K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **VIJAYALAKSHMI MEKALI & GEETHA R**
SUBJECT CODE/NAME : **18CSL38/ DATA STRUCTURES LAB**
SEMESTER/YEAR/SEC : **III / II /A**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction and Practice of C Programs	BB+LCD	3	A1	18/10/2021
		BB+LCD	3	A2	22/10/2021
		BB+LCD	3	A3	21/10/2021
2	Design, Develop and Implement a menu driven Program in C for the following array operations. a. Creating an array of N Integer Elements b. Display of array Elements with Suitable Headings c. Inserting an Element (ELEM) at a given valid Position (POS) d. Deleting an Element at a given valid Position (POS) e. Exit. Support the program with functions for each of the above operations.	BB+LCD	3	A1	25/10/2021
		BB+LCD	3	A2	29/10/2021
		BB+LCD	3	A3	28/10/2021
3	Design, Develop and Implement a Program in C for the following operations on Strings. a. Read a main String (STR), a Pattern String (PAT) and a Replace String (REP) b. Perform Pattern Matching Operation: Find and Replace all occurrences of PAT in STR with REP if PAT exists in STR. Report suitable messages in case PAT does not exist in STR Support the program with functions for each of the	BB+LCD	3	A1	8/11/2021
		BB+LCD	3	A2	12/11/21
		BB+LCD	3	A3	30/10/21

	above operations. Don't use Built-in functions.				
4	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 how Stack can be used to check Palindrome d. Demonstrate Overflow and Underflow situations on Stack e. Display the status of Stack f. Exit Support the program with appropriate functions for each of the above operations	BB+LCD	3	A1	13/11/21
		BB+LCD	3	A2	19/11/21
		BB+LCD	3	A3	04/11/21
5	Design, Develop and Implement a Program in C for converting an Infix Expression to Postfix Expression. Program should support for both parenthesized and free parenthesized expressions with the operators: +, -, *, /, % (Remainder), ^ (Power) and alphanumeric operands.	BB+LCD	3	A1	15/11/21
		BB+LCD	3	A2	26/11/21
		BB+LCD	3	A3	11/11/21
6	Design, Develop and Implement a Program in C for the following Stack Applications a. Evaluation of Suffix expression with single digit operands and operators: +, -, *, /, %, ^ b. Solving Tower of Hanoi problem with n disks	BB+LCD	3	A1	29/11/21
		BB+LCD	3	A2	03/12/21
		BB+LCD	3	A3	18/11/21
7	Design, Develop and Implement a menu driven Program in C for the following operations on Circular QUEUE of Characters (Array Implementation of Queue with maximum size MAX) a. Insert an Element on to Circular QUEUE b. Delete an Element from Circular QUEUE c. Demonstrate Overflow and Underflow situations on Circular QUEUE d. Display the status of Circular QUEUE e. Exit Support the program with appropriate functions	BB+LCD	3	A1	06/12/21
		BB+LCD	3	A2	04/12/21
		BB+LCD	3	A3	27/11/21

	for each of the above operations				
8	Design, Develop and Implement a menu driven Program in C for the following operations on Singly Linked List (SLL) of Student Data with the fields: USN, Name, Programme, Sem, PhNo a. Create a SLL of N Students Data by using front insertion. b. Display the status of SLL and count the number of nodes in it c. Perform Insertion / Deletion at End of SLL d. Perform Insertion / Deletion at Front of SLL(Demonstration of stack) e. Exit	BB+LCD	3	A1	13/12/21
		BB+LCD	3	A2	10/12/21
		BB+LCD	3	A3	02/12/21
9	Design, Develop and Implement a menu driven Program in C for the following operations on Doubly Linked List (DLL) of Employee Data with the fields: SSN, Name, Dept, Designation, Sal, PhNo a. Create a DLL of N Employees Data by using end insertion. b. Display the status of DLL and count the number of nodes in it c. Perform Insertion and Deletion at End of DLL d. Perform Insertion and Deletion at Front of DLL e. Demonstrate how this DLL can be used as Double Ended Queue. f. Exit	BB+LCD	3	A1	20/12/21
		BB+LCD	3	A2	17/12//21
		BB+LCD	3	A3	09/12/21
10	Design, Develop and Implement a Program in C for the following operations on Singly Circular Linked List (SCLL) with header nodes a. Represent and Evaluate a Polynomial P(x,y,z) = 6x2 y 2 z-4yz5 +3x3 yz+2xy5 z-2xyz3 b. Find the sum of two polynomials POLY1(x,y,z) and POLY2(x,y,z) and store the result in POLYSUM(x,y,z) Support the program with appropriate functions for each of the above operations	BB+LCD	3	A1	27/12/21
		BB+LCD	3	A2	24/12/21
		BB+LCD	3	A3	16/12/21
11	Design, Develop and Implement a menu driven Program	BB+LCD	3	A1	10/01/22

	in C for the following operations on Binary Search Tree (BST) of Integers . a. Create a BST of N Integers: 6, 9, 5, 2, 8, 15, 24, 14, 7, 8, 5, 2 b. Traverse the BST in Inorder, Preorder and Post Order c. Search the BST for a given element (KEY) and report the appropriate message d. Exit	BB+LCD	3	A2	07/01/22
		BB+LCD	3	A3	23/12/21
12	Design, Develop and Implement a Program in C for the following 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 a digraph using DFS/BFS method	BB+LCD	3	A1	17/01/22
		BB+LCD	3	A2	08/01/22
		BB+LCD	3	A3	30/12/21
13	Given a File of N employee records with a set K of Keys (4-digit) which uniquely determine the records in file F. Assume that file F is maintained in memory by a Hash Table (HT) of m memory locations with L as the set of memory addresses (2-digit) of locations in HT. Let the keys in K and addresses in L are Integers. Design and develop a Program in C that uses Hash function H: K →L as H(K)=K mod m (remainder method), and implement hashing technique to map a given key K to the address space L. Resolve the collision (if any) using linear probing	BB+LCD	3	A1	24/01/22
		BB+LCD	3	A2	21/01/22
		BB+LCD	3	A3	06/01/22
14	Revision	BB	3	A1	31/01/22
		BB	3	A2	28/01/22
		BB	3	A3	13/01/22
15	Internal Test 2	BB	3	A1	07/02/22
		BB	3	A2	04/02/22
		BB	3	A3	20/01/22

WEB MATERIALS:

- https://nptel.ac.in/courses/106106139
- https://www.greatlearning.in/academy/learn-for-free/courses/data-structures-in-c
- https://www.tutorialspoint.com/data_structures_algorithms/index.htm

Details for the teaching Aids

BB-Black Board

LCD-Projector

Faculty

Module Coordinator

HOD

Head of the Department
Dept. of Computer Science & Engg.
M.S. Institute of Technology
Bangalore-560 106

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **GEETHA R & SWAPNA GOPALA JOIS**
SUBJECT CODE/NAME : **18CSL38/ DATA STRUCTURES LAB**
SEMESTER/YEAR/SEC : **III / II /B**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction and Practice of C Programs	BB+LCD	3	B1	18/10/2021
		BB+LCD	3	B2	22/10/2021
		BB+LCD	3	B3	19/10/2021
2	Design, Develop and Implement a menu driven Program in C for the following array operations. a. Creating an array of N Integer Elements b. Display of array Elements with Suitable Headings c. Inserting an Element (ELEM) at a given valid Position (POS) d. Deleting an Element at a given valid Position (POS) e. Exit. Support the program with functions for each of the above operations.	BB+LCD	3	B1	25/10/2021
		BB+LCD	3	B2	29/10/2021
		BB+LCD	3	B3	26/10/2021
3	Design, Develop and Implement a Program in C for the following operations on Strings. a. Read a main String (STR), a Pattern String (PAT) and a Replace String (REP) b. Perform Pattern Matching Operation: Find and Replace all occurrences of PAT in STR with REP if PAT exists in STR. Report suitable messages in case PAT does not exist in STR Support the program with functions for each of the	BB+LCD	3	B1	8/11/2021
		BB+LCD	3	B2	12/11/21
		BB+LCD	3	B3	9/11/21

	above operations. Don't use Built-in functions.				
4	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 how Stack can be used to check Palindrome d. Demonstrate Overflow and Underflow situations on Stack e. Display the status of Stack f. Exit Support the program with appropriate functions for each of the above operations	BB+LCD	3	B1	13/11/21
		BB+LCD	3	B2	19/11/21
		BB+LCD	3	B3	16/11/21
5	Design, Develop and Implement a Program in C for converting an Infix Expression to Postfix Expression. Program should support for both parenthesized and free parenthesized expressions with the operators: +, -, *, /, % (Remainder), ^ (Power) and alphanumeric operands.	BB+LCD	3	B1	15/11/21
		BB+LCD	3	B2	26/11/21
		BB+LCD	3	B3	30/11/21
6	Design, Develop and Implement a Program in C for the following Stack Applications a. Evaluation of Suffix expression with single digit operands and operators: +, -, *, /, %, ^ b. Solving Tower of Hanoi problem with n disks	BB+LCD	3	B1	29/11/21
		BB+LCD	3	B2	03/12/21
		BB+LCD	3	B3	7/12/21
7	Design, Develop and Implement a menu driven Program in C for the following operations on Circular QUEUE of Characters (Array Implementation of Queue with maximum size MAX) a. Insert an Element on to Circular QUEUE b. Delete an Element from Circular QUEUE c. Demonstrate Overflow and Underflow situations on Circular QUEUE d. Display the status of Circular QUEUE e. Exit Support the program with appropriate functions	BB+LCD	3	B1	06/12/21
		BB+LCD	3	B2	04/12/21
		BB+LCD	3	B3	14/12/21

	for each of the above operations				
8	Design, Develop and Implement a menu driven Program in C for the following operations on Singly Linked List (SLL) of Student Data with the fields: USN, Name, Programme, Sem, PhNo a. Create a SLL of N Students Data by using front insertion. b. Display the status of SLL and count the number of nodes in it c. Perform Insertion / Deletion at End of SLL d. Perform Insertion / Deletion at Front of SLL(Demonstration of stack) e. Exit	BB+LCD	3	B1	13/12/21
		BB+LCD	3	B2	10/12/21
		BB+LCD	3	B3	21/12/21
9	Design, Develop and Implement a menu driven Program in C for the following operations on Doubly Linked List (DLL) of Employee Data with the fields: SSN, Name, Dept, Designation, Sal, PhNo a. Create a DLL of N Employees Data by using end insertion. b. Display the status of DLL and count the number of nodes in it c. Perform Insertion and Deletion at End of DLL d. Perform Insertion and Deletion at Front of DLL e. Demonstrate how this DLL can be used as Double Ended Queue. f. Exit	BB+LCD	3	B1	20/12/21
		BB+LCD	3	B2	17/12//21
		BB+LCD	3	B3	28/12/21
10	Design, Develop and Implement a Program in C for the following operations on Singly Circular Linked List (SCLL) with header nodes a. Represent and Evaluate a Polynomial P(x,y,z) = 6x2 y 2 z-4yz5 +3x3 yz+2xy5 z-2xyz3 b. Find the sum of two polynomials POLY1(x,y,z) and POLY2(x,y,z) and store the result in POLYSUM(x,y,z) Support the program with appropriate functions for each of the above operations	BB+LCD	3	B1	27/12/21
		BB+LCD	3	B2	24/12/21
		BB+LCD	3	B3	11/1/22
11	Design, Develop and Implement a menu driven Program	BB+LCD	3	B1	10/01/22

	in C for the following operations on Binary Search Tree (BST) of Integers . a. Create a BST of N Integers: 6, 9, 5, 2, 8, 15, 24, 14, 7, 8, 5, 2 b. Traverse the BST in Inorder, Preorder and Post Order c. Search the BST for a given element (KEY) and report the appropriate message d. Exit	BB+LCD	3	B2	07/01/22
		BB+LCD	3	B3	18/1/22
12	Design, Develop and Implement a Program in C for the following 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 a digraph using DFS/BFS method	BB+LCD	3	B1	17/01/22
		BB+LCD	3	B2	08/01/22
		BB+LCD	3	B3	25/1/22
13	Given a File of N employee records with a set K of Keys (4-digit) which uniquely determine the records in file F. Assume that file F is maintained in memory by a Hash Table (HT) of m memory locations with L as the set of memory addresses (2-digit) of locations in HT. Let the keys in K and addresses in L are Integers. Design and develop a Program in C that uses Hash function H: K →L as H(K)=K mod m (remainder method), and implement hashing technique to map a given key K to the address space L. Resolve the collision (if any) using linear probing	BB+LCD	3	B1	24/01/22
		BB+LCD	3	B2	21/01/ 22
		BB+LCD	3	B3	1/02/22
14	REVISION	BB	3	B1	31/01/22
		BB	3	B2	28/01/22
		BB	3	B3	8/02/22
15	Internal Test 2	BB	3	B1	17/02/22
		BB	3	B2	19/02/22
		BB	3	B3	18/02/22

WEB MATERIALS:

- https://nptel.ac.in/courses/106106139
- https://www.greatlearning.in/academy/learn-for-free/courses/data-structures-in-c
- https://www.tutorialspoint.com/data_structures_algorithms/index.htm

Details for the teaching Aids

BB-Black Board

LCD-Projector

Faculty

Module Coordinator

HOD

Head of the Department
Dept. of Computer Science & Engg.
K.S. Institute of Technology
Bengaluru -560 109

K.S. INSTITUTE OF TECHNOLOGY
BENGALURU
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Mrs. PAVITHRA J

SUBJECT CODE/NAME : 21PSP13/ PROBLEM SOLVING THROUGH PROGRAMMING

YEAR/SEMESTER/SEC : I / I / E

ACADEMIC YEAR : 2021-2022

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
1	Introductory Class	L+D	BB	1	1	23/12/2021
MODULE 1: Introduction to Computer Hardware and Software						
2	Computer Generations, Computer types introduction	L+D	BB	1	2	24/12/2021
3	Computer types explanation, bits, bytes and words,	L+D	BB	1	3	27/12/2021
4	CPU, Primary Memory, secondary memory,	L+D	BB	1	4	28/12/2021
5	Ports and connections, Input and output devices,	L+D	BB	1	5	30/12/2021
6	Computers in a network, Network hardware,	L+D	BB	1	6	3/01/2022
7	Software Basics and types,	L+D	BB	1	7	04/01/2022

8	Basic Structure of C program	L+D	BB	1	8	5/01/2022
9	Executing a C Program	L+D	BB	1	9	6/01/2022
10	Constant, Variable and data types	L+D	BB	1	10	10/01/2022
11	Operators	L+D	BB	1	11	11/01/2022
12	Expressions	L+D	BB	1	12	11/01/2022
MODULE 2:						
13	Managing input operations	L+D	BB	1	13	12/01/2022
14	Managing output operations	L+D	BB	1	14	13/01/2022
15	Conditional Branching basics	L+D	BB	1	15	17/01/2022
16	Conditional Branching Examples	L+D	BB	1	16	17/01/2022
17	Loops explanation	L+D	BB	1	17	18/01/2022
18	Loops Examples	L+D	BB	1	18	19/01/2022
19	Finding roots of a quadratic equation	L+D	BB	1	19	27/01/2022
20	Computation of binomial coefficients	L+D	BB	1	20	7/02/2022
21	Plotting of Pascal's triangle	L+D	BB	1	21	07/02/2022
MODULE 3						
22	Array Introduction, 1-D & 2-D	L+D	BB	1	22	10/02/2022
23	Character arrays	L+D	BB	1	23	14/02/2022
24	Strings	L+D	BB	1	24	15/02/2022
25	Blue Book Verification + Revision	L+D	BB	1	25	17 /02/2022
26	Linear Search	L+D	BB	1	26	17/02/2022
27	Binary Search	L+D	BB	1	27	17/02/2022
28	Bubble Sort	L+D	BB	1	28	21/02/2022
29	Selection Sort	L+D	BB	1	29	21/02/2022
30	If any topics pending + Revision	L+D	BB	1	30	22/02/2022
31	Functions in C	L+D	BB	1	31	23/2/2022
32	Location of function	L+D	BB	1	32	24/2/2022
MODULE 4						

33	Structure of function	L+D	BB	1	33	28/2/2022
34	Types of functions	L+D	BB	1	34	1/3/2022
35	Parameter passing mechanism	L+D	BB	1	35	2/3/2022
36	Recursive function	L+D	BB	1	36	3/3/2022
37	Factorial of a number	L+D	BB	1	37	7/3/2022
38	Fibonacci series	L+D	BB	1	38	7/3/2022
39	Programming examples	L+D	BB	1	39	8/3/2022
40	Basic of structures	L+D	BB	1	40	9/3/2022
41	Structures and functions	L+D	BB	1	41	10/3/2022
42	Array of structures	L+D	BB	1	42	10/3/2022
43	Pointers and addresses	L+D	BB	1	43	14/3/2022
44	Pointers and functions arguments	L+D	BB	1	44	14/3/2022
45	Pointers and arrays	L+D	BB	1	45	14/3/2022
46	Address arithmetic	L+D	BB	1	46	14/3/2022
47	Pointer to pointer initialization	L+D	BB	1	47	15/32022
48	Dynamic memory allocations methods	L+D	BB	1	48	16/3/2022
49	Introduction to preprocessor directives	L+D	BB	1	49	17/3/2022
50	Activity					
51	Revision	L+D	BB	1	51	21/3/2022

Total No. of Lecture Hours= 47

Total No. of Revision Hours=3

Total No.of Activity= 1

CourseIncharge **Module Coordinator** **H.O. D** **Principal**

K.S. INSTITUTE OF TECHNOLOGY

BENGALURU

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Mrs. Pallavi K N

SUBJECT CODE/NAME : 21PSP13/ PROBLEM SOLVING USING PROGRAMMING

YEAR/SEMESTER/SEC : I / I / D

ACADEMIC YEAR : 2021-2022

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date	Engaged Date
1	Introductory Class	L+D	BB	1	1	20/12/2021	20/12/2021
	MODULE 1: Introduction to Computer Hardware and Software						
2	Computer Generations, Computer types introduction	L+D	BB	1	2	21/12/2021	21/12/2021
3	Computer types explanation, bits, bytes and words;	L+D	BB	1	3	23/12/2021	23/12/2021
4	CPU, Primary Memory, secondary memory,	L+D	BB	1	4	24/12/2021	24/12/2021 27/12/2021
5	Ports and connections, Input and output devices,	L+D	BB	1	5	27/12/2021	27/12/2021
6	Computers in a network, Network hardware,	L+D	BB	1	6	28/12/2021	28/12/2021
7	Software Basics and types,	L+D	BB	1	7	30/12/2021	28/12/2021

8	Basic Structure of C program	L+D	BB	1	8	3/01/2022	30/12/2021
9	Executing a C Program	L+D	BB	1	9	4/01/2022	31/12/2021
10	Constant, Variable and data types	L+D	BB	1	10	5/01/2022	03/01/2022 04/01/2022
11	Operators	L+D	BB	1	11	6/01/2022	06/01/2022
12	Expressions	L+D	BB	1	12	10/01/2022	10/01/2022
MODULE 2							
13	Managing input operations	L+D	LCD	1	13	11/01/2022	11/01/2022
14	Managing output operations	L+D	LCD	1	14	13/01/2022	13/01/2022
15	Conditional Branching basics	L+D	LCD	1	15	17/01/2022	17/01/2022
16	Conditional Branching Examples	L+D	LCD	1	16	18/01/2022	18/01/2022
17	Loops explanation	L+D	LCD	1	17	24/01/2022	20/01/2022
18	Loops Examples	L+D	LCD	1	18	25/01/2022	21/01/2022
19	Finding roots of a quadratic equation	L+D	LCD	1	19	27/01/2022	21/01/2022
20	Computation of binomial coefficients	L+D	LCD	1	20	28/01/2022	24/01/2022
21	Plotting of Pascal's triangle	L+D	LCD	1	21	31/01/2022	24/01/2022
MODULE 3							
22	Array Introduction, 1-D & 2-D	L+D	LCD	1	22	31/01/2022	25/01/2022 28/01/2022
23	Character arrays	L+D	LCD	1	23	01/02/2022	04/02/2022
24	Strings	L+D	LCD	1	24	02/02/2022	07/02/2022
25	Blue Book Verification + Motivation	L+D	LCD	1	25	03/02/2022	
26	Linear Search	L+D	LCD	1	26	04/02/2022	07/02/2022
27	Binary Search	L+D	LCD	1	27	07/02/2022	08/02/2022
28	Bubble Sort	L+D	LCD	1	28	08/02/2022	10/02/2022
29	Selection Sort	L+D	LCD	1	29	10/02/2022	14/02/2022
30	If any topics pending + Revision	L+D	LCD	1	30	14/02/2022	14/02/2022
MODULE 4							
31	Functions in C	L+D	LCD	1	31	17/02/2022	15/02/2022

32	Location of function	L+D	LCD	1	32	18/02/2022	17/02/2022
33	Structure of function	L+D	LCD	1	33	19/02/2022	18/02/2022
34	Types of functions	L+D	LCD	1	34	24/02/2022	19/02/2022
35	Parameter passing mechanism	L+D	LCD	1	35	25/02/2022	24/02/2022
36	Recursive function	L+D	LCD	1	36	28/02/2022	25/02/2022
37	Factorial of a number	L+D	LCD	1	37	03/03/2022	28/02/2022
38	Fibonacci series	L+D	LCD	1	38	03/03/2022	28/02/2022
39	Programming examples	L+D	LCD	1	39	04/03/2022	03/03/2022
	MODULE 5						
40	Basic of structures	L+D	LCD	1	40	07/03/2022	07/03/2022
41	Structures and functions	L+D	LCD	1	41	07/03/2022	07/03/2022
42	Array of structures	L+D	LCD	1	42	08/03/2022	08/03/2022
43	Pointers and addresses	L+D	LCD	1	43	11/03/2022	11/03/2022
44	Pointers and functions arguments	L+D	LCD	1	44	14/03/2022	14/03/2022
45	Pointers and arrays	L+D	LCD	1	45	15/03/2022	15/03/2022
46	Address arithmetic	L+D	LCD	1	46	15/03/2022	15/03/2022
47	Introduction to preprocessors directives	L+D	BB	1	47	17/03/2022	17/03/2022
48	Programming examples	L+D	BB	1	48	18/03/2022	18/03/2022
49	Revision (Activity)	L+D	BB	1	49	19/03/2022	19/03/2022
50	Revision	L+D	BB	1	51	20/03/2022	20/03/2022

Total No. of Lecture Hours = 44

Total No. of Revision Hours = 6

Pallavi KN

Course In charge

H.O. D
Head of the Department
Dept. of Computer Science & Engg.
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 COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **PALLAVI K N**
SUBJECT CODE/NAME : **21CPL17/ COMPUTER PROGRAMMING LABORATORY**
SEMESTER/YEAR/SEC : **I/ I / D**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction Class	BB+LCD	3	D1	17/12/2021
		BB+LCD	3	D2	13/12/2021
		BB+LCD	3	D3	15/12/2021
2	Simulation of a Simple Calculator.	BB+LCD	3	D1	24/12/2021
		BB+LCD	3	D2	20/12/2021
		BB+LCD	3	D3	22/12/2021
3	Compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages.	BB+LCD	3	D1	31/12/2021
		BB+LCD	3	D2	27/12/2021
		BB+LCD	3	D3	29/12/2021
4	An electricity board charges the following rates for the use of electricity: for the first 200 units 80 paise per unit: for the next 100 units 90 paise per unit: beyond 300 units Rs 1 per unit. All users are charged a minimum of Rs. 100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of total amount is charged. Write a program to read the name of the user, number of units consumed and print out the charges.	BB+LCD	3	D1	07/01/2022
		BB+LCD	3	D2	03/02/2022
		BB+LCD	3	D3	05/02/2022
5	Implement Binary Search on Integers / Names.	BB+LCD	3	D1	08/01/2022
		BB+LCD	3	D2	10/01/2022
		BB+LCD	3	D3	12/01/2022
6	Implement Matrix multiplication and validate the rules of multiplication.	BB+LCD	3	D1	28/01/2022
		BB+LCD	3	D2	17/01/2022
		BB+LCD	3	D3	19/01/2022
7	Compute sin(x)/cos(x) using Taylor series approximation. Compare your result with the built-in library function. Print both the results with appropriate inferences.	BB+LCD	3	D1	04/02/2022
		BB+LCD	3	D2	24/1/2022
		BB+LCD	3	D3	02/02/2022

8	Sort the given set of N numbers using Bubble sort.	BB+LCD	3	D1	11/02/2022
		BB+LCD	3	D2	31/01/2022
		BB+LCD	3	D3	05/02/2022
9	Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques.	BB+LCD	3	D1	18/02/2022
		BB+LCD	3	D2	07/02/2022
		BB+LCD	3	D3	09/02/2022
10	Implement structures to read, write and compute average- marks and the students scoring above and below the average marks for a class of N students	BB+LCD	3	D1	25/02/2022
		BB+LCD	3	D2	14/02/2022
		BB+LCD	3	D3	16/02//2022
11	Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers.	BB+LCD	3	D1	04/03/2022
		BB+LCD	3	D2	28/02/2022
		BB+LCD	3	D3	02/03/2022
12	Implement Recursive functions for Binary to Decimal Conversion.	BB+LCD	3	D1	11/03/2022
		BB+LCD	3	D2	07/03/2022
		BB+LCD	3	D3	05/03/2022

WEB MATERIALS:

1. http://elearning.vtu.ac.in/econtent/courses/video/BS/14CPL16.html
2. https://nptel.ac.in/courses/106/105/106105171/

Faculty Incharge **Module Coordinator** **HOD** **Principal**

Head of the Department
Dept. of Computer S g.
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K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **PALLAVI K N**
SUBJECT CODE/NAME : **21CPL27/ COMPUTER PROGRAMMING LABORATORY**
SEMESTER/YEAR/SEC : **II/ I / A**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction Class	BB+LCD	3	A1	10-06-2022
		BB+LCD	3	A2	06-06-2022
		BB+LCD	3	A3	08-06-2022
2	Simulation of a Simple Calculator.	BB+LCD	3	A1	17-06-2022
		BB+LCD	3	A2	13-06-2022
		BB+LCD	3	A3	15-06-2022
3	Compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages.	BB+LCD	3	A1	24-06-2022
		BB+LCD	3	A2	20-06-2022
		BB+LCD	3	A3	22-06-2022
4	An electricity board charges the following rates for the use of electricity: for the first 200 units 80 paise per unit: for the next 100 units 90 paise per unit: beyond 300 units Rs 1 per unit. All users are charged a minimum of Rs. 100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of total amount is charged. Write a program to read the name of the user, number of units consumed and print out the charges.	BB+LCD	3	A1	08-07-2022
		BB+LCD	3	A2	04-07-2022
		BB+LCD	3	A3	25-06-2022
5	Implement Binary Search on Integers / Names.	BB+LCD	3	A1	15-07-2022
		BB+LCD	3	A2	18-07-2022
		BB+LCD	3	A3	06-07-2022
6	Implement Matrix multiplication and validate the rules of multiplication.	BB+LCD	3	A1	16-07-2022
		BB+LCD	3	A2	25-07-2022
		BB+LCD	3	A3	20-07-2022
7	Compute sin(x)/cos(x) using Taylor series approximation. Compare your result with the built-in library function. Print both the results with appropriate inferences.	BB+LCD	3	A1	22-07-2022
		BB+LCD	3	A2	01-08-2022
		BB+LCD	3	A3	27-07-2022

8	Sort the given set of N numbers using Bubble sort.	BB+LCD	3	A1	29-07-2022
		BB+LCD	3	A2	08-08-2022
		BB+LCD	3	A3	03-08-2022
9	Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques.	BB+LCD	3	A1	19-08-2022
		BB+LCD	3	A2	22-08-2022
		BB+LCD	3	A3	17-08-2022
10	Implement structures to read, write and compute average- marks and the students scoring above and below the average marks for a class of N students	BB+LCD	3	A1	26-08-2022
		BB+LCD	3	A2	29-08-2022
		BB+LCD	3	A3	24-08-2022
11	Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers.	BB+LCD	3	A1	02-09-2022
		BB+LCD	3	A2	03-09-2022
		BB+LCD	3	A3	27-08-2022
12	Implement Recursive functions for Binary to Decimal Conversion.	BB+LCD	3	A1	02-09-2022
		BB+LCD	3	A2	05-09-2022
		BB+LCD	3	A3	27-08-2022

WEB MATERIALS:

1. http://elearning.vtu.ac.in/econtent/courses/video/BS/14CPL16.html
2. https://nptel.ac.in/courses/106/105/106105171/

Faculty In-charge **Module Coordinator** **HOD** **Principal**

Head of the Department
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K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **PAVITHRA J**
SUBJECT CODE/NAME : **21CPL17/ COMPUTER PROGRAMMING LAB**
SEMESTER/YEAR/SEC : **I/I/E**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction Class	BB+LCD	3	E1	16/12/2021
		BB+LCD	3	E2	14/12/2021
		BB+LCD	3	E3	15/12/2021
2	Simulation of a Simple Calculator.	BB+LCD	3	E1	23/12/2021
		BB+LCD	3	E2	21/12/2021
		BB+LCD	3	E3	22/12/2021
3	Compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages	BB+LCD	3	E1	30/12/2021
		BB+LCD	3	E2	28/12/2021
		BB+LCD	3	E3	29/12/2021
4	An electricity board charges the following rates for the use of electricity: for the first 200 units 80 paise per unit: for the next 100 units 90 paise per unit: beyond 300 units Rs 1 per unit. All users are charged a minimum of Rs. 100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of total amount is charged. Write aprogram to read the name of the user, number of units consumed and print out the charges.	BB+LCD	3	E1	6/1/2022
		BB+LCD	3	E2	04/01/2022
		BB+LCD	3	E3	05/1/2022
5	Implement Binary Search on Integers / Names.	BB+LCD	3	E1	13/1/2022
		BB+LCD	3	E2	11/1/2022

		BB+LCD	3	E3	12/1/2022
6	Implement Matrix multiplication and validate the rules of multiplication.	BB+LCD	3	E1	27/1/2022
		BB+LCD	3	E2	18/1/2022
		BB+LCD	3	E3	19/1/2022
7	Compute sin(x)/cos(x) using Taylor series approximation. Compare your result with the built-in library function. Print both the results with appropriate inferences.	BB+LCD	3	E1	3/2/2022
		BB+LCD	3	E2	25/1/2022
		BB+LCD	3	E3	2/2/2022
8	Sort the given set of N numbers using Bubble sort	BB+LCD	3	E1	10/2/2022
		BB+LCD	3	E2	1/2/2022
		BB+LCD	3	E3	9/2/2022
9	Write functions to implement string operations such as compare, concatenate, string length. Convince theparameter passing techniques.	BB+LCD	3	E1	17/2/2022
		BB+LCD	3	E2	8/2/2022
		BB+LCD	3	E3	16/2/2022
10	Implement structures to read, write and compute average- marks and the students scoring above and below the average marks for a class of N students	BB+LCD	3	E1	24/2/2022
		BB+LCD	3	E2	15/2/2022
		BB+LCD	3	E3	3/3/2022
11	Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers.	BB+LCD	3	E1	3/3/2022
		BB+LCD	3	E2	8/3/2022
		BB+LCD	3	E3	9/3/2022
12	Implement Recursive functions for Binary toDecimal Conversion.	BB+LCD	3	E1	10/3/2022
		BB+LCD	3	E2	15/3/2022
		BB+LCD	3	E3	16/3/2022

WEB MATERIALS:

https://nptel.ac.in/courses/106106090
https://www.udemy.com/course/computer_graphics_subject
https://www.coursera.org/for-university-and-college-students

Details for the teaching Aids

BB-BlackBoard

LCD-Projector

Course Incharge **Module Coordinator** **HOD** **Principal**

K S INSTITUTE OF TECHNOLOGY, BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **GEETHA.R**
SUBJECT CODE/NAME : **18CS55/APPLICATION DEVELOPMENT USING PYTHON**
SEMESTER/YEAR : **VB**
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: Python Basics, Flow Control, Functions:						
1	Python and Entering Expressions into the Interactive Shell,	L+D	BB+LCD+Python IDE	1	1	01-10-2021
2	The Integer, Floating-Point and String Data Types String Concatenation and Replication	L+ D	BB+LCD+Python IDE	1	2	04-10-2021
3	Storing Values in Variables, Your First Program, Dissecting Your Program,	L+ D	BB+LCD+Python IDE	1	3	05-10-2021
4	Boolean Values ,Comparison Operators, Boolean Operators,	L+D	BB+LCD+Python IDE	1	4	08-10-2021
5	Mixing Boolean and Comparison Operators, Elements of Flow Control ,Program Execution	L+D	BB+LCD+Python IDE	1	5	09-10-2021
6	Flow Control Statements, Importing Modules,	L+D	BB+LCD+Python IDE	1	6	11-10-2021
7	Ending a Program Early with sys.exit() , def Statements with Parameters ,	L+D	BB+LCD+Python IDE	1	7	12-10-2021
8	Return Values and return Statements, The None Value, Keyword Arguments and print()	L+D	BB+LCD+Python IDE	1	8	13-10-2021
9	Local and Global Scope, The global Statement, Exception Handling,	L+D, GD	BB+LCD+Python IDE	1	9	18-10-2021
10	A Short Program: Guess the Number	L+D, GD	LCD+Python IDE	1	10	22-10-2021

11	Programming Examples	L+D, GD	LCD+Python IDE	1	11	23-10-2021
12	Surprise Class Test	L+D, GD	LCD+Python IDE	1	12	25-10-2021
MODULE 2: Lists, Dictionaries and Structuring Data,Manipulating Strings:						
13	The List Data Type, Working with Lists	L+ D	BB+LCD+Python IDE	1	13	26-10-2021
14	Augmented Assignment Operators, Methods Example Program: Magic 8 Ball with a List,	L+ D,GD	BB+LCD+Python IDE	1	14	27-10-2021
15	List-like Types: Strings and Tuples, References	L+ D	BB+LCD+Python IDE	1	15	29-10-2021
16	Dictionaries and Structuring Data, The Dictionary Data Type, Pretty Printing	L+ D	BB+LCD+Python IDE	1	16	02-11-2021
17	Using Data Structures to Model Real-World Things,	L+ D	BB+LCD+Python IDE	1	17	04-11-2021
18	Manipulating Strings, Working with Strings, Useful String Methods,	L+ D	BB+LCD+Python IDE	1	18	08-11-2021
19	Project: Password Locker and Quiz	L+ D, GD	BB+LCD+Python IDE	1	19	09-11-2021
20	Revision	L+ D, GD	LCD+Python IDE	1	20	15-11-2021
MODULE 3: Pattern Matching With Regular Expression, Reading and Writing the Files, Organizing Files, Debugging						
21	Finding Patterns of Text Without Regular Expressions, Finding Patterns of Text with Regular Expressions	L+D	BB+LCD+Python IDE	2	22	17-11-2021 17-11-2021
22	More Pattern Matching with Regular Expressions,Greedy and Nongreedy Matching, The findall() Method	L+D	BB+LCD+Python IDE	1	23	18-11-2021
23	Character Classes, Making Your Own Character Classes,The Caret and Dollar Sign Characters, The Wildcard Character	L+D	BB+LCD+Python IDE	2	25	24-11-2021 24-11-2021
24	Review of Regex Symbols,Case-Insensitive Matching, Substituting Strings with the sub() Method,	L+D	BB+LCD+Python IDE	1	26	25-11-2021

25	Managing. Complex Regexes , Combining re.IGNORECASE, re .DOTALL, and re .VERBOSE,	L+D	BB+LCD+Python IDE	1	27	27-11-2021
26	Project: Phone Number and Email Address Extractor ,Files and File Paths, The os.path Module,	L+D	BB+LCD+Python IDE	1	28	29-11-2021
27	The File Reading/Writing Process, Saving Variables with the shelve Module Saving Variables with the pprint.pformat() Function, Project: Generating Random Quiz Files	L+D	BB+LCD+Python IDE	2	30	01-12-2021 01-12-2021
28	Project:Multiclipboard,The shutil Module, Walking a Directory Tree,Compressing Files with the zipfile Module	L+D	BB+LCD+Python IDE	1	31	02-12-2021
29	Project: Renaming Files with American-Style Dates to European-Style Dates,	L+D,GD	BB+LCD+Python IDE	1	32	06-12-2021
30	Project: Backing Up a Folder into a ZIP File Raising Exceptions, Getting the Traceback as a String, Assertions, Logging, IDLE's Debugger.	L+D	BB+LCD+Python IDE	2	34	08-12-2021 08-12-2021
31	Programing Examples	L+D,GD	BB+LCD+Python IDE	1	35	09-12-2021
32	Revision	L+D	BB+LCD+Python IDE	1	36	13-12-2021
MODULE 4: Classes and objects, Classes and functions, Classes and methods, Inheritance:						
33	Programmer-defined types, Attributes, Rectangles, Instances as return values, Objects are mutable, Copying, Time, Pure functions, Modifiers,	L+D	BB+LCD+Python IDE	2	38	15-12-2021 15-12-2021
34	Prototyping versus planning, Object-oriented features, Printing objects, Another example, A more complicated example, The init method, The __str__ method	L+D	BB+LCD+Python IDE	1	39	20-12-2021
35	Operator overloading, Type-based dispatch, polymorphism, Interface and implementation, Card objects, Class attributes, Comparing cards,	L+D	BB+LCD+Python IDE	2	41	22-12-2021 22-12-2021
36	Decks,Printing the deck, Add, remove, shuffle and sort, Inheritance, Class diagrams, Data encapsulation	L+D	BB+LCD+Python IDE	1	42	23-12-2021

37	Revision	L+D,GD	BB+LCD+Python IDE	1	43	27-12-2021
MODULE 5: Web Scrapping, Working with Excel ,Working with PDF and word, Working with CSV AND Jason Data						
38	Project: MAPIT.PY with the web browser Module, Downloading Files from the Web with the requests Module, Saving Downloaded Files to the Hard Drive,	L+D	BB+LCD+Python IDE	2	45	29-12-2021 29-12-2021
39	Parsing HTML with the BeautifulSoup Module, Project: "I"m Feeling Lucky" Google Search,Project: Downloading All XKCD Comics	L+D	BB+LCD+Python IDE	1	46	30-12-2021
40	Controlling the Browser with the selenium Module,Excel Documents, Installing the openpyxl Module,	L+D	BB+LCD+Python IDE	1	47	03-1-2022
41	Reading Excel Documents, Project: Reading Data from a Spreadsheet, Writing Excel Documents, Project: Updating a Spreadsheet	L+D	BB+LCD+Python IDE	2	49	05-01-2022 05-01-2022
42	Setting the Font Style of Cells, Font Objects, Formulas, Adjusting Rows and Columns, Charts,	L+D	BB+LCD+Python IDE	1	50	06-01-2022
43	PDF Documents, Project: Combining Select Pages from Many PDFs, Word Documents	L+D	BB+LCD+Python IDE	1	51	10-01-2022
44	The csv Module, Project: Removing the Header from CSV Files, JSON and APIs, The json Module, Project: Fetching Current Weather Data	L+D	BB+LCD+Python IDE	2	53	12-01-2022 12-01-2022
45	Programming Examples	L+D	LCD+Python IDE	1	54	13-01-2022
46	Revision	L+D	LCD+Python IDE	1	55	17-01-2022
47	Revision	L+D,GD	LCD+Python IDE	1	56	31-01-2022

Text Books:

1. Al Sweigart,"Automate the Boring Stuff with Python",1st Edition, No Starch Press, 2015. Available under CC-BY-NC-SA license at https://automatetheboringstuff.com/ (Chapters 1 to 18)

2. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition,Green Tea Press, 2015. Available under CC-BY-NC license at http://greenteapress.com/thinkpython2/thinkpython2.pdf

Reference Books:

1. Gowrishankar S, Veena A, "Introduction to Python Programming", 1st Edition, CRC Press/Taylor & Francis, 2018.
2. Jake VanderPlas, "Python Data Science Handbook: Essential Tools for Working with Data", 1st Edition, O"Reilly Media, 2016.
3. Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, Wiley India Pvt Ltd, 2015.
4. Wesley J Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education India, 2015.

WEB MATERIALS:

W1: http://nptel.ac.in/
W2: https://www.python.org/
W3: https://www.tutorialspoint.com/python/index.htm
W4: https://www.w3schools.com/python/

Geetha.l
Faculty

Module Coordinator

HOD

Head of the Department
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K S INSTITUTE OF TECHNOLOGY, BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **GEETHA.R**
SUBJECT CODE/NAME : **18CS55/APPLICATION DEVELOPMENT USING PYTHON**
SEMESTER/YEAR : **VA**
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: Python Basics, Flow Control, Functions:						
1	Python and Entering Expressions into the Interactive Shell,	L+D	BB+LCD+Python IDE	2	2	01-10-2021 01-10-2021
2	The Integer, Floating-Point and String Data Types String Concatenation and Replication	L+ D	BB+LCD+Python IDE	1	3	04-10-2021
3	Storing Values in Variables, Your First Program, Dissecting Your Program, Boolean Values	L+ D	BB+LCD+Python IDE	1	4	5-10-2021
4	Comparison Operators, Boolean Operators, Mixing Boolean and Comparison Operators, Elements of Flow Control	L+D	BB+LCD+Python IDE	2	6	08-10-2021 08-10-2021
5	Program Execution, Flow Control Statements, Importing Modules,	L+D	BB+LCD+Python IDE	2	8	09-10-2021 09-10-2021
6	Ending a Program Early with sys.exit() , def Statements with Parameters	L+D	BB+LCD+Python IDE	1	9	11-10-2021
7	Return Values and return Statements, The None Value,	L+D	BB+LCD+Python IDE	1	10	12-10-2021
8	Keyword Arguments and print(), Local and Global Scope, The global Statement, Exception Handling,	L+D	BB+LCD+Python IDE	1	11	18-10-2021
9	A Short Program: Guess the Number and Programming Examples	L+D, GD	BB+LCD+Python IDE	1	12	19-10-2021

10	Surprise Class Test	L+D, GD	LCD+Python IDE	1	13	22-10-2021
MODULE 2: Lists, Dictionaries and Structuring Data,Manipulating Strings:						
11	The List Data Type, Working with Lists	L+ D	BB+LCD+Python IDE	1	14	22-10-2021
12	Augmented Assignment Operators, Methods Example Program: Magic 8 Ball with a List,	L+ D	BB+LCD+Python IDE	1	15	25-10-2021
13	List-like Types: Strings and Tuples, References	L+ D	BB+LCD+Python IDE	2	17	29-10-2021 29-10-2021
14	Dictionaries and Structuring Data, The Dictionary Data Type, Pretty Printing	L+ D	BB+LCD+Python IDE	1	18	02-11-2021
15	Using Data Structures to Model Real-World Things,	L+ D	BB+LCD+Python IDE	1	19	08-11-2021
16	Manipulating Strings, Working with Strings, Useful String Methods,	L+ D	BB+LCD+Python IDE	1	20	09-11-2021
17	Project: Password Locker and Quiz	L+ D,GD	BB+LCD+Python IDE	2	22	16-11-2021 16-11-2021
18	Revision	L+ D, GD	BB+LCD+Python IDE	1	23	18-11-2021
MODULE 3: Pattern Matching With Regular Expression, Reading and Writing the Files, Organizing Files, Debugging						
19	Finding Patterns of Text Without Regular Expressions, Finding Patterns of Text with Regular Expressions, More Pattern Matching with Regular Expressions,	L+D	BB+LCD+Python IDE	1	24	19-11-2021
20	Greedy and Nongreedy Matching, The findall() Method, Character Classes, Making Your Own Character Classes	L+D	BB+LCD+Python IDE	1	25	23-11-2021
21	The Caret and Dollar Sign Characters, The Wildcard Character,.	L+D	BB+LCD+Python IDE	1	26	25-11-2021
22	Review of Regex Symbols,Case-Insensitive Matching,	L+D	BB+LCD+Python IDE	1	27	26-11-2021
23	Substituting Strings with the sub() Method, Managing Complex Regexes	L+D	BB+LCD+Python IDE	1	28	27-11-2021

24	Combining re .IGNORECASE,re .DOTALL, and re .VERBQSE, Project: Phone Number and Email Address Extractor	L+D	BB+LCD+Python IDE	2	30	30-11-2021 30-11-2021
25	Files and File Paths, The os.path Module, The File Reading/Writing Process,	L+D	BB+LCD+Python IDE	1	31	02-12-2021
26	Saving Variables with the shelve Module ,Saving Variables with the pprint.pformat() Function,	L+D,GD	BB+LCD+Python IDE	1	32	03-12-2021
27	Project: Generating Random Quiz Files, Project: Multiclipboard, The shutil Module, Walking a Directory Tree,	L+D	BB+LCD+Python IDE	1	33	04-12-2021
28	Compressing Files with the zipfile Module, Project: Renaming Files with American-Style Dates to European-Style Dates	L+D,GD	BB+LCD+Python IDE	2	35	07-12-2021 07-12-2021
29	Project: Backing Up a Folder into a ZIP File,	L+D	BB+LCD+Python IDE	1	36	09-12-2021
30	Raising Exceptions, Getting the Traceback as a String, Assertions, Logging, IDLE's Debugger.	L+D	BB+LCD+Python IDE	1	37	10-12-2021
31	Revision	L+D,GD	LCD+Python IDE	1	38	14-12-2021
MODULE 4: Classes and objects, Classes and functions, Classes and methods, Inheritance:						
32	Programmer-defined types, Attributes, Rectangles, Instances as return values, Objects are mutable,	L+D	BB+LCD+Python IDE	1	39	14-12-2021
33	Copying, Time, Pure functions, Modifiers, Prototyping versus planning, ,	L+D	BB+LCD+Python IDE	2	41	21-12-2021 21-12-2021
34	Object-oriented features, Printing objects ,Another example, A more complicated example,	L+D	BB+LCD+Python IDE	1	42	23-12-2021
35	The init method, The __str__ method ,Operator overloading, Type-based dispatch, polymorphism, Interface and implementation,	L+D	BB+LCD+Python IDE	1	43	24-12-2021

36	Card objects, Class attributes, Comparing cards, Decks, Printing the deck, Add, remove, shuffle and sort, Inheritance, Class diagrams, Data encapsulation	L+D	BB+LCD+Python IDE	2	45	28-12-2021 28-12-2021
37	Revision	L+D,GD	BB+LCD+Python IDE	1	46	30-12-2021
MODULE 5: Web Scrapping, Working with Excel ,Working with PDF and word, Working with CSV AND Jason Data						
38	Project: MAPIT.PY with the web browser Module, Downloading Files from the Web with the requests Module	L+D	BB+LCD+Python IDE	1	47	31-12-2021
39	Parsing HTML with the BeautifulSoup Module, Project: "I"m Feeling Lucky" Google Search, Saving Downloaded Files to the Hard Drive,	L+D	BB+LCD+Python IDE	2	49	04-01-2022 04-01-2022
40	Project: Downloading All XKCD Comics, Controlling the Browser with the selenium Module, Excel Documents,	L+D	BB+LCD+Python IDE	1	50	06-01-2022
41	Installing the open pyxl Module, Reading Excel Documents, Project: Reading Data from a Spreadsheet, Writing Excel Documents,	L+D	BB+LCD+Python IDE	1	51	07-01-2022
42	Project: Updating a Spreadsheet, Setting the Font Style of Cells, Font Objects, Formulas, Adjusting Rows and Columns, Charts,	L+D	BB+LCD+Python IDE	1	52	08-01-2022
43	PDF Documents, Project: Combining Select Pages from Many PDFs, Word Documents, The csv Module,	L+D	BB+LCD+Python IDE	2	54	11-01-2022 11-01-2022
44	Project: Removing the Header from CSV Files ,JSON and APIs, The json Module, Project: Fetching Current Weather Data	L+D,	BB+LCD+Python IDE	1	55	13-01-2022
45	Revision	L+D,GD	LCD+Python IDE	1	56	18-01-2022
46	Revision	L+D,GD	LCD+Python IDE	1	57	31-01-2022

Text Books:

1. Al Sweigart,"Automate the Boring Stuff with Python",1st Edition, No Starch Press, 2015. Available under CC-BY-NC-SA license at https://automatetheboringstuff.com/ (Chapters 1 to 18)

2. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2nd Edition,Green Tea Press, 2015. Available under CC-BY-NC license at http://greenteapress.com/thinkpython2/thinkpython2.pdf (Chapters 13, 15, 16, 17, 18)

Reference Books:

1. Gowrishankar S, Veena A, "Introduction to Python Programming", 1st Edition, CRC Press/Taylor & Francis, 2018.
2. Jake VanderPlas, "Python Data Science Handbook: Essential Tools for Working with Data", 1st Edition, O"Reilly Media, 2016.
3. Charles Dierbach, "Introduction to Computer Science Using Python", 1st Edition, Wiley India Pvt Ltd, 2015.
4. Wesley J Chun, "Core Python Applications Programming", 3rd Edition, Pearson Education India, 2015.

WEB MATERIALS:

W1: http://nptel.ac.in/
W2: https://www.python.org/
W3: https://www.tutorialspoint.com/python/index.htm
W4: https://www.w3schools.com/python/

Geetha R
Faculty

Module Coordinator

H.O.D

Head of the Department
Dept. of Computer Science & Engg.
K.S. Institute of Technology
Bengaluru -560 109

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

NAME OF THE STAFF : Mrs. Supreetha Ganesh

SUBJECT CODE/NAME : 18CS44/ MICROCONTROLLER & EMBEDDED SYSTEMS

SEMESTER/YEAR/SEC : IV B

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					
1	Microprocessors versus Microcontrollers	L+I	BB+LCD	1	1	27/05/2022
2	ARM Embedded Systems	L+I	BB+LCD	1	2	28/05/2022
3	The RISC design philosophy	L+I	BB+LCD	1	3	30/05/2022
4	The ARM Design Philosophy	L+I	BB+LCD	1	4	31/05/2022
5	Embedded System Hardware	L+I	BB+LCD	1	5	01/06/2022
6	Embedded System Software, Pipeline	L+I	BB+LCD	1	6	02/06/2022
7	ARM Processor Fundamentals: Registers, Current Program Status Register	L+I	BB+LCD	1	7	06/06/2022
8	Exceptions	L+I	BB+LCD	1	8	07/06/2022
9	Interrupts, and the Vector Table	L+I	BB+LCD	1	9	08/06/2022
10	Core Extensions	L+I	BB+LCD	1	10	09/06/2022
	MODULE 2					
11	**Introduction to the ARM Instruction Set :** Data Processing Instructions	L+I	LCD	1	11	13/06/2022
12	Programme Instructions, Software Interrupt Instructions	L+I	LCD	1	12	14/06/2022
13	Program Status Register Instructions ,Coprocessor	L+I	LCD	1	13	15/06/2022

	Instructions					
	FIRST INTERNALS					
14	Coprocessor Instructions, Loading Constants	L+I	LCD	1	14	23/06/2022
15	**ARM programming using Assembly language:** Writing Assembly code	L+I	LCD	1	15	04/07/2022
16	Profiling and cycle counting, Instruction scheduling	L+I	LCD	1	16	05/07/2022
17	Register Allocation	L+I	LCD	1	17	06/07/2022
18	Conditional Execution, Looping Constructs	L+I	LCD	1	18	07/07/2022
	MODULE 3					
19	**Embedded System Components:** Embedded Vs General computing system	L+I	LCD	1	19	08/07/2022
20	History of embedded systems	L+I	LCD	1	20	09/07/2022
21	Classification of Embedded systems	L+I	LCD	1	21	11/07/2022
22	Major applications areas of embedded systems	L+I	LCD	1	22	12/07/2022
23	Purpose of embedded systems	L+I	LCD	1	23	13/07/2022
24	Core of an Embedded System including all types of processor/controller	L+I	LCD	1	24	14/07/2022
25	Core of an Embedded System including all types of processor/controller	L+I	LCD	1	25	16/07/2022
26	Embedded firmware, Other system components	L+I	LCD	1	26	18/07/2022
	MODULE 4					
27	**Embedded System Design Concepts:** Characteristics and Quality Attributes of Embedded Systems	L+I	LCD	1	27	19/07/2022
28	Operational quality attributes, non-operational quality attributes	L+I	LCD	1	28	20/07/2022
29	Embedded Systems-Application specific	L+I	LCD	1	29	21/07/2022
	SECOND INTERNALS					
30	Embedded Systems- Domain specific	L+I	LCD	1	30	30/07/2022

31	Hardware Software Co-Design and Program Modelling	L+I	LCD	1	31	01/08/2022
32	Pedagogical Activity-Seminar	L+I	LCD	1	32	02/08/2022
33	Embedded firmware design and development	L+I	LCD	1	33	03/08/2022
	MODULE 5					
34	**RTOS and IDE for Embedded System Design:**	L+I	LCD	1	34	04/08/2022
35	Operating System basics, Types of operating systems	L+I	LCD	1	35	08/08/2022
36	Task, process and threads	L+I	LCD	1	36	10/08/2022
37	Thread preemption, Multiprocessing and Multitasking	L+I	LCD	1	37	11/08/2022
38	Task Communication	L+I	LCD	1	38	13/08/2022
39	Task synchronization issues	L+I	LCD	1	39	16/08/2022
40	Concept of Binary and counting semaphores	L+I	LCD	1	40	17/08/2022
41	Technical quiz	L+I	LCD	1	41	18/08/2022
42	Concept of Binary and counting semaphores, How to choose an RTOS	L+I	LCD	1	42	22/08/2022
43	Integration and testing of Embedded hardware and firmware, Embedded system Development Environment	L+I	LCD	1	43	23/08/2022
	THIRD INTERNALS					

Text Books

1.Andrew N Sloss, Dominic Symes and Chris Wright, ARM system developers guide, Elsevier, Morgan Kaufman publishers, 2008.

2. Shibu K V, "Introduction to Embedded Systems", Tata McGraw Hill Education, Private Limited, 2nd Edition.

Reference Books:

1. The Insider's Guide to the ARM7 Based Microcontrollers, Hitex Ltd.,1st edition, 2005
2. Steve Furber, ARM System-on-Chip Architecture, Second Edition, Pearson, 2015
3. Raj Kamal, Embedded System, Tata McGraw-Hill Publishers, 2nd Edition, 2008
4. Ragunandan, An Introduction to ARM System Design, Cengage Publication

Signature of course In-charge **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

Head of the Department
Dept. of Computer
K.S. Institute of
Bengaluru -560 109

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **Supreetha Ganesh & Sanjoy Das**
SUBJECT CODE/NAME: 18CSL48
SEMESTER/YEAR/SEC: IV/B
ACADEMIC YEAR: **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	**INTRODUCTION** Write a program to multiply two 16 bit binary numbers Write a program to find the sum of first 10 integer numbers	LCD	3	B1	27-05-2022
		LCD	3	B2	31-05-2022
		LCD	3	B3	26-05-2022
2	Write a program to find factorial of a number. Write a program to add an array of 16 bit numbers and store the 32 bit result in internal RAM	LCD	3	B1	03-06-2022
		LCD	3	B2	07-06-2022
		LCD	3	B3	02-06-2022
3	Write a program to find the square of a number (1 to 10) using look-up table. Write a program to find the largest/smallest number in an array of 32 numbers	LCD	3	B1	10-06-2022
		LCD	3	B2	14-06-2022
		LCD	3	B3	09-06-2022

4	Write a program to arrange a series of 32 bit numbers in ascending/descending order. Write a program to count the number of ones and zeros in two consecutive memory locations	LCD	3	B1	24-06-2022
		LCD	3	B2	05-07-2022
		LCD	3	B3	23-06-2022
5	Display "Hello World" message using Internal UART	LCD	3	B1	08-07-2022
		LCD	3	B2	12-07-2022
		LCD	3	B3	07-07-2022
6	Interface and Control a DC Motor. Interface a Stepper motor and rotate it in clockwise and anti-clockwise direction.	LCD	3	B1	15-07-2022
		LCD	3	B2	19-07-2022
		LCD	3	B3	14-07-2022
7	Determine Digital output for a given Analog input using Internal ADC of ARM controller. Interface a DAC and generate Triangular and Square waveforms	LCD	3	B1	22-07-2022
		LCD	3	B2	29-07-2022
		LCD	3	B3	21-07-2022

8	Interface a 4x4 keyboard and display the key code on an LCD. Demonstrate the use of an external interrupt to toggle an LED On/Off.	LCD	3	B1	12-08-2022
		LCD	3	B2	02-08-2022
		LCD	3	B3	04-08-2022

9	Display the Hex digits 0 to F on a 7-segment LED interface, with an appropriate delay in between	LCD	3	B1	19-08-2022
		LCD	3	B2	16-08-2022
		LCD	3	B3	18-08-2022

10	Lab Internals	LCD	3+3	B1	29-08-2022
		LCD	3	B2	30-08-2022
		LCD	3+3	B3	02-09-2022

Signature of course In-charge **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

Dept. of Co...
K.S. Insti...
Bengaluru ...

DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

NAME OF THE STAFF : Mr. Somasekhar T

SUBJECT CODE/NAME : 18CS43/ OPERATING SYSTEMS

SEMESTER/YEAR/SEC : IV/II/ B

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					
1	**Introduction to operating systems, System structures:** What operating systems do; Computer System organization;Computer System architecture; Operating System structure;	L+I	BB+LCD	1	1	27/05/2022
2	Operating System operations; Process management; Memory management; Storage management;	L+I	BB+LCD	1	2	28/05/2022
3	Protection and Security; Distributed system; Special-purpose systems;Computing environments.	L+I	BB+LCD	1	3	28/05/2022
4	Operating System Services; User - Operating System interface;	L+I	BB+LCD	1	4	31/05/2022
5	System calls; Types of system calls; System programs; Operating system design andimplementation;	L+I	BB+LCD	1	5	01/06/2022
6	Operating System structure; Virtual machines; Operating Systemgeneration; System boot.	L+I	BB+LCD	1	6	01/06/2022
7	Process Management Process concept;	L+I	BB+LCD	1	7	03/06/2022
8	Process scheduling; Operations on processes; Inter process communication	L+I	BB+LCD	1	8	07/06/2022
	MODULE 2					
9	Multi-threaded Programming: Overview; Multithreading models;	L+I	BB+LCD	1	9	07/06/2022
10	Thread Libraries; Threading issues	L+I	BB+LCD	1	10	08/06/2022

11	Scheduling Algorithms;					
12	Scheduling Algorithms;	L+I	LCD	1	12	13/06/2022
13	Multiple-processor scheduling; Thread scheduling. Process Synchronization:	L+I	LCD	1	13	14/06/2022
	FIRST INTERNALS					
14	Synchronization: The critical section problem;	L+I	LCD	1	14	14/06/2022
15	Peterson's solutions Synchronization hardware;	L+I	LCD	1	15	15/06/2022
16	Semaphores; Classical problems of synchronization; Monitors.	L+I	LCD	1	16	23/06/2022
	MODULE 3					
17	Deadlocks : Deadlocks; System model; Deadlock characterization;	L+I	LCD	1	17	24/06/2022
18	Methods for handlingdeadlocks;	L+I	LCD	1	18	25/06/2022
19	Deadlock prevention;	L+I	LCD	1	19	25/06/2022
20	Deadlock avoidance;	L+I	LCD	1	20	06/07/2022
21	Deadlock detection and recovery fromdeadlock.	L+I	LCD	1	21	8/07/2022
22	Memory Management: Memory management strategies: Background; Swapping;	L+I	LCD	1	22	12/07/2022
23	Contiguous memory allocation;	L+I	LCD	1	23	13/07/2022
24	Paging; Structure of page table; Segmentation.	L+I	LCD	1	24	13/07/2022
	MODULE 4					
25	Virtual Memory Management: Background; Demand paging;	L+I	LCD	1	25	15/07/2022
26	Copy-on-write; Pagereplacement;Allocation of frames;	L+I	LCD	1	26	16/07/2022
27	Thrashing.	L+I	LCD	1	27	19/07/2022
28	File System, Implementation of File System:	L+I	LCD	1	28	20/07/2022
29	File system: File concept; Access methods;	L+I	LCD	1	29	20/07/2022
30	Directory structure; File system mounting;	L+I	LCD	1	30	22/07/2022

31	Directory implementation; Allocation methods;	L+I	LCD	1	31	29/07/2022
32	Free spacemanagement.	L+I	LCD	1	32	30/07/2022
MODULE 5						
33	Secondary Storage Structures, Protection: Mass storage structures;	L+I	LCD	1	33	02/08/2022
34	Disk structure; Diskattachment;	L+I	LCD	1	34	03/08/2022
35	Disk scheduling;	L+I	LCD	1	35	03/08/2022
36	Disk management; Swap space management.	L+I	LCD	1	36	10/08/2022
37	Protection: Goals of protection	L+I	LCD	1	37	10/08/2022
38	Principles of protection, Domain of protection	L+I	LCD	1	38	12/08/2022
39	Access matrix, Implementation of access matrix	L+I	LCD	1	39	13/08/2022
40	Access control, Revocation of access rights	L+I	LCD	1	40	16/08/2022
41	Capability- Based systems.	L+I	LCD	1	41	17/08/2022
42	Case Study: The Linux Operating System: Linux history; Design principles; Kernel Modules;	L+I	LCD	1	42	17/08/2022
43	Case Study: Process management; Scheduling; Memory Management; File systems, Input and output; Inter-process communication.	L+I	LCD	1	43	19/08/2022
44	Revision	L+I	LCD	1	44	23/08/2022
45	Revision	L+I	LCD	1	45	24/08/2022
46	Revision	L+I	LCD	1	46	24/08/2022
THIRD INTERNALS						
47	Revision	L+I	LCD	1	47	2/9/2022

TEXT BOOK:

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Principles 7th edition, Wiley-India, 2006.

1. Ann McHoes Ida M Fylnn, Understanding Operating System, Cengage Learning, 6th Edition
2. D.M Dhamdhere, Operating Systems: A Concept Based Approach 3rd Ed, McGraw-Hill, 2013.
3. P.C.P. Bhatt, An Introduction to Operating Systems: Concepts and Practice 4th Edition, PHI(EEE), 2014.
4. William Stallings Operating Systems: Internals and Design Principles, 6th Edition, Pearson.

WEB MATERIALS:

W1: http://nptel.ac.in/courses/106106090/
W2: https://www.youtube.com/watch?v=ITN7bDyHrfE

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

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
LESSON PLAN 2021-22 EVEN SEMESTER

COURSE INCHARGE : **DR. VANEETA M**

COURSE CODE/TITLE : **18CS81 / INTERNET OF THINGS**

YEAR/ SEMESTER/SECTION : **IV/VIII/B**

BRANCH : **COMPUTER SCIENCE AND ENGINEERING**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	Module 1					
1	What is IoT, Genesis of IoT	L+D	LCD+BB	1	1	4-4-2022
2	IoT and Digitization, IoT Impact	L+D	LCD+BB	1	2	4-4-2022
3	IoT Impact	L+D	LCD+BB	1	3	5-4-2022
4	Convergence of IT and IoT, IoT Challenges	L+D	LCD+BB	1	4	5-4-2022
5	IoT Network Architecture and Design	L+D	LCD+BB	1	5	11-4-2022
6	Drivers Behind New Network Architectures	L+D	LCD+BB	1	6	11-4-2022
7	Comparing IoT Architectures	L+D	LCD+BB	1	7	12-4-2022
8	A Simplified IoT Architecture, The Core IoT Functional Stack	L+D	LCD+BB	1	8	12-4-2022
9	IoT Data Management and Compute Stack	L+D	LCD+BB	1	9	18-4-2022

Module 5						
10	IoT Physical Devices and Endpoints - Arduino UNO: Introduction to Arduino, Arduino UNO	L+D	LCD+BB	1	10	19-4-2022
11	Installing the Software, Fundamentals of Arduino Programming. Online Arduino Board Simulator	L+D+I	LCD+BB	1	11	19-4-2022
12	IoT Physical Devices and Endpoints - RaspberryPi: Introduction to RaspberryPi, About the RaspberryPi Board: Hardware Layout	L+D	LCD+BB	1	12	25-4-2022
13	Operating Systems on RaspberryPi, Configuring RaspberryPi, Programming RaspberryPi with Python	L+D	LCD+BB	1	13	26-4-2022
14	**Internal Assessment Test 1**			1	14	**06-5-2022**
15	Wireless Temperature Monitoring System Using Pi	L+D	LCD+BB	1	15	26-4-2022
16	DS18B20 Temperature Sensor, Connecting Raspberry Pi via SSH	L+D	LCD+BB	1	16	9-5-2022
17	Accessing Temperature from DS18B20 sensors, Remote access to RaspberryPi	L+D	LCD+BB	1	17	10-5-2022
18	Smart and Connecting Cities, An IoT Strategy for Smarter Cities, Smart City IoT Architecture, Smart City Security, Smart City Use-Case Examples	L+D	LCD+BB	1	18	10-5-2022
	Pedagogy Written Assignment: IoT Use Cases					
Module 2						
19	Smart Objects: The "Things" in IoT: Sensors	L+D	LCD+BB	1	19	16-5-2022
20	Actuators, Smart Objects	L+D	LCD+BB	1	20	17-5-2022
21	Sensors Networks	L+D	LCD+BB	1	21	17-5-2022
22	Connecting Smart Objects	L+D	LCD+BB	1	22	23-5-2022
23	Communication Criteria	L+D	LCD+BB	1	23	24-5-2022
24	IoT Access Technologies	L+D	LCD+BB	1	24	24-5-2022
25	IoT Access Technologies	L+D	LCD+BB	2	26	30-5-2022, 31-5-2022

26	**Internal Assessment Test 2**			1	27	3-6-2022
Module 3						
27	IP as the IoT Network Layer: The Business Case for IP	L+D	LCD+BB	1	28	31-5-2022
28	The need for Optimization, Optimizing IP for IoT	L+D	LCD+BB	1	29	6-6-2022
29	Profiles and Compliances	L+D	LCD+BB	1	30	7-6-2022
30	Application Protocols for IoT: The Transport Layer	L+D	LCD+BB	1	31	7-6-2022
31	IoT Application Transport Methods	L+D	LCD+BB	2	33	13-6-2022, 14-6-2022
Module 4						
32	Data and Analytics for IoT, An Introduction to DataAnalytics for IoT, Machine Learning	L+D	LCD+BB	1	34	14-6-2022
33	Big Data Analytics Tools and Technology, Edge Streaming Analytics	L+D	LCD+BB	1	35	20-6-2022
34	Network Analytics, Securing IoT: A Brief History of OT Security	L+D	LCD+BB	1	36	21-6-2022
35	Common Challenges in OT Security	L+D	LCD+BB	1	37	21-6-2022
36	How IT and OT Security Practices and SystemsVary,	L+D	LCD+BB	1	38	27-6-2022
37	Formal Risk Analysis Structures: OCTAVE andFAIR	L+D	LCD+BB	1	39	28-6-2022
38	The Phased Application of Security in an Operational Environment	L+D	LCD+BB	1	40	28-6-2022
39	**Internal Assessment Test 3**				41	29-6-2022

Text Books:

1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", 1st Edition, Pearson Education (Cisco Press Indian Reprint). (ISBN: 978-9386873743)
2. Srinivasa K G, "Internet of Things", CENGAGE Leaning India, 2017

Reference Books:

1. Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Hands-on-Approach)", 1st Edition, VPT, 2014. (ISBN: 978-8173719547)
2. Raj Kamal, "Internet of Things: Architecture and Design Principles", 1 st Edition, McGraw Hill Education, 2017. (ISBN: 978-9352605224)

Details of the teaching aids:

- **LCD**
- **Black Board**
- **Online Arduino simulator**

Course Incharge **Module coordinator** **HOD** **PRINCIPAL**

K.S. INSTITUTE OF TECHNOLOGY, BENGALURU- 560109

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Prof. Manoj Kumar S

SUBJECT CODE/NAME : 18CS33/ **ANALOG AND DIGITAL ELECTRONICS**

SEMESTER/SEC/YEAR : III / B / II

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 2: Karnaugh Maps & Quine McClusky Method						
1	Minimum forms of Switching functions	L+D	BB	1	1	19/10/2021
2	Two and three variable Karnaugh Maps	L+ D	BB	1	2	21/10/2021
3	Four variable Karnaugh Maps-SOP	L+ D	BB	1	3	26/10/2021
4	Four variable Karnaugh Maps-SOP with don't cares	L+D	BB	1	4	27/10/2021
5	Determination of minimum expression using essential prime implicants	L+ D	BB	1	5	27/10/2021
6	Four variable Karnaugh Maps-POS	L+D	BB	1	6	28/10/2021
7	Quine McClusky method	L+D	BB	1	7	02/11/2021
8	Determination of prime implicants	L+ D	BB	1	8	04/11/2021
9	Quine McClusky method with don't cares	L+D	BB	1	9	09/11/2021
10	Petrick's methods	L+D	BB	1	10	10/11/2021
11	Simplification using map-entered variables	L+D	BB	1	11	10/11/2021

12	Additional Problems	L+D	BB	1	12	11/11/2021
MODULE 3: Combinational Circuits Design						
13	Review of Combinational Circuits	L+D	BB	1	13	16/11/2021
14	Design of circuits with limited Gate Fan-in	L+ D	BB	1	14	17/11/2021
15	Gate Delays and Timing Diagrams	L+D	BB	1	15	17/11/2021
16	Hazards in Combinational Logic, simulation and testing of logic circuits	L+ D	BB	1	16	18/11/2021
17	Introduction to Multiplexers	L+ D	BB	1	17	20/11/2021
18	Design of Multiplexers, MUX tree	L+ D	BB	1	18	23/11/2021
19	Three state buffers	L+ D	BB	1	19	24/11/2021
20	Demultiplexers	L+ D	BB	1	20	24/11/2021
21	Design of Demultiplexers	L+ D	BB	1	21	25/11/2021
22	Decoders, encoders	L+D	BB	1	22	30/11/2021
23	Programmable Logic Arrays	L+D	BB	1	23	01/12/2021
24	Programmable Array Logic	L+D	BB	1	24	01/12/2021
25	Additional Problems	L+ D	BB	1	25	07/12/2021
MODULE 4: VHDL, FLIP-FLOPS						
26	VHDL description of combinational circuits	L+ D	BB	1	26	08/12/2021
27	VHDL Models for Multiplexers	L+D	BB	1	27	08/12/2021
28	VHDL Modules	L+ D	BB	1	28	09/12/2021
29	Set-Reset Latches, Gated Latches	L+D	BB	1	29	14/12/2021
30	SR Flip flop	L+D	BB	1	30	15/12/2021
31	JK Flip flop, JK master-slave flip-flop	L+ D	BB	1	31	15/12/2021
32	T Flip flop	L+D	BB	1	32	16/12/2021
33	Conversion of Flip-flops	L+D	BB	1	33	21/12/2021
34	Conversion of Flip-flops	L+ D	BB	1	34	22/12/2021
35	Flip-flops with additional inputs	L+D	BB	1	35	22/12/2021

36	Asynchronous Sequential Circuits	L+D	BB	1	6	23/12/2021
37	Additional Problems	L+ D	BB	1	37	28/12/2021
MODULE 5: Registers & Counters						
38	Registers & register transfers	L+ D	BB	1	38	29/12/2021
39	Parallel Adder with accumulator	L+D	BB	1	39	29/12/2021
40	Shift registers-SISO, SIPO	L+ D	BB	1	40	30/12/2021
41	Shift registers- PIPO, PISO	L+D	BB	1	41	06/01/2022
42	Design of Binary counters	L+D	BB	1	42	11/01/2022
43	Design of Binary counters	L+D	BB	1	43	12/01/2022
44	Counters for other sequences	L+ D	BB	1	44	12/01/2022
45	Counter design using SR & JK flip-flops	L+ D	BB	1	45	13/01/2022
46	Counter design using SR & JK flip-flops	L+ D	BB	1	46	18/01/2022
47	Sequential parity checker	L+D	BB	1	47	19/01/2022
48	State tables & graphs	L+D	BB	1	48	19/01/2022
49	Additional Counter Design problems	L+D	BB	1	49	20/01/2022
MODULE 1: Optoelectronics, Biasing, Op-Amps, Voltage Regulators						
50	Photodiodes, LED, Optocouplers	L+D	BB+LCD	1	50	25/01/2022
51	BJT Biasing	L+ D	BB+LCD	1	51	27/01/2022
52	Multivibrators using IC-555	L+D	BB+LCD	1	52	01/02/2022
53	Peak Detector, Schmitt trigger, Active filters	L+D	BB+LCD	1	53	02/02/2022
54	Active filters, Non-Linear Amplifier,	L+D	BB+LCD	1	54	02/02/2022
55	Relaxation Oscillator	L+D	BB+LCD	1	55	03/02/2022
56	Current -to-Voltage and Voltage-to-Current Converter	L+D	BB+LCD	1	56	08/02/2022
57	Regulated Power Supply Parameters, Adjustable Voltage Regulator	L+D	BB+LCD	1	57	09/02/2022
58	D/A and A/D converter	L+D	BB+LCD	1	58	09/02/2022
59	Revision	L+D	BB+LCD	1	59	10/02/2022

Textbooks:

1. Charles H Roth and Larry L Kinney, 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

Course in charge

Module Coordinator

HOD

Head of the Department
Dept. of Computer Science
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KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Dr. REKHA BVENKATAPUR

SUBJECT CODE/NAME :18CS56 UNIX PROGRAMMING

SEMESTER/YEAR : V 'A' Section

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: Introduction					
1	**Introduction**. Unix Components/Architecture. Features of Unix, The UNIX Environment and UNIX Structure,	L+D	Power point presentations(PPTs)	1	1	01-10-2021
2	POSIX and single Unix specification. The login prompt. General features of Unix commands/ command structure.	L+ D	PPTs	1	2	04-10-2021
3	Command arguments and options. Understanding of some basic commands such as echo, printf, ls, who, date, passwd, cal.	L+ D	PPTs Ubuntu Operating system	1	3	05-10-2021
4	Combining commands. Meaning of Internal and external commands.	L+D	PPTs Ubuntu Operating system	1	4	07-10-2021
5	The type command: knowing the type of a command and locating it. The root Login , Becoming Super user: su command	L+D	Cygwin Simulator	1	5	08-10-2021
6	**Unix Files**:Naming files, Basic file types/categories, Organization of files.	L+D	PPTs	1	6	09-10-2021
7	Hidden files, Standard directories. Parent Child relationship. Home directory and HOME variable	L+D	Cygwin Simulator	1	7	11-10-2021
8	The PATH variable, Manipulating the PATH,Realtive and absolute	L+D	PPTs	1	8	12-10-2021

	path names. Directory commands – pwd,cd, mkdir,rmdir,the (.) dotand double dots(..) notations to represent		Ubuntu, Cygwin Simulator			
9	File related commands –cat,mv.rm,cp and od commands	L+D	PPTs Cygwin Simulator	1	9	18-10-2021
10	Pedagogy activity – I	Quiz				19-10-2021
11	Afile attributes and permissions : The ls Command with options, Changing file permissions: the relative and absolute permissions changing methods. Recursively changing file permissions, Directory permissions.	L+D	PPTs Cygwin Simulator	1	10	21-10-2021
12	**The Shells interpretive cycle**: Wild cards. Removing the special meaning of wild cards. Three standard files and redirection.	L+D	PPTs Ubuntu	1	11	22-10-2021
13	**Connecting Commands**pipe.Basic and extended regular expressions The grep,egrep. Typical ex. Involving diff. regular expressions	L+ D	PPTs Ubuntu	1	12	25-10-2021
14	**Shell Programming** : Ordinary and environment variables	L+D	PPTs Ubuntu	1	13	26-10-2021
15	The .profile. Read and readonly commands. Command line arguments.	L+D	PPTs Ubuntu	1	14	28-10-2021
16	exit and exit status of command. Logical operators for conditional execution. The test command & short cuts	L+D	PPTs Ubuntu	1	15	29-10-2021
17	The if, while, for and case control statements	L+D	PPTs Ubuntu	1	16	30-10-2021
18	The set and shift commands	L+D	PPTs Ubuntu	1	17	02-11-2021
19	Handling positional parameters. The HERE (<<) document and trap command, Simple shell program examples	L+D	PPTs Ubuntu	1	18	04-11-2021
20	Pedagogy Activity - II	Group Discussion-Execution of Shell Programs				08-11-2021
	Revision					09-11-2021
21	Internal Assessment – I					13-11-2021
21				1		15-11-2021
22	UNIX File APIs: General File APIs	L+D	PPTs Ubuntu	1	19	16-11-2021
23	File and Record locking, Directory File APIs, Device File APIs	L+D	PPTs Ubuntu	1	20	18-11-2021
24	FIFO File APIs, Symbolic Link APIs	L+D	PPTs Ubuntu	1	21	19-11-2021

25	**UNIX PROCESSES and Process Control :** **The Environment of a UNIX Process:** Introduction, main function, Process termination, Command-line arguments	L+D	PPTs Ubuntu	1	22	23-11-2021
26	Environment List, Memory layout of a C program, Shared Libraries, Memory Allocation	L+D	PPTs Ubuntu	1	23	25-11-2021
27	Environmental Variables, setjmp, longjmp Functions, getrlimit, setrlimit functions	L+D	PPTs Ubuntu	1	24	26-11-2021
28	Unix Kernel Support for Processes, **Process Control: Introduction**	L+D	PPTs Ubuntu	1	25	27-11-2021
29	Process identifier,fork,vfork	L+D	PPTs Ubuntu	1	26	29-11-2021
30	wait,waitpid,wait3,wait4 Functions	L+D	PPTs Ubuntu	1	27	30-11-2021
31	Race Conditions, exec Functions	L+D	PPTs Ubuntu	1	28	02-12-2021
32	Changing User IDs and Group IDs, Interpreter Files, system Function, Process Accounting,	L+D	PPTs Ubunt	1	29	03-12-2021
33	User Identification, Process Times, I/O Redirection.	L+D	PPTs Ubuntu	1	30	04-12-2021
34	Overview of IPC Methods,	L+D	PPTs Ubuntu	1	31	06-12-2021
35	Pipes, popen, pclose Functions,	L+D	PPTs Ubuntu	1	32	07-12-2021
36	Coprocesses, FIFOs,	L+D	PPTs Ubuntu	1	33	09-12-2021
37	System V IPC, Message Queues, Semaphores.	L+D	PPTs Ubuntu	1	34	10-12-2021
38	Shared Memory, Client-Server Properties,	L+D	PPTs Ubuntu	1	35	13-12-2021
	Revision			1		14-12-2021
39	Internal Assessment – II					18-12-2021
40	Stream Pipes, Passing File Descriptors	L+D	PPTs Ubuntu	1	36	20-12-2021
41	An Open Server-Version 1,	L+D	PPTs Ubuntu	1	37	21-12-2021
42	Client-Server Connection Functions.	L+D		1	38	23-12-2021
43	Signals: The UNIX Kernel Support for Signals,	L+D	PPTs Ubuntu	1	39	24-12-2021
44	signal, Signal Mask, sigaction,	L+D	PPTs	1	40	27-12-2021

			Ubuntu			
45	The SIGCHLD Signal and the waitpid Function	L+D	PPTs Ubuntu	1	41	28-12-2021
46	The sigsetjmp and siglongjmp Functions	L+D	PPTs Ubuntu	1	42	30-12-2021
47	Kill, Alarm, Interval Timers,	L+D	PPTs Ubuntu	1	43	31-12-2021
48	POSIX.lb Timers.	L+D	PPTs Ubuntu	1	44	03-01-2022
49	Daemon Processes: Introduction,	L+D	PPTs Ubuntu	1	45	04-01-2022
50	Daemon Characteristics,	L+D	PPTs Ubuntu	1	46	06-01-2022
51	Coding Rules, Error Logging,	L+D	PPTs Ubuntu	1	47	07-01-2022
52	Client-Server Model.	L+D	PPTs Ubuntu	1	48	08-01-2022
53	Revision					10,12,13, 17, 19-01-2022
54	**Internal Assessment - III**					22-01-2022

1/10/21

Signature of Faculty

1/10/21

Signature of HOD

Head of the Department
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Signature of Principal

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KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Dr. REKHA BVENKATAPUR

SUBJECT CODE/NAME :18CS56 UNIX PROGRAMMING

SEMESTER/YEAR : V 'B' Section

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: Introduction						
1	**Introduction**. Unix Components/Architecture. Features of Unix, The UNIX Environment and UNIX Structure,	L+D	Power point presentations(PPTs)	1	1	01-10-2021
2	POSIX and single Unix specification. The login prompt. General features of Unix commands/ command structure.	L+ D	PPTs	1	2	04-10-2021
3	Command arguments and options. Understanding of some basic commands such as echo, printf, ls, who, date, passwd, cal.	L+ D	PPTs Ubuntu Operating system	1	3	07-10-2021
4	Combining commands. Meaning of Internal and external commands.	L+D	PPTs Ubuntu Operating system	1	4	08-10-2021
5	The type command: knowing the type of a command and locating it. The root Login , Becoming Super user: su command	L+D	Cygwin Simulator	1	5	09-10-2021
6	**Unix Files**:Naming files, Basic file types/categories,	L+D	PPTs	1	6	11-10-2021

	Organization of files.					
7	Hidden files, Standard directories. Parent Child relationship. Home directory and HOME variable	L+D	Cygwin Simulator	1	7	13-10-2021
8	The PATH variable, Manipulating the PATH,Realtive and absolute path names. Directory commands – pwd,cd, mkdir,rmdir,the (.) dotand double dots(..) notations to represent	L+D	PPTs Ubuntu, Cygwin Simulator	1	8	18-10-2021
9	File related commands –cat,mv.rm,cp and od commands	L+D	PPTs Cygwin Simulator	1	9	21-10-2021
10	Pedagogy activity – I	Quiz				22-10-2021
11	Afile attributes and permissions : The ls Command with options, .Changing file permissions: the relative and absolute permissions changing methods. Recursively changing file permissions, Directory permissions.	L+D	PPTs Cygwin Simulator	1	10	23-10-2021
12	**The Shells interpretive cycle**: Wild cards. Removing the special meaning of wild cards. Three standard files and redirection.	L+D	PPTs Ubuntu	1	11	25-10-2021
13	**Connecting Commands**pipe.Basic and extended regular expressions The grep,egrep. Typical ex. Involving diff. regular expressions	L+ D	PPTs Ubuntu	1	12	27-10-2021
14	**Shell Programming** : Ordinary and environment variables	L+D	PPTs Ubuntu	1	13	28-10-2021
15	The .profile. Read and readonly commands. Command line arguments.	L+D	PPTs Ubuntu	1	14	29-10-2021
16	exit and exit status of command. Logical operators for conditional execution. The test command & short cuts	L+D	PPTs Ubuntu	1	15	30-10-2021
17	The if, while, for and case control statements	L+D	PPTs Ubuntu	1	16	04-11-2021
18	The set and shift commands	L+D	PPTs Ubuntu	1	17	08-11-2021
19	Handling positional parameters. The HERE (<<) document and trap command, Simple shell program examples	L+D	PPTs Ubuntu	1	18	10-11-2021
20	Internal Assessment – I					13-11-2021
21	Pedagogy Activity - II	Group Discussion-Execution of Shell Programs		1		15-11-2021

22	UNIX File APIs: General File APIs	L+D	PPTs Ubuntu	1	19	17-11-2021
23	File and Record locking, Directory File APIs, Device File APIs	L+D	PPTs Ubuntu	1	20	18-11-2021
24	FIFO File APIs, Symbolic Link APIs	L+D	PPTs Ubuntu	1	21	19-11-2021
25	**UNIX PROCESSES and Process Control :** **The Environment of a UNIX Process:** Introduction, main function, Process termination, Command-line arguments	L+D	PPTs Ubuntu	1	22	24-11-2021
26	Environment List, Memory layout of a C program, Shared Libraries, Memory Allocation	L+D	PPTs Ubuntu	1	23	25-11-2021
27	Environmental Variables, setjmp, longjmp Functions, getrlimit, setrlimit functions	L+D	PPTs Ubuntu	1	24	26-11-2021
28	Unix Kernel Support for Processes, **Process Control: Introduction**	L+D	PPTs Ubuntu	1	25	27-11-2021
29	Process identifier,fork,vfork	L+D	PPTs Ubuntu	1	26	29-11-2021
30	wait,waitpid,wait3,wait4 Functions	L+D	PPTs Ubuntu	1	27	01-12-2021
31	Race Conditions, exec Functions	L+D	PPTs Ubuntu	1	28	02-12-2021
32	Changing User IDs and Group IDs, Interpreter Files, system Function, Process Accounting,	L+D	PPTs Ubunt	1	29	03-12-2021
33	User Identification, Process Times, I/O Redirection.	L+D	PPTs Ubuntu	1	30	04-12-2021
34	Overview of IPC Methods,	L+D	PPTs Ubuntu	1	31	06-12-2021
35	Pipes, popen, pclose Functions,	L+D	PPTs Ubuntu	1	32	08-12-2021
36	Coprocesses, FIFOs,	L+D	PPTs Ubuntu	1	33	09-12-2021
37	System V IPC, Message Queues, Semaphores.	L+D	PPTs Ubuntu	1	34	10-12-2021
38	Shared Memory, Client-Server Properties,	L+D	PPTs Ubuntu	1	35	13-12-2021
	Revision			1		15-12-2021
39	Internal Assessment – II					18-12-2021
40	Stream Pipes, Passing File Descriptors	L+D	PPTs	1	36	20-12-2021

			Ubuntu			
41	An Open Server-Version 1,	L+D	PPTs Ubuntu	1	37	22-12-2021
42	Client-Server Connection Functions.	L+D		1	38	23-12-2021
43	Signals: The UNIX Kernel Support for Signals,	L+D	PPTs Ubuntu	1	39	24-12-2021
44	signal, Signal Mask, sigaction,	L+D	PPTs Ubuntu	1	40	27-12-2021
45	The SIGCHLD Signal and the waitpid Function	L+D	PPTs Ubuntu	1	41	29-12-2021
46	The sigsetjmp and siglongjmp Functions	L+D	PPTs Ubuntu	1	42	30-12-2021
47	Kill, Alarm, Interval Timers,	L+D	PPTs Ubuntu	1	43	31-12-2021
48	POSIX.lb Timers.	L+D	PPTs Ubuntu	1	44	03-01-2022
49	Daemon Processes: Introduction,	L+D	PPTs Ubuntu	1	45	05-01-2022
50	Daemon Characteristics,	L+D	PPTs Ubuntu	1	46	06-01-2022
51	Coding Rules, Error Logging,	L+D	PPTs Ubuntu	1	47	07-01-2022
52	Client-Server Model.	L+D	PPTs Ubuntu	1	48	08-01-2022
53	Revision					10,11,13-01-2022
54	**Internal Assessment - III**					22-01-2022
54						

Signature of Faculty 1/10/21

Signature of HOD 1/10/21

Head of the Department
Dept. of Computer Science & Engg
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Signature of Principal

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Deepa .S.R

SUBJECT CODE/NAME : 18CS71/ ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

SEMESTER/YEAR : VIIA / IV

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					
1	What is artificial intelligence?	L+D+I	LCD	1	1	1/10/21
2	Problems	L+D+I	LCD, BB	2	3	4/10/21, 4/10/21
3	Problem Spaces and search	L+D+I	LCD, BB	3	6	7/10/21, 8/10/21, 9/10/21
4	Heuristic search technique	L+D+I	LCD, BB	6	12	11/10/21, 11/10/21, 13/10/21, 18/10/21, 18/10/21, 22/10/21
	MODULE 2					
5	Concept Learning: Concept learning task,	L+D+I	LCD	1	13	23/10/21
6	Concept learning as search,	L+D+I	LCD	1	14	27/10/21
7	Find-S algorithm,	L+D+I	LCD	1	15	29/10/21
8	Example on Find-S algorithm	L+D+I	LCD	1	16	8/11/21
9	Version space,Candidate Elimination algorithm	L+D+I	LCD, BB	1	17	8/11/21
10	Candidate Elimination algorithm and its examples	L+D+I	LCD, BB	1	18	10/11/21
11	1st IA			1	19	11/11/21
12	Inductive Bias	L+D+I	LCD, BB	1	20	15/11/21
13	Knowledge Representation Issues	L+D+I	LCD, BB	1	21	15/11/21
14	Predicate Logic	L+D+I	LCD, BB	1	22	17/11/21, 19/11/21

15	Representing knowledge using Rules, Pedagogy	L+D+I	LCD, BB	1	23	24/11/21
	MODULE 3					
16	Decision tree representation	L+D+I	LCD, BB	1	24	26/11/21
17	Appropriate problems for decision tree learning	L+D+I	LCD, BB	1	25	29/11/21
18	Basic decision tree learning algorithm	L+D+I	LCD, BB	1	26	29/11/21
19	Example on ID3 algorithm	L+D+I	LCD, BB	1	27	1/12/21
20	Example on ID3 algorithm	L+D+I	LCD, BB	1	28	3/12/21
21	Neural Network representation	L+D+I	LCD, BB	1	29	4/12/21
22	Neural Network representation	L+D+I	LCD, BB	1	30	6/12/21
23	Appropriate problems	L+D+I	LCD, BB	1	31	6/12/21
24	Appropriate problems	L+D+I	LCD, BB	1	32	8/12/21
25	Perceptron	L+D+I	LCD, BB	1	33	10/12/21
26	Perceptron	L+D+I	LCD, BB	1	34	13/12/21
27	Back propagation algorithm	L+D+I	LCD, BB	1	35	13/12/21
	MODULE 4					
28	Introduction,	L+D+I	LCD, BB	1	36	15/12/21
29	2nd IA			1	37	16/12/21
30	Bayes theorem	L+D+I	LCD, BB	1	38	20/12/21
31	Bayes theorem	L+D+I	LCD, BB	1	39	20/12/21
32	Concept Learning	L+D+I	LCD, BB	1	40	22/12/21
33	ML and LS error hypothesis	L+D+I	LCD, BB	1	41	24/12/21
34	ML for predicting probabilities	L+D+I	LCD, BB	1	42	27/12/21
35	MDL principle	L+D+I	LCD, BB	1	43	27/12/21
36	Naive Bayes classifier	L+D+I	LCD, BB	1	44	29/12/21
37	Bayesian belief networks	L+D+I	LCD, BB	1	45	31/12/21
38	EM algorithm	L+D+I	LCD, BB	1	46	3/1/22
	MODULE 5					
39	Instance Based Learning:Introduction	L+D+I	LCD, BB	1	47	3/1/22
40	k-nearest neighbor learning	L+D+I	-LCD, BB	2	49	3/1/22, 5/1/22
41	Locally weighted regression	L+D+I	LCD, BB	1	50	7/1/22
42	radial basis function, cased-based reasoning	L+D+I	LCD, BB	1	51	8/1/22
43	Reinforcement Learning:Introduction,	L+D+I	LCD, BB	1	53	10/1/22, 12/1/22
44	Learning Task,	L+D+I	LCD, BB	2	55	17/1/22, 17/1/22
45	Q Learning	L+D+I	LCD, BB	2	57	19/1/22
46	3rd IA			1	58	20/1/22
47	Revision			1	59	31/1/22

Textbooks:

1. Tom M. Mitchell, Machine Learning, 1st Edition 2017, McGraw Hill Education
2. E. Rich , K. Knight & S. B. Nair - Artificial Intelligence, 3/e, McGraw Hill, 2017

Reference Books:

1. Saroj Kaushik, Artificial Intelligence, Cengage learning
2. Stuart Rusell, Peter Norving , Artificial Intelligence: A Modern Approach, Pearson Education 2nd Edition
3. AurÈlienGÈron,"Hands-On Machine Learning with Scikit-Learn and Tensor Flow: Concepts, Tools, and Techniques to Build Intelligent Systems", 1st Edition, Shroff/O'Reilly Media, 2017.
4. Trevor Hastie, Robert Tibshirani, Jerome Friedman, h The Elements of Statistical Learning, 2nd edition, springer series in statistics.
5. Ethem Alpaydın, Introduction to machine learning, second edition, MIT press
6. Srinvivasa K G and Shreedhar, " Artificial Intelligence and Machine Learning", Cengage

WEB MATERIALS:

W1: https://nptel.ac.in/courses/106/105/106105152/
W2: https://nptel.ac.in/courses/106/102/106102220/

Details for the teaching Aids

BB- Black Board
LCD- Projector

Signature of Course In charge	Signature of Module Coordinator	Signature of HOD

K S INSTITUTE OF TECHNOLOGY, BENGALURU

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **Dr. VIJAYALAXMI MEKALI**
SUBJECT CODE/NAME : **18CS733/ ADVANCED COMPUTER ARCHITECTURES**
SEMESTER/SEC/YEAR : **VII / B / IV**
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:Theory of Parallelism					
1	Parallel Computer Models: The State of Computing,	L+D	BB	1	1	1/10/2021
2	The State of Computing	L+D	BB	1	2	5/10/2021
3	Multiprocessors and Multicomputer	L+ D	BB	1	3	7/10/2021
4	Multivector and SIMD Computers	L+ I	LCD	1	4	8/10/2021
5	PRAM and VLSI Models	L+D	BB	1	5	9/10/2021
6	Program and Network Properties: Conditions of Parallelism	L+D	BB	1	6	12/10/2021
7	Program Partitioning and Scheduling	L+D	BB	1	7	13/10/2021
8	Program Flow Mechanisms	L+D	BB	1	8	19/10/2021
9	System Interconnect Architectures	L+I	LCD	1	9	21/10/2021
10	Principles of Scalable Performance: Performance Metrics and Measures	L+D	BB	1	10	22/10/2021
11	Parallel Processing Applications, Speedup Performance Laws	L+D	BB	1	11	23/10/2021
12	Scalability Analysis and Approaches	L+D	BB	1	12	26/10/2021
	MODULE 2:Hardware Technologies					
13	Processors and Memory Hierarchy: Advanced Processor Technology	L+ D	BB	2	14	27/10/2021 to28/10/2021
14	Superscalar Processors	L+D	BB	2	16	29/10/2021 to30/10/2021

15	Vector Processors	L+D	BB	2	18	2/11/2021 to 4/11/2021
16	Memory Hierarchy Technology	L+D	BB	1	19	9/11/2021
17	Virtual Memory Technology	L+D	BB	1	20	10/11/2021
	IA-I: 12/11/2021					
	MODULE 3:Bus, Cache, and Shared Memory					
18	Backplane Bus Systems	L+I	LCD	1	21	16/11/2021
19	Bus Arbitration Techniques	CL(S)	LCD	1	22	17/11/2021
20	Cache Memory Organizations	L+D	BB	2	24	18/11/2021to 19/11/2021
21	Shared Memory Organizations	L+D	BB	1	25	23/11/2021
22	Sequential and Weak Consistency Models	L+D	BB	1	26	24/11/2021
23	Pipelining and Superscalar Techniques : Linear Pipeline Processors	L+I	LCD	1	27	25/11/2021
24	NonlinearPipeline Processors	L+D	BB	1	28	26/11/2021
25	Instruction Pipeline Design	L+D	BB	2	30	27/11/2021to 30/11/2021
26	Arithmetic Pipeline Design	L+D	BB	1	31	1/12/2021
	MODULE 4:Parallel and Scalable Architectures					
27	Multiprocessors and Multicomputer: Multiprocessor System Interconnects	L+I	LCD	1	32	2/12/2021
28	Cache Coherence and Synchronization Mechanisms	L+I	LCD	1	33	3/12/2021
29	Three Generations of Multicomputer	L+D	BB	1	34	4/12/2021
30	Message-PassingMechanisms	L+D	BB	1	35	7/12/2021
31	Multivector and SIMD Computers: Vector Processing Principles	L+D	BB	1	36	8/12/2021
32	Multivector Multiprocessors	GD	BB	1	37	9/12/2021
33	Compound Vector Processing, SIMD ComputerOrganizations	L+I	LCD	1	38	10/12/2021
34	Latency-Hiding Techniques, Principles of Multithreading, Fine-Grain Multicomputer	L+D	BB	1	39	14/12/2021
35	Scalable and Multithreaded Architectures, Dataflow and HybridArchitectures.	L+D	BB	2	41	15/12/2021 to 21/12/2021

IA-II: 17/12/2021						
MODULE 5: Software for parallel programming						
36	Parallel Programming Models	L+I	LCD	2	43	22/12/2021 to 23/12/2021
37	Parallel Languages and Compilers ,Dependence Analysis of Data Arrays	L+I	LCD	2	45	24/12/2021 to 28/12/2021
38	Parallel Program Development and Environments, Synchronization and Multiprocessing Modes	L+D	BB	2	47	29/12/2021 to30/12/2021
39	Instruction and System Level parallelism, Instruction Level Parallelism ,Computer Architecture ,Contents, Basic Design Issues ,Problem Definition	L+D	BB	2	49	31/12/2021to 4/1/2022
40	Model of a Typical Processor ,Compiler-detected Instruction Level Parallelism , Operand Forwarding ,Reorder, Buffer, Register Renaming	L+D	BB	2	51	5/1/2022to 6/1/2022
41	Tomasulo's Algorithm	L+D	BB	2	53	7/1/2022to 8/1/2022
42	Branch Prediction, Limitations in Exploiting Instruction Level Parallelism,	L+D	BB	2	55	11/1/2022 to 12/1/2022,
43	Thread Level Parallelism.	L+D	BB	3	58	13/1/2022, 17/1/2022, 18/1/2022
IA-III: 21/1/2022						

Text Books:

1. Kai Hwang and NareshJotwani, Advanced Computer Architecture (SIE): Parallelism, Scalability, Programmability, McGraw Hill Education 3/e. 2015

Reference Books:

1. John L. Hennessy and David A. Patterson, Computer Architecture: A quantitative approach, 5th edition, Morgan Kaufmann Elseveir, 2013

Web Materials:

1. https://nptel.ac.in/courses/106/103/106103206/
2. https://www.ee.iitb.ac.in/~viren/Courses/2015/CS683.htm

Details of Teaching Aids:

Black Board and LCD

Signature of Course In-Charge

Signature of Module Coordinator

Signature of HOD-CSE

Head of the Department
Dept. of Computer Science & Engg.
K.S. Institute of Technology
Bengaluru -560 109

K S INSTITUTE OF TECHNOLOGY, BENGALURU

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **Dr. VIJAYALAXMI MEKALI**
SUBJECT CODE/NAME : **18CS733/ ADVANCED COMPUTER ARCHITECTURES**
SEMESTER/SEC/YEAR : **VII / A / IV**
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:Theory of Parallelism					
1	Parallel Computer Models: The State of Computing,	L+D	BB	1	1	4/10/2021
2	The State of Computing	L+D	BB	1	2	5/10/2021
3	Multiprocessors and Multicomputer	L+ D	BB	1	3	7/10/2021
4	Multivector and SIMD Computers	L+ I	LCD	1	4	11/10/2021
5	PRAM and VLSI Models	L+D	BB	1	5	12/10/2021
6	Program and Network Properties: Conditions of Parallelism	L+D	BB	1	6	13/10/2021
7	Program Partitioning and Scheduling	L+D	BB	1	7	18/10/2021
8	Program Flow Mechanisms	L+D	BB	1	8	19/10/2021
9	System Interconnect Architectures	L+I	LCD	1	9	21/10/2021
10	Principles of Scalable Performance: Performance Metrics and Measures	L+D	LCD	1	10	25/10/2021
11	Parallel Processing Applications, Speedup Performance Laws	L+D	LCD	1	11	26/10/2021
12	Scalability Analysis and Approaches	L+D	BB	1	12	27/10/2021
	MODULE 2:Hardware Technologies					
13	Processors and Memory Hierarchy: Advanced Processor Technology	L+ D	LCD	2	14	28/10/2021 to 30/10/2021
14	Superscalar Processors	L+D	LCD	2	16	2/11/2021 to 4/11/2021
15	Vector Processors	L+D	BB	2	18	8/11/2021 to 9/11/2021
16	Memory Hierarchy Technology	L+D	BB	1	19	10/11/2021

	IA-I: 12/11/2021					
17	Virtual Memory Technology	L+D	BB	1	20	15/11/2021
	MODULE 3:Bus, Cache, and Shared Memory					
18	Backplane Bus Systems	L+I	LCD	1	21	16/11/2021
19	Bus Arbitration Techniques	CL(S)	LCD	1	22	17/11/2021
20	Cache Memory Organizations	L+D	BB	2	24	18/11/2021to 23/11/2021
21	Shared Memory Organizations	L+D	BB	1	25	24/11/2021
22	Sequential and Weak Consistency Models	L+D	BB	1	26	25/11/2021
23	Pipelining and Superscalar Techniques : Linear Pipeline Processors	L+I	LCD	1	27	27/11/2021
24	NonlinearPipeline Processors	L+D	BB	1	28	29/11/2021
25	Instruction Pipeline Design	L+D	BB	2	30	30/11/2021to 1/12/2021
26	Arithmetic Pipeline Design	L+D	BB	1	31	2/12/2021
	MODULE 4:Parallel and Scalable Architectures					
27	Multiprocessors and Multicomputer: Multiprocessor System Interconnects	L+I	LCD	1	32	6/12/2021
28	Cache Coherence and Synchronization Mechanisms	L+I	LCD	1	33	7/12/2021
29	Three Generations of Multicomputer	L+D	BB	1	34	8/12/2021
30	Message-PassingMechanisms	L+D	BB	1	35	9/12/2021
31	Multivector and SIMD Computers: Vector Processing Principles	L+D	LCD	1	36	13/12/2021
32	Multivector Multiprocessors	GD	BB	1	37	14/12/2021
33	Compound Vector Processing, SIMD ComputerOrganizations	L+I	LCD	1	38	15/12/2021
	IA-II: 17/12/2021					
34	Latency-Hiding Techniques, Principles of Multithreading, Fine-Grain Multicomputer	L+D	BB	1	39	20/12/2021
35	Scalable and Multithreaded Architectures, Dataflow and HybridArchitectures.	L+D	BB	2	41	21/12/2021 to 22/12/2021
	MODULE 5: Software for parallel programming					
36	Parallel Programming Models	L+I	LCD	2	43	23/12/2021 to 23/12/2021

37	Parallel Languages and Compilers ,Dependence Analysis of Data Arrays	L+I	LCD	2	45	27/12/2021 to 28/12/2021
38	Parallel Program Development and Environments, Synchronization and Multiprocessing Modes	L+D	BB	2	47	29/12/2021 to30/12/2021
39	Instruction and System Level parallelism, Instruction Level Parallelism ,Computer Architecture ,Contents, Basic Design Issues ,Problem Definition	L+D	BB	2	49	31/12/2021to 4/1/2022
40	Model of a Typical Processor ,Compiler-detected Instruction Level Parallelism , Operand Forwarding ,Reorder, Buffer, Register Renaming	L+D	LCD	2	51	3/1/2022to 4/1/2022
41	Tomasulo's Algorithm	L+D	BB	2	53	5/1/2022to 6/1/2022
42	Branch Prediction, Limitations in Exploiting Instruction Level Parallelism,	L+D	BB	2	55	10/1/2022 to 11/1/2022,
43	Thread Level Parallelism.	L+D	BB	3	58	12/1/2022, 13/1/2022, 17/1/2022
IA-III: 21/1/2022						

Text Books:

1. Kai Hwang and NareshJotwani, Advanced Computer Architecture (SIE): Parallelism, Scalability,Programmability, McGraw Hill Education 3/e. 2015

Reference Books:

1. John L. Hennessy and David A. Patterson, Computer Architecture: A quantitative approach, 5th edition, Morgan Kaufmann Elseveir, 2013

Web Materials:

1. https://nptel.ac.in/courses/106/103/106103206/
2. https://www.ee.iitb.ac.in/~viren/Courses/2015/CS683.htm

Details of Teaching Aids:

Black Board and LCD

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

Head of the Department
Dept. of Computer Science &
K.S. Institute of Technology
Bengaluru -560 109

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **BEENA K &DEEPA SR**
SUBJECT CODE/NAME : **18CSL76/ ARTIFICIAL INTELLIGENCE & MACHINE LEARNING LAB**
SEMESTER/YEAR/SEC : **VII / IV /B**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction to Python Programs	BB+LCD	3	B1	4/10/21
		BB+LCD	3	B2	7/10/21
		BB+LCD	3	B3	13/10/21
2	Implement and demonstratethe FIND-Salgorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.	BB+LCD	3	B1	11/10/21
		BB+LCD	3	B2	21/10/21
		BB+LCD	3	B3	23/10/21
3	For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples..	BB+LCD	3	B1	18/10/21
		BB+LCD	3	B2	28/10/21
		BB+LCD	3	B3	27/10/21
4	Implement A^* search algorithm	BB+LCD	3	B1	25/10/21
		BB+LCD	3	B2	30/10/21
		BB+LCD	3	B3	10/11/21
5	Implement AO^* search algorithm	BB+LCD	3	B1	8/11/21
		BB+LCD	3	B2	4/11/21
		BB+LCD	3	B3	17/11/21
6	Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to	BB+LCD	3	B1	15/11/21
		BB+LCD	3	B2	18/11/21
		BB+LCD	3	B3	24/11/21

	classify a new sample				
7	Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.	BB+LCD	3	B1	29/11/21
		BB+LCD	3	B2	25/11/21
		BB+LCD	3	B3	1/12/21
8	Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.	BB+LCD	3	B1	6/12/21
		BB+LCD	3	B2	27/11/21
		BB+LCD	3	B3	8/12/21
9	Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.	BB+LCD	3	B1	13/12/21
		BB+LCD	3	B2	2/12/21
		BB+LCD	3	B3	15/12/21
10	Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.	BB+LCD	3	B1	20/12/21
		BB+LCD	3	B2	9/12/21
		BB+LCD	3	B3	22/12/21
11	Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.	BB+LCD	3	B1	27/12/21
		BB+LCD	3	B2	23/12/21
		BB+LCD	3	B3	29/12/21
12	Revision(Practice Lab)	BB	3	B1	3/1/22
		BB	3	B2	30/12/21
		BB	3	B3	5/1/22
13	Internal Test 1	BB	3	B1	10/1/22
		BB	3	B2	6/1/22
		BB	3	B3	12/1/22
14	Internal Test 2	BB	3	B1	17/1/22
		BB	3	B2	13/1/22
		BB	3	B3	19/1/22

WEB MATERIALS:

- https://nptel.ac.in/courses/106106139
- https://www.coursera.org/learn/machine-learning
- https://www.udemy.com/machinelearning/

Details for the teaching Aids

BB-Black Board

LCD-Projector

Signature of the Faculty **Signature of Module Coordinator** **Signature of HOD**

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **DEEPA .S.R & BEENA K**
SUBJECT CODE/NAME : **18CSL76/ ARTIFICIAL INTELLIGENCE & MACHINE LEARNING LAB**
SEMESTER/YEAR/SEC : **VII / IV /A**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction to Python Programs	BB+LCD	3	A1	7/10/21
		BB+LCD	3	A2	5/10/21
		BB+LCD	3	A3	1/10/21
2	Content Beyond Syllabus: Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.	BB+LCD	3	A1	21/10/21
		BB+LCD	3	A2	12/10/21
		BB+LCD	3	A3	8/10/21
3	For a given set of training data examples stored in a .CSV file, implement and demonstrate the Candidate-Elimination algorithm to output a description of the set of all hypotheses consistent with the training examples..	BB+LCD	3	A1	28/10/21
		BB+LCD	3	A2	19/10/21
		BB+LCD	3	A3	9/10/21
4	Implement A^* search algorithm	BB+LCD	3	A1	30/10/21
		BB+LCD	3	A2	26/10/21
		BB+LCD	3	A3	22/10/21
5	Implement AO* search algorithm	BB+LCD	3	A1	4/11/21
		BB+LCD	3	A2	2/11/21
		BB+LCD	3	A3	29/10/21
6	Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.	BB+LCD	3	A1	18/11/21
		BB+LCD	3	A2	9/11/21
		BB+LCD	3	A3	19/11/21

7	Build an Artificial Neural Network by implementing the Back propagation algorithm and test the same using appropriate data sets.	BB+LCD	3	A1	25/11/21
		BB+LCD	3	A2	16/11/21
		BB+LCD	3	A3	26/11/21
8	Write a program to implement the naïve Bayesian classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.	BB+LCD	3	A1	27/11/21
		BB+LCD	3	A2	23/11/21
		BB+LCD	3	A3	3/12/21
9	Apply EM algorithm to cluster a set of data stored in a .CSV file. Use the same data set for clustering using k-Means algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Java/Python ML library classes/API in the program.	BB+LCD	3	A1	2/12/21
		BB+LCD	3	A2	30/11//21
		BB+LCD	3	A3	7/12/21
10	Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Java/Python ML library classes can be used for this problem.	BB+LCD	3	A1	9/12/21
		BB+LCD	3	A2	14/12/21
		BB+LCD	3	A3	10/12/21
11	Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.	BB+LCD	3	A1	23/12/21
		BB+LCD	3	A2	21/12/21
		BB+LCD	3	A3	24/12/21
12	Revision(Practice Lab)	BB	3	A1	30/12/21,6/1/22
		BB	3	A2	28/12/21, 4/1/22, 11/1/22
		BB	3	A3	31/12/21
13	Internal Test 1	BB	3	A1	13/1/22
		BB	3	A2	18/1/ 22
		BB	3	A3	7/1/22
14	Internal Test 2	BB	3	A1	27/1/22
		BB	3	A2	25/1/22
		BB	3	A3	28/1/22

- https://nptel.ac.in/courses/106106139
- https://www.coursera.org/learn/machine-learning
- https://www.udemy.com/machinelearning/

Details for the teaching Aids

BB-Black Board

LCD-Projector

deepa

Signature of the Faculty

deepa

Signature of Module Coordinator

Signature of HOD

K.S. INSTITUTE OF TECHNOLOGY
BENGALURU
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Mrs. Pallavi K N

SUBJECT CODE/NAME : 21PSP23/ PROBLEM SOLVING USING PROGRAMMING

YEAR/SEMESTER/SEC : I / II / A

ACADEMIC YEAR : 2021-2022

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
1	Introductory Class	L+D	BB	1	1	06-06-2022
MODULE 1: Introduction to Computer Hardware and Software						
2	Computer Generations, Computer types introduction	L+D	BB	1	1	06-06-2022
3	Computer types explanation, bits, bytes and words,	L+D	BB	1	2	07-06-2022
4	CPU, Primary Memory, secondary memory,	L+D	BB	1	3	08-06-2022
5	Ports and connections, Input and output devices,	L+D	BB	1	4	09-06-2022
6	Computers in a network, Network hardware,	L+D	BB	1	5	13-06-2022
7	Software Basics and types,	L+D	BB	1	6	14-06-2022
8	Basic Structure of C program	L+D	BB	1	7	15-06-2022
9	Executing a C Program	L+D	BB	1	8	16-06-2022
10	Constant, Variable and data types	L+D	BB	1	9	20-06-2022
11	Operators	L+D	BB	1	10	21-06-2022
12	Expressions	L+D	BB	1	11	22-06-2022
13	Managing input operations	L+D	LCD	1	12	23-06-2022
14	Managing output operations	L+D	LCD	1	13	25-06-2022
15	Conditional Branching basics	L+D	LCD	1	14	04-07-2022
16	Conditional Branching Examples	L+D	LCD	1	15	05-07-2022
17	Loops explanation	L+D	LCD	1	16	06-07-2022
18	Loops Examples	L+D	LCD	1	17	07-07-2022

19	Finding roots of a quadratic equation	L+D	LCD	1	18	09-07-202
20	Computation of binomial coefficients	L+D	LCD	1	19	14-07-202
21	Plotting of Pascal's triangle	L+D	LCD	1	20	18-07-202
22	Array Introduction, 1-D	L+D	LCD	1	21	19-07-202
23	2-D Arrays	L+D	LCD	1	22	20-07-202
24	Character arrays	L+D	LCD	1	23	21-07-202
25	Strings	L+D	LCD	1	24	25-07-202
26	Activity	L+D	LCD	1	25	26-07-202
27	Linear Search	L+D	LCD	1	26	27-07-202
28	Binary Search	L+D	LCD	1	27	28-07-202
29	Bubble Sort	L+D	LCD	1	28	30-07-202
30	Selection Sort	L+D	LCD	1	29	01-08-202
31	If any topics pending + Revision	L+D	LCD	1	30	02-08-202
32	Functions in C	L+D	LCD	1	31	03-08-202
33	Location of function	L+D	LCD	1	32	04-08-202
34	Structure of function	L+D	LCD	1	33	08-08-202
35	Types of functions	L+D	LCD	1	34	13-08-202
36	Parameter passing mechanism	L+D	LCD	1	35	16-08-2022
37	Recursive function	L+D	LCD	1	36	17-08-2022
38	Factorial of a number	L+D	LCD	1	37	18-08-2022
39	Fibonacci series	L+D	LCD	1	38	22-08-2022
40	Revision	L+D	LCD	1	39	23-08-2022
41	Basic of structures	L+D	LCD	1	40	24-08-2022
42	Structures and functions	L+D	LCD	1	41	25-08-2022
43	Array of structures	L+D	LCD	1	42	27-08-2022
44	Pointers and addresses	L+D	LCD	1	43	29-08-2022
45	Pointers and functions arguments	L+D	LCD	1	44	30-08-2022
46	Pointers and arrays	L+D	LCD	1	45	01-09-2022
47	Address arithmetic	L+D	LCD	1	46	03-09 22
48	Introduction to preprocessors directives	L+D	BB	1	47	05-09-2022
49	Revision	L+D	BB	1	48	05-09-2022
50	Activity	L+D	BB	1	49	06-09-2022

Total No. of Lecture Hours =44

Total No. of Revision Hours =3

Total No. of Activity Hours= 2

Text Books:

1. E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill
2. Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language, Prentice Hall of India.

Reference:

1. Reema Thereja , Programming in C , Cengage publication

Course In charge	Module Coordinator	H.O. D	Principal

Head of the Department
Dept. of Computer Science & Engg.
K.S. Institute of Technology
Bengaluru -560 109

K.S. INSTITUTE OF TECHNOLOGY
BENGALURU
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Mrs. Rashmi H

SUBJECT CODE/NAME :21IDT29/ INNOVATION AND DESIGN THINKING

YEAR/SEMESTER/SEC : I / II/B

ACADEMIC YEAR : 2021-2022

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
1	Introductory Class	L+D	BB	1	1	6/6/2022
	MODULE 1: PROCESS DESIGN					
2	Shared model in team-bases design	L+D	LCD	1	1	6/6/2022
3	Theory and Practice in Design Thinking	L+D	LCD	1	2	13/6/2022
4	Explore Presentation Signers across Globe	L+D	LCD	1	2	13/6/2022
5	MVP or Prototyping	L+D	LCD	1	3	20/6/2022
	MODULE 2: TOOLD FOR DESIGN THINKING					
6	Real Time design interaction capture and analysis	L+D	LCD	1	3	20/6/2022
7	Enabling efficient collaboration in digital space	L+D	LCD	1	4	4/7/2022
8	Empathy for design	L+D	LCD	1	4	4/7/2022
9	Collaboration in distributed Design	L+D	LCD	1	5	18/7/2022
10	Design Thinking to Business Process	L+D	LCD	1	5	18/7/2022
11	Agile in Virtual Collaboration	L+D	LCD	1	6	25/7/2022
12	Scenario based Prototyping	L+D	LCD	1	6	25/7/2022
	Module -4 DT for Strategic Innovations					
13	Growth,Story telling Representation, Strategic Foresight	L+D	LCD	1	6	25/7/2022
14	Change,Sense Making,Maintenance,Relevance, Value Redefinition, Extreme Competitior	L+D	LCD	1	7	1/8/2022

15	Experience Design, Standardization, Humanization, Creative Culture	L+D	LCD	1	7	1/8/2022
16	Rapid Prototyping, Strategy and Organization, Business Model design	L+D	LCD	1	7	1/8/2022
Module- 5 : Design Thinking Workshop						
17	Design Thinking Work Shop Empathize	L+D	LCD	1	8	8/8/2022
18	Design, Ideate, Prototype and Test	L+D	LCD	1	8	8/8/2022
19	Activity	L+D	LCD	1	9	22/8/2022
20	Activity	L+D	LCD	1	10	29/8/2022
20	Revision	L+D	LCD	1	11	5/9/2022

Total No. of Lecture Hours = 11

Text Books:

1. John.R.Karsnitz, Stephen O'Brien and John P. Hutchinson, "Engineering Design", Cengage learning (International edition) Second Edition, 2013.

2. Roger Martin, "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Harvard Business Press 2009.

3. Hasso Plattner, Christoph Meinel and Larry Leifer (eds), "Design Thinking: Understand – Improve – Apply", Springer, 2011

4. Idris Mootee, "Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School", John Wiley & Sons 2013.

References:

1. Yousef Haik and Tamer M.Shahin, "Engineering Design Process", Cengage Learning, Second Edition, 2011.

2. Book - Solving Problems with Design Thinking - Ten Stories of What Works (Columbia Business School Publishing) Hardcover – 20 Sep 2013 by Jeanne Liedtka (Author), Andrew King (Author), Kevin Bennett (Author).

Rashmi. H
Course In charge

Module Coordinator

HOD

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PRINCIPAL
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BENGALURU - 560 109.

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **RASHMI H**
SUBJECT CODE/NAME : **21CPL27/ COMPUTER PROGRAMMING LAB**
SEMESTER/YEAR/SEC : **II/I/C**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction Class	BB+LCD	3	C1	10/6/2022
		BB+LCD	3	C2	7/6/2022
		BB+LCD	3	C3	9/6/2022
2	Simulation of a Simple Calculator.	BB+LCD	3	C1	17/6/2022
		BB+LCD	3	C2	14/6/2022
		BB+LCD	3	C3	16/6/2022
3	Compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages	BB+LCD	3	C1	24/6/2022
		BB+LCD	3	C2	21/6/2022
		BB+LCD	3	C3	23/6/2022
4	An electricity board charges the following rates for the use of electricity: for the first 200 units 80 paise per unit: for the next 100 units 90 paise per unit: beyond 300 units Rs 1 per unit. All users are charged a minimum of Rs. 100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of total amount is charged. Write a program to read the name of the user, number of units consumed and print out the charges.	BB+LCD	3	C1	8/7/2022
		BB+LCD	3	C2	21/6/2022
		BB+LCD	3	C3	23/6/2022
5	Implement Binary Search on Integers / Names.	BB+LCD	3	C1	15/7/2022
		BB+LCD	3	C2	19/7/2022
		BB+LCD	3	C3	14/7/2022
6	Implement Matrix multiplication and validate therules of multiplication.	BB+LCD	3	C1	22/7/2022
		BB+LCD	3	C2	26/7/2022
		BB+LCD	3	C3	21/7/2022
7	Compute sin(x)/cos(x) using Taylor series approximation. Compare your result with the built-in library function. Print both the results with appropriate inferences.	BB+LCD	3	C1	29/7/2022
		BB+LCD	3	C2	2/8/2022
		BB+LCD	3	C3	28/7/2022
8	Sort the given set of N numbers using Bubble	BB+LCD	3	C1	19/8/2022
		BB+LCD	3	C2	16/8/2022

	sort	BB+LCD	3	C3	4/8/2022
9	Write functions to implement string operations such as compare, concatenate, string length. Convince theparameter passing techniques.	BB+LCD	3	C1	26/8/2022
		BB+LCD	3	C2	23/8/2022
		BB+LCD	3	C3	4/8/2022
10	Implement structures to read, write and compute average- marks and the students scoring above andbelow the average marks for a class of N students	BB+LCD	3	C1	26/8/2022
		BB+LCD	3	C2	30/8/2022
		BB+LCD	3	C3	18/8/2022
11	Develop a program using pointers to compute the sum, mean and standard deviation of all elementsstored in an array of N real numbers.	BB+LCD	3	C1	2/9/2022
		BB+LCD	3	C2	6/9/2022
		BB+LCD	3	C3	25/8/2022
12	Implement Recursive functions for Binary to Decimal Conversion.	BB+LCD	3	C1	2/9/2022
		BB+LCD	3	C2	6/9/2022
		BB+LCD	3	C3	1/9/2022

WEB MATERIALS:

https://nptel.ac.in/courses/106106090
https://www.udemy.com/course/computer_graphics_subject
https://www.coursera.org/for-university-and-college-students

Details for the teaching Aids

BB-Black Board

LCD-Projector

Rashmi. H
Signature of the Faculty

Signature of Module Coordinator

Signature of HOD

Head of the Department
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K.S. INSTITUTE OF TECHNOLOGY
BENGALURU
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Mrs. Rashmi H

SUBJECT CODE/NAME : 21PSP23/ PROBLEM SOLVING USING PROGRAMMING

YEAR/SEMESTER/SEC : I / II/C

ACADEMIC YEAR : 2021-2022

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
1	Introductory Class	L+D	BB	1	1	6/6/2022
MODULE 1: Introduction to Computer Hardware and Software						
2	Computer Generations, Computer types introduction	L+D	BB	1	2	7/6/2022
3	Computer types explanation, bits, bytes and words,	L+D	BB	1	3	8/6/2022
4	CPU, Primary Memory, secondary memory,	L+D	BB	1	4	10/6/2022
5	Ports and connections, Input and output devices,	L+D	BB	1	5	13/6/2022
6	Computers in a network, Network hardware,	L+D	BB	1	6	14/6/2022
7	Software Basics and types,	L+D	BB	1	7	20/6/2022
8	Basic Structure of C program	L+D	BB	1	8	21/06/2022
9	Executing a C Program	L+D	BB	1	9	22/6/2022
10	Constant, Variable and data types	L+D	BB	1	10	24/6/2022
11	Operators	L+D	BB	1	11	25/6/2022
12	Expressions	L+D	BB	1	12	4/7/2022
13	Managing input operations	L+D	BB	1	13	5/7/2022
14	Managing output operations	L+D	BB	1	14	6/7/2022
15	Conditional Branching basics	L+D	BB	1	15	8/7/2022
16	Conditional Branching Examples	L+D	BB	1	16	9/7/2022
17	Loops explanation	L+D	BB	1	17	15/7/2022
18	Loops Examples	L+D	BB	1	18	16/7/2022

19	Finding roots of a quadratic equation	L+D	BB	1	19	18/7/2022
20	Computation of binomial coefficients	L+D	BB	1	20	19/7/2022
21	Plotting of Pascal's triangle	L+D	BB	1	21	20/7/2022
22	Array Introduction, 1-D	L+D	BB	1	22	22/7/2022
23	2-D Arrays	L+D	BB	1	23	25/7/2022
24	Character arrays	L+D	BB	1	24	26/7/2022
25	Strings	L+D	BB	1	25	27/7/2022
26	Activity	L+D	BB	1	26	29/7/2022
27	Linear Search	L+D	BB	1	27	30/7/2022
28	Binary Search	L+D	BB	1	28	1/8/2022
29	Bubble Sort	L+D	BB	1	29	2/8/2022
30	Selection Sort	L+D	BB	1	30	3/8/2022
31	If any topics pending + Revision	L+D	BB	1	31	8/8/2022
32	Functions in C	L+D	BB	1	32	13/8/2022
33	Location of function	L+D	BB	1	33	16/8/2022
34	Structure of function	L+D	BB	1	34	17/8/2022
35	Types of functions	L+D	BB	1	35	19/8/2022
36	Parameter passing mechanism	L+D	BB	1	36	22/8/2022
37	Recursive function	L+D	BB	1	37	23/8/2022
38	Factorial of a number	L+D	BB	1	38	24/8/2022
39	Fibonacci series	L+D	BB	1	39	26/8/2022
40	Revision	L+D	BB	1	40	27/8/2022
41	Basic of structures, Structures and functions	L+D	BB	1	41	29/8/2022
42	Array of structures	L+D	BB	1	42	30/8/2022
43	Pointers and addresses	L+D	BB	1	43	2/9/2022
44	Pointers and functions arguments	L+D	BB	1	44	3/9/2022
45	Pointers and arrays, Address arithmetic	L+D	BB	1	45	5/9/2022
46	Introduction to Pre-processors directives	L+D	BB	1	46	6/9/2022
47	Revision	L+D	BB	1	47	16/9/2022
48	Activity	L+D	BB	1	48	17/9/2022

Total No. of Lecture Hours = 48

Total No. of Revision Hours = 2

Text Books: **1. E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill**

2. Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language.

Reference Books: 1. Reema Thereja , Programming in C , Cengage publication

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Course In charge

Module Coordinator

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K.S. INSTITUTE OF TECHNOLOGY
BENGALURU
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Mrs. Pallavi K N

SUBJECT CODE/NAME : 21IDT29/Innovation and Design Thinking

YEAR/SEMESTER/SEC : I / II / C

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: Process of Design					
1	Shared Model in Team based design Theory and practice in Design thinking	L+D	LCD	1	1	09-06-2022
2	Explore presentation signers across globe MVP or Prototyping	L+D	LCD	2	2	16-06-2022
	MODULE 2: Tools of Design Thinking					
3	Real Time design interaction capture and analysis Enabling Efficient collaboration in digital space	L+D	LCD	3	3	23-06-2022
4	Empathy for Design Collaboration in Distributed Design	L+D	LCD	4	4	07-07-2022
	MODULE 3: Design Thinking in IT					
5	Design Thinking to Business Process modelling	L+D	LCD	5	5	14-07-2022
6	Agile in Virtual collaboration environment Scenario based Prototyping	L+D	LCD	6	6	21-07-2022
	MODULE 4: DT for strategic innovations					
7	Growth-Story Telling representation Strategic Foresight Sense Making Relevance	L+D	LCD	7	7	28-07-2022
8	Humanization Strategy and Organization	L+D	LCD	8	8	04-08-2022

9	Activity			09	09	18-08-2022
10	Activity			10	10	25-08-2022
11	Revision			11	11	01-09-2022

Total No. of Lecture Hours = 13

Text Books:

1. John.R.Karsnitz, Stephen O'Brien and John P. Hutchinson, "Engineering Design", Cengage learning (International edition) Second Edition, 2013.
2. Roger Martin, "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Harvard Business Press , 2009.
3. Hasso Plattner, Christoph Meinel and Larry Leifer (eds), "Design Thinking: Understand – Improve – Apply", Springer, 2011
4. Idris Mootee, "Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School", John Wiley & Sons 2013.

References:

1. Yousef Haik and Tamer M.Shahin, "Engineering Design Process", Cengage Learning, Second Edition, 2011.
2. Book - Solving Problems with Design Thinking - Ten Stories of What Works (Columbia Business School Publishing) Hardcover – 20 Sep 2013 by Jeanne Liedtka (Author), Andrew King (Author), Kevin Bennett (Author).

Course In charge | Module Coordinator | H.O. D | Principal

Head of the Department
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K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **RASHMI H**
SUBJECT CODE/NAME : **21CPL27/ COMPUTER PROGRAMMING LAB**
SEMESTER/YEAR/SEC : **I/I/F**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction Class	BB+LCD	3	F1	24/12/2021
		BB+LCD	3	F2	21/12/2021
		BB+LCD	3	F3	23/12/2021
2	Simulation of a Simple Calculator.	BB+LCD	3	F1	31/12/2021
		BB+LCD	3	F2	28/12/2021
		BB+LCD	3	F3	30/12/2021
3	Compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages	BB+LCD	3	F1	7/1/2022
		BB+LCD	3	F2	4/1/2022
		BB+LCD	3	F3	6/1/2022
4	An electricity board charges the following rates for the use of electricity: for the first 200 units 80 paise per unit: for the next 100 units 90 paise per unit: beyond 300 units Rs 1 per unit. All users are charged a minimum of Rs. 100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of total amount is charged. Write a program to read the name of the user, number of units consumed and print out the charges.	BB+LCD	3	F1	14/01/2022
		BB+LCD	3	F2	11/01/2022
		BB+LCD	3	F3	13/01/2022
5	Implement Binary Search on Integers / Names.	BB+LCD	3	F1	21/01/2022
		BB+LCD	3	F2	18/01/2022
		BB+LCD	3	F3	20/01/2022
6	Implement Matrix multiplication and validate therules of multiplication.	BB+LCD	3	F1	28/01/2022
		BB+LCD	3	F2	25/01/2022
		BB+LCD	3	F3	27/01/2022
7	Compute sin(x)/cos(x) using Taylor series approximation. Compare your result with the built-in library function. Print both the results with appropriate inferences.	BB+LCD	3	F1	4/2/2022
		BB+LCD	3	F2	8/2/2022
		BB+LCD	3	F3	17/02/2022
8	Sort the given set of N numbers using	BB+LCD	3	F1	18/02/2022

	Bubble sort	BB+LCD	3	F2	15/02/2022
		BB+LCD	3	F3	24/02/2022
9	Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques.	BB+LCD	3	F1	18/02/2022
		BB+LCD	3	F2	15/02/2022
		BB+LCD	3	F3	24/02/2022
10	Implement structures to read, write and compute average- marks and the students scoring above and below the average marks for a class of N students	BB+LCD	3	F1	04/03/2022
		BB+LCD	3	F2	22/02/2022
		BB+LCD	3	F3	15/03/2022
11	Develop a program using pointers to compute the sum, mean and standard deviation of all elementsstored in an array of N real numbers.	BB+LCD	3	F1	11/03/2022
		BB+LCD	3	F2	8/3/2022
		BB+LCD	3	F3	17/03/2022
12	Implement Recursive functions for Binary toDecimal Conversion.	BB+LCD	3	F1	18/03/2022
		BB+LCD	3	F2	19/03/2022
		BB+LCD	3	F3	17/03/2022

WEB MATERIALS:

https://nptel.ac.in/courses/106106090
https://www.udemy.com/course/computer_graphics_subject
https://www.coursera.org/for-university-and-college-students

Details for the teaching Aids

BB-Black Board

LCD-Projector

Rashmi. H
Signature of the Faculty

Signature of Module Coordinator

Signature of HOD

Head of the Department
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K.S. Institute of Technology
Bengaluru -560 109

K.S. INSTITUTE OF TECHNOLOGY

BENGALURU

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : Mrs. Pavithra J

SUBJECT CODE/NAME :21IDT29/ INNOVATION AND DESIGN THINKING

YEAR/SEMESTER/SEC : I / II / A

ACADEMIC YEAR : 2021-2022

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
1	Introductory Class	L+D	LCD	1	1	10/6/2022
MODULE 1: PROCESS DESIGN						
2	Shared model in team-bases design	L+D	LCD	1	1	10/6/2022
3	Theory and Practice in Design Thinking	L+D	LCD	1	2	17/6/2022
4	Explore Presentation Signers across Globe	L+D	LCD	1	2	17/6/2022
5	MVP or Prototyping	L+D	LCD	1	3	24/6/2022
MODULE 2: TOOLD FOR DESIGN THINKING						
6	Real Time design interaction capture and analysis	L+D	LCD	1	3	24/6/2022
7	Enabling efficient collaboration in digital space	L+D	LCD	1	4	8/7/2022
8	Empathy for design	L+D	LCD	1	4	8/7/2022
9	Collaboration in distributed Design	L+D	LCD	1	5	15/7/2022
10	Design Thinking to Business Process modelling	L+D	LCD	1	5	15/7/2022

11	Agile in Virtual Collaboration Environment	L+D	LCD	1	6	22/7/2022
12	Scenario based Prototyping	L+D	LCD	1	6	22/7/2022
Module -4 DT for Strategic Innovations						
13	Growth,Story telling Representation, Strategic Foresight	L+D	LCD	1	6	22/7/2022
14	Change,Sense Making,Maintenance,Relevance, Value Redefinition, Extreme Competition	L+D	LCD	1	7	29/7/2022
15	Experience Design, Standardization, Humanization, Creative Culture	L+D	LCD	1	7	29/7/2022
16	Rapid Prototyping, Strategy and Organization, Business Model design	L+D	LCD	1	7	29/7/2022
Module- 5 : Design Thinking Workshop						
17	Design Thinking Work Shop Empathize	L+D	LCD	1	8	19/8/2022
18	Design, Ideate, Prototype and Test	L+D	LCD	1	8	19/8/2022
19	Activity			1	9	2/9/2022
20	Activity			1	10	16/9/2022

Total No. of Lecture Hours = 11

Text Books:

1.John.R.Karsnitz, Stephen O'Brien and John P. Hutchinson, "Engineering Design", Cengage learning (International edition) Second Edition, 2013.

2. Roger Martin, "The Design of Business: Why Design Thinking is the Next Competitive Advantage", Harvard Business Press 2009.

3. Hasso Plattner, Christoph Meinel and Larry Leifer (eds), "Design Thinking: Understand – Improve – Apply", Springer, 2011

4.Idris Mootee, "Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School", John Wiley & Sons 2013.

References:

1. Yousef Haik and Tamer M.Shahin, "Engineering Design Process", Cengage Learning, Second Edition, 2011.

2. Book - Solving Problems with Design Thinking - Ten Stories of What Works (Columbia Business School Publishing) Hardcover – 20 Sep 2013 by Jeanne Liedtka (Author), Andrew King (Author), Kevin Bennett (Author).

Course In charge **Module Coordinator** **HOD** **Principal**

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **PAVITHRA J**
SUBJECT CODE/NAME : **21CPL27/ COMPUTER PROGRAMMING LAB**
SEMESTER/YEAR/SEC : **II/I/B**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction Class	BB+LCD	3	B1	9/6/2022
		BB+LCD	3	B2	7/6/2022
		BB+LCD	3	B3	8/6/2022
2	Simulation of a Simple Calculator.	BB+LCD	3	B1	16/6/2022
		BB+LCD	3	B2	14/6/2022
		BB+LCD	3	B3	15/6/2022
3	Compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages	BB+LCD	3	B1	23/6/2022
		BB+LCD	3	B2	21/6/2022
		BB+LCD	3	B3	22/6/2022
4	An electricity board charges the following rates for the use of electricity: for the first 200 units 80 paise per unit: for the next 100 units 90 paise per unit: beyond 300 units Rs 1 per unit. All users are charged a minimum of Rs. 100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of total amount is charged. Write aprogram to read the name of the user, number of units consumed and print out the charges.	BB+LCD	3	B1	14/7/2022
		BB+LCD	3	B2	19/72022
		BB+LCD	3	B3	20/7/2022
5	Implement Binary Search on Integers / Names.	BB+LCD	3	B1	21/7/2022
		BB+LCD	3	B2	26/7/2022

		BB+LCD	3	B3	27/7/2022
6	Implement Matrix multiplication and validate the rules of multiplication.	BB+LCD	3	B1	28/7/2022
		BB+LCD	3	B2	2/8/2022
		BB+LCD	3	B3	3/8/2022
7	Compute sin(x)/cos(x) using Taylor series approximation. Compare your result with the built-in library function. Print both the results with appropriate inferences.	BB+LCD	3	B1	04/8/2022
		BB+LCD	3	B2	2/8/2022
		BB+LCD	3	B3	17/8/2022
8	Sort the given set of N numbers using Bubble sort	BB+LCD	3	B1	18/8/2022
		BB+LCD	3	B2	16/8/2022
		BB+LCD	3	B3	17/8/2022
9	Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques.	BB+LCD	3	B1	18/8/2022
		BB+LCD	3	B2	23/8/2022
		BB+LCD	3	B3	17/8/2022
10	Implement structures to read, write and compute average- marks and the students scoring above and below the average marks for a class of N students	BB+LCD	3	B1	25/8/2022
		BB+LCD	3	B2	30/8/2022
		BB+LCD	3	B3	24/8/2022
11	Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers.	BB+LCD	3	B1	25/9/2022
		BB+LCD	3	B2	6/9/2022
		BB+LCD	3	B3	24/8/2022
12	Implement Recursive functions for Binary to Decimal Conversion.	BB+LCD	3	B1	1/9/2022
		BB+LCD	3	B2	6/9/2022
		BB+LCD	3	B3	24/8/2022

WEB MATERIALS:

https://nptel.ac.in/courses/106106090
https://www.udemy.com/course/computer_graphics_subject
https://www.coursera.org/for-university-and-college-students

Details for the teaching Aids

BB-Black Board
LCD-Projector

Course Incharge | ModuleCoordinator | HOD | Principal

K.S. INSTITUTE OF TECHNOLOGY

BENGALURU

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

NAME OF THE STAFF : **Mrs. PAVITHRA J**

SUBJECT CODE/NAME : **21PSP23/ PROBLEM SOLVING USING PROGRAMMING**

YEAR/SEMESTER/SEC : **I / II / B**

ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
1	Introductory Class	L+D	BB	1	1	6/6/2022
MODULE 1: Introduction to Computer Hardware and Software						
2	Computer Generations, Computer types introduction	L+D	BB	1	2	7/6/2022
3	Computer types explanation, bits, bytes and words,	L+D	BB	1	3	9/6/2022
4	CPU, Primary Memory, secondary memory,	L+D	BB	1	4	10/6/2022
5	Ports and connections, Input and output devices,	L+D	BB	1	5	13/6/2022
6	Computers in a network, Network hardware,	L+D	BB	1	6	16/6/2022
7	Software Basics and types,	L+D	BB	1	7	17/6/2022

8	Basic Structure of C program	L+D	BB	1	8	20/06/2022
9	Executing a C Program	L+D	BB	1	9	21/6/2022
10	Constant, Variable and data types	L+D	BB	1	10	23/6/2022
11	Operators	L+D	BB	1	11	24/6/2022
12	Expressions	L+D	BB	1	12	4/7/2022
13	Managing input operations	L+D	BB	1	13	5/7/2022
14	Managing output operations	L+D	BB	1	14	7/7/2022
15	Conditional Branching basics	L+D	BB	1	15	8/7/2022
16	Conditional Branching Examples	L+D	BB	1	16	9/7/2022
17	Loops explanation	L+D	BB	1	17	14/7/2022
18	Loops Examples	L+D	BB	1	18	15/7/2022
19	Finding roots of a quadratic equation	L+D	BB	1	19	16/7/2022
20	Computation of binomial coefficients	L+D	BB	1	20	18/7/2022
21	Plotting of Pascal's triangle	L+D	BB	1	21	19/7/2022
22	Array Introduction, 1-D	L+D	BB	1	22	21/7/2022
23	2-D Arrays	L+D	BB	1	23	22/7/2022
24	Character arrays	L+D	BB	1	24	25/7/2022
25	Strings	L+D	BB	1	25	26/7/2022
26	Activity					28/7/2022
27	Linear Search	L+D	BB	1	27	29/7/2022
28	Binary Search	L+D	BB	1	28	30/7/2022
29	Bubble Sort	L+D	BB	1	29	1/8/2022
30	Selection Sort	L+D	BB	1	30	2/8/2022
31	If any topics pending + Revision	L+D	BB	1	31	4/8/2022
32	Functions in C	L+D	BB	1	32	8/8/2022
33	Location of function	L+D	BB	1	33	13/8/2022
34	Structure of function	L+D	BB	1	34	16/8/2022
35	Types of functions	L+D	BB	1	35	18/8/2022
36	Parameter passing mechanism	L+D	BB	1	36	19/8/2022

37	Recursive function	L+D	BB	1	37	22/8/2022
38	Factorial of a number	L+D	BB	1	38	23/8/2022
39	Fibonacci series	L+D	BB	1	39	25/8/2022
40	Revision	L+D	BB	1	40	26/8/2022
41	Basic of structures, Structures and functions	L+D	BB	1	41	29/8/2022
42	Array of structures	L+D	BB	1	42	30/8/2022
43	Pointers and addresses	L+D	BB	1	43	1/9/2022
44	Pointers and functions arguments	L+D	BB	1	44	2/9/2022
45	Pointers and arrays, Address arithmetic	L+D	BB	1	45	3/9/2022
46	Introduction to Pre-processors directives	L+D	BB	1	46	5/9/2022
47	Revision	L+D	BB	1	47	6/9/2022
48	Activity			1	48	16/9/2022

Total No. of Lecture Hours 43

Total No. of Revision Hours = 3

Total No. of activity = 2

Text Books: **1. E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill**

2. Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language, Prentice Hall of India.

Reference Books: 1. Reema Thereja , Programming in C , Cengage publication

Course Incharge **Module Coordinator** **HOD** **Principal**

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : Dr. **VIJAYALAXMI MEKALI**
SUBJECT CODE/NAME : **18CS42/ DESIGN AND ANALYSIS OF ALGORITHMS**
SEMESTER/YEAR/SEC : **IV /II/A**
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					
1	What is an Algorithm?, Algorithm Specification	L+D	LCD	1	1	23-5-2022
2	**Important Problem Types:** Sorting, Searching, String processing, Graph Problems, Combinatorial Problems.	L+ D	LCD	1	2	24-5-2022
3	**Fundamental Data Structures:** Stacks, Queues, Graphs, Trees, Sets and Dictionaries.	L+ D	LCD	1	3	26-5-2022
4	Analysis Framework Performance Analysis: Space complexity, Time complexity	L+D	LCD+BB	1	4	27-5-2022
5	Analysis Framework	L+D	LCD+BB	1	5	30-5-2022
6	**Asymptotic Notations:** Big-Oh notation (O), with Examples	L+D	BB	2	7	31-5-2022 2-6-2022
7	Omega notation (Ω), Theta notation (Q), and Little-oh notation (o)	L+D	BB	2	9	3-6-2022 6-6-2022
8	Mathematical analysis of Non-Recursive Algorithms	L+I	BB	2	11	7-6-2022 9-6-2022
9	Mathematical analysis of recursive Algorithms	L+D	BB	2	13	10-6-2022 11-6-2022

	MODULE 2					
10	**Divide and Conquer:** General method	L+ D	LCD	1	14	13-6-2022
11	Binary search	L+D	LCD+BB	1	15	14-6-2022
12	Recurrence equation for divide and conquer	LW	BB	2	17	16-6-2022 17-6-2022
	IA-I 20-6-2022					
13	Merge sort	L+D	LCD+BB	2	19	27-6-2022 28-6-2022
14	Quick sort	L+D	LCD+BB	2	21	30-6-2022 1-7-2022
15	Strassen's matrix multiplication	L+ D	LCD+BB	1	22	4-7-2022
16	Strassen's matrix multiplication Advantages and Disadvantages of divide and Conquer.	L+ D	LCD	1	23	5-7-2022
17	**Decrease and Conquer Approach:** Topological Sort.	L+ D	BB	1	24	7-7-2022
	MODULE 3					
18	**Greedy Method:** General method	L+D	LCD+BB	1	25	8-7-2022
19	Coin Change Problem	L+D	BB	1	26	11-7-2022
20	Knapsack Problem	L+D	BB	2	28	12-7-2022
21	Job sequencing with deadlines	L+D+I	BB	1	29	14-7-2022
22	Minimum cost spanning trees: Prim's Algorithm	L+D+I	LCD+BB	1	30	15-7-2022
23	**Minimum cost spanning trees:**Kruskal's Algorithm	CL(S) L+D+I	LCD+BB	1	31	16-7-2022
24	**Single source shortest paths:**Dijkstra's Algorithm	L+D	LCD+BB	1	32	18-7-2022
25	Optimal Tree problem: Huffman Trees and Codes **Transform and Conquer Approach:** Heaps Heap Sort	L+D	BB	1	33	19-7-2022

	MODULE 4					
26	**Dynamic Programming:** General method with Examples	L+I	LCD	1	34	21-7-2022
27	Multistage Graphs	L+I	LCD+BB	1	35	22-7-2022
	IA-II 25-7-2022					
28	**Transitive Closure:** Warshall's Algorithm	L+D	BB	1	36	28-7-2022
29	**All Pairs Shortest Paths:** Floyd's Algorithm	L+D	BB	1	37	29-7-2022
30	Optimal Binary Search Trees	L+D	BB	1	38	30-7-2022
31	Knapsack problem	L+D	BB	1	39	1-8-2022
32	Knapsack problem	L+D	LCD+BB	1	40	2-8-2022
33	Bellman-Ford Algorithm	L+D+I	LCD+BB	1	41	4-8-2022
34	Traveling Sales Person problem	L+D+I,T	LCD+BB	1	42	8-8-2022
35	Traveling Sales Person problem	L+ D	LCD+BB	1	43	11-8-2022
	MODULE 5					
36	**Backtracking**: General method Programme and **Bound**: Assignment Problem,	L+D	LCD	1	44	12-8-2022
37	N-Queens problem	L+D	LCD+BB	1	45	13-8-2022
38	N-Queens problem	L+I,FCR	LCD+BB	1	46	16-8-2022
39	Sum of subsets problem	L+ D	BB	1	47	18-8-2022
40	Graph coloring	L+D	LCD+BB	1	48	19-8-2022
41	Hamiltonian cycles	L+D	LCD+BB	1	49	22-8-2022
42	Traveling Sales Person problem	L+ D	LCD+BB	1	50	23-8-2022
43	0/1 Knapsack problem LC Programme and Bound solution	L+D	LCD+BB	1	51	24-8-2022
44	FIFO Programme and Bound solution, non-deterministic algorithms, P, NP, NP-Complete, and NP-Hard classes	L+D	LCD+BB	1	52	24-8-2022

Textbooks:

1. Introduction to the Design and Analysis of Algorithms, AnanyLevitin:, 2rd Edition, 2009. Pearson.
2. Computer Algorithms/C++, Ellis Horowitz, SatrajSahni and Rajasekaran, 2nd Edition, 2014, Universities Press

Reference Books:

1. Introduction to Algorithms, Thomas H. Cormen, Charles E. Leiserson, Ronal L. Rivest, Clifford Stein, 3rd Edition, PHI.
2. Design and Analysis of Algorithms, S. Sridhar, Oxford (Higher Education).

Web Material:

https://nptel.ac.in/courses/106/106/106106131/
https://onlinecourses.nptel.ac.in/noc22_cs27/

Details of Teaching Aids:

Black Board and LCD

27/5/2022
Signature of Course in-charge

27/5/2022
Signature of Module Coordinator

27/5/22
Signature of HOD-CSE

Head of the Department
Dept. of Computer Science &
K.S. Institute of Technology
Bengaluru

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : Dr. **VIJAYALAXMI MEKALI**
SUBJECT CODE/NAME : **18CS42/ DESIGN AND ANALYSIS OF ALGORITHMS**
SEMESTER/YEAR/SEC : **IV /II/B**
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					
1	What is an Algorithm?, Algorithm Specification	L+D	LCD	1	1	23-5-2022
2	**Important Problem Types:** Sorting, Searching, String processing, Graph Problems, Combinatorial Problems.	L+ D	LCD	1	2	25-5-2022
3	**Fundamental Data Structures:** Stacks, Queues, Graphs, Trees, Sets and Dictionaries.	L+ D	LCD	1	3	25-5-2022
4	Analysis Framework Performance Analysis: Space complexity, Time complexity	L+D	LCD+BB	1	4	26-5-2022
5	Analysis Framework	L+D	LCD+BB	1	5	28-5-2022
6	**Asymptotic Notations:** Big-Oh notation (O), with Examples	L+D	BB	2	7	28-5-2022 30-5-2022
7	Omega notation (Ω), Theta notation (Q), and Little-oh notation (o)	L+D	BB	2	9	1-6-2022 6-6-2022
8	Mathematical analysis of Non-Recursive Algorithms	L+I	BB	2	11	8-6-2022 8-6-2022
9	Mathematical analysis of recursive Algorithms	L+D	BB	2	13	9-6-2022 11-6-2022

	MODULE 2					
10	**Divide and Conquer:** General method	L+ D	LCD	1	14	13-6-2022
11	Binary search	L+D	LCD+BB	1	15	15-6-2022
12	Recurrence equation for divide and conquer	LW	BB	2	17	15-6-2022 16-6-2022
	IA-I 20-6-2022					
13	Merge sort	L+D	LCD+BB	2	19	27-6-2022 29-6-2022
14	Quick sort	L+D	LCD+BB	2	21	29-6-2022 30-6-2022
15	Strassen's matrix multiplication	L+ D	LCD+BB	1	22	4-7-2022
16	Strassen's matrix multiplication Advantages and Disadvantages of divide and Conquer.	L+ D	LCD	1	23	6-7-2022
17	**Decrease and Conquer Approach:** Topological Sort.	L+ D	BB	1	24	6-7-2022
	MODULE 3					
18	**Greedy Method:** General method	L+D	LCD+BB	1	25	7-7-2022
19	Coin Change Problem	L+D	BB	1	26	11-7-2022
20	Knapsack Problem	L+D	BB	2	28	13-7-2022
21	Job sequencing with deadlines	L+D+I	BB	1	29	13-7-2022
22	Minimum cost spanning trees: Prim's Algorithm	L+D+I	LCD+BB	1	30	14-7-2022
23	**Minimum cost spanning trees:**Kruskal's Algorithm	CL(S) L+D+I	LCD+BB	1	31	18-7-2022
24	**Single source shortest paths:**Dijkstra's Algorithm	L+D	LCD+BB	1	32	20-7-2022
25	Optimal Tree problem: Huffman Trees and Codes **Transform and Conquer Approach:** Heaps Heap Sort	L+D	BB	1	33	20-7-2022

	MODULE 4					
26	**Dynamic Programming:** General method with Examples	L+I	LCD	1	34	21-7-2022
27	Multistage Graphs	L+I	LCD+BB	1	35	22-7-2022
	IA-II 25-7-2022					
28	**Transitive Closure:** Warshall's Algorithm	L+D	BB	1	36	28-7-2022
29	**All Pairs Shortest Paths:** Floyd's Algorithm	L+D	BB	1	37	1-8-2022
30	Optimal Binary Search Trees	L+D	BB	1	38	3-8-2022
31	Knapsack problem	L+D	BB	1	39	3-8-2022
32	Knapsack problem	L+D	LCD+BB	1	40	4-8-2022
33	Bellman-Ford Algorithm	L+D+I	LCD+BB	1	41	8-8-2022
34	Traveling Sales Person problem	L+D+I,T	LCD+BB	1	42	8-8-2022
35	Traveling Sales Person problem	L+ D	LCD+BB	1	43	10-8-2022
	MODULE 5					
36	**Backtracking**: General method Programme and **Bound**: Assignment Problem,	L+D	LCD	1	44	10-8-2022
37	N-Queens problem	L+D	LCD+BB	1	45	11-8-2022
38	N-Queens problem	L+I,FCR	LCD+BB	1	46	17-8-2022
39	Sum of subsets problem	L+ D	BB	1	47	17-8-2022
40	Graph coloring	L+D	LCD+BB	1	48	18-8-2022
41	Hamiltonian cycles	L+D	LCD+BB	1	49	22-8-2022
42	Traveling Sales Person problem	L+ D	LCD+BB	1	50	23-8-2022
43	0/1 Knapsack problem LC Programme and Bound solution	L+D	LCD+BB	1	51	24-8-2022
44	FIFO Programme and Bound solution, non-deterministic algorithms, P, NP, NP-Complete, and NP-Hard classes	L+D	LCD+BB	1	52	24-8-2022

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Web Material:

https://nptel.ac.in/courses/106/106/106106131/
https://onlinecourses.nptel.ac.in/noc22_cs27/

Details of Teaching Aids:

Black Board and LCD

27/5/2022
Signature of Course in-charge

27/5/2022
Signature of Module Coordinator

27/5/22
Signature of HOD-CSE

Head of the Department
Dept. of Computer Science & Engg.
K.S. Institute of Technology
Bengaluru -560 109

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING

NAME OF THE STAFF : Mr. Manoj Kumar S

SUBJECT CODE/NAME : 18CS44/ MICROCONTROLLER & EMBEDDED SYSTEMS

SEMESTER/YEAR/SEC : IV A

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					
1	Microprocessors versus Microcontrollers	L+I	BB+LCD	1	1	25/05/2022
2	ARM Embedded Systems	L+I	BB+LCD	1	2	26/05/2022
3	The RISC design philosophy	L+I	BB+LCD	1	3	26/05/2022
4	The ARM Design Philosophy	L+I	BB+LCD	1	4	27/05/2022
5	Embedded System Hardware	L+I	BB+LCD	1	5	28/05/2022
6	Embedded System Software, Pipeline	L+I	BB+LCD	1	6	01/06/2022
7	ARM Processor Fundamentals: Registers, Current Program Status Register	L+I	BB+LCD	1	7	02/06/2022
8	Exceptions	L+I	BB+LCD	1	8	02/06/2022
9	Interrupts, and the Vector Table	L+I	BB+LCD	1	9	03/06/2022
10	Core Extensions	L+I	BB+LCD	1	10	08/06/2022
	MODULE 2					
11	**Introduction to the ARM Instruction Set :** Data Processing Instructions	L+I	LCD	1	11	09/06/2022
12	Programme Instructions, Software Interrupt Instructions	L+I	LCD	1	12	09/06/2022
13	Program Status Register Instructions ,Coprocessor Instructions	L+I	LCD	1	13	10/06/2022

	FIRST INTERNALS					
14	Coprocessor Instructions, Loading Constants	L+I	LCD	1	14	11/06/2022
15	**ARM programming using Assembly language:** Writing Assembly code	L+I	LCD	1	15	11/06/2022
16	Profiling and cycle counting, Instruction scheduling	L+I	LCD	1	16	06/07/2022
17	Register Allocation	L+I	LCD	1	17	07/07/2022
18	Conditional Execution, Looping Constructs	L+I	LCD	1	18	07/07/2022
	MODULE 3					
19	**Embedded System Components:** Embedded Vs General computing system	L+I	LCD	1	19	08/07/2022
20	History of embedded systems	L+I	LCD	1	20	13/07/2022
21	Classification of Embedded systems	L+I	LCD	1	21	14/07/2022
22	Major applications areas of embedded systems	L+I	LCD	1	22	14/07/2022
23	Purpose of embedded systems	L+I	LCD	1	23	15/07/2022
24	Core of an Embedded System including all types of processor/controller	L+I	LCD	1	24	16/07/2022
25	Core of an Embedded System including all types of processor/controller	L+I	LCD	1	25	20/07/2022
26	Embedded firmware, Other system components	L+I	LCD	1	26	21/07/2022
	MODULE 4					
27	**Embedded System Design Concepts:** Characteristics and Quality Attributes of Embedded Systems	L+I	LCD	1	27	21/07/2022
28	Operational quality attributes, non-operational quality attributes	L+I	LCD	1	28	22/07/2022
29	Embedded Systems-Application specific	L+I	LCD	1	29	28/07/2022
	SECOND INTERNALS					
30	Embedded Systems- Domain specific	L+I	LCD	1	30	28/07/2022
31	Hardware Software Co-Design and Program Modelling	L+I	LCD	1	31	29/07/2022
32	Pedagogy: Seminar	L+I	LCD	1	32	03/08/2022
33	Embedded firmware design and development	L+I	LCD	1	33	04/08/2022
	MODULE 5					
34	**RTOS and IDE for Embedded System Design:**	L+I	LCD	1	34	04/08/2022
35	Operating System basics, Types of operating systems	L+I	LCD	1	35	10/08/2022
36	Task, process and threads	L+I	LCD	1	36	11/08/2022
37	Thread preemption, Multiprocessing and Multitasking	L+I	LCD	1	37	11/08/2022

39	Task synchronization issues	L+I	LCD	1	39	17/08/2022
40	Concept of Binary and counting maphores	L+I	LCD	1	40	18/08/2022
41	Technical Quiz	L+I	LCD	1	41	18/08/2022
42	Concept of Binary and counting semaphores, How to choose an RTOS	L+I	LCD	1	42	19/08/2022
43	Integration and testing of Embedded hardware and firmware, Embedded system Development Environment	L+I	LCD	1	43	24/08/2022
	THIRD INTERNALS					

Course in charge **Module Coordinator** **HOD** **Principal**

K S INSTITUTE OF TECHNOLOGY, BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : Mr. RAGHAVENDRACHAR.S
SUBJECT CODE/NAME : 18CS45/ OBJECT ORIENTED CONCEPTS
SEMESTER/SEC/YEAR : IV / A / II
ACADEMIC YEAR : 2021-2022 [EVEN SEMESTER]

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 1: Introduction to Object Oriented Concepts:						
1	A Review of structures	L+D	BB + LCD	1	1	23-05-2022
2	Procedure–Oriented Programming system	L+D	BB + LCD	1	2	24-05-2022
3	Object Oriented Programming System	L+D	BB + LCD	1	3	26-05-2022
4	Comparison of Object Oriented Language with C	L+D	BB + LCD	1	4	27-05-2022
5	Console I/O, variables and reference variables	L+D	BB + LCD	1	5	30-05-2022
6	Function Prototyping	L+D	BB + LCD	1	6	31-05-2022
7	Function Overloading	L+D	BB + LCD	1	7	02-06-2022
8	**Class and Objects :** Introduction	L+D	BB + LCD	1	8	03-06-2022
9	member functions and data	L+D	BB + LCD	1	9	06-06-2022
10	objects and functions	L+D	BB + LCD	1	10	07-06-2022

11	Programming Examples	L+D	BB + LCD	1	11	09-06-2022
12	Programming Examples	L+D	BB + LCD	1	12	10-06-2022
13	Programming Examples	L+D	BB + LCD	1	13	11-06-2022
14	Programming Examples	L+D	BB + LCD	1	14	13-06-2022
15	Objects and arrays	L+D	BB + LCD	1	15	14-06-2022
16	Namespaces	L+D	BB + LCD	1	16	16-06-2022
17	Nested classes, Constructors, Destructors	L+D	BB + LCD	1	17	17-06-2022
						22-06-2022
18	**Introduction to Java**	L+D	BB + LCD	1	18	23-06-2022
19	Java"s magic: the Byte code; Java Development Kit (JDK)	L+D	BB + LCD	1	19	24-06-2022
20	the Java Buzzwords	L+D	BB + LCD	1	20	04-07-2022
21	Object-oriented programming	L+D	BB + LCD	1	21	05-07-2022
22	Simple Java programs. Data types, variables	L+D	BB + LCD	1	22	07-07-2022
23	arrays, Operators	L+D	BB + LCD	1	23	08-07-2022
24	Control Statements	L+D	BB + LCD	1	24	09-07-2022
25	Programming Examples	L+D	BB + LCD	1	25	11-07-2022
26	Programming Examples	L+D	BB + LCD	1	26	12-07-2022
27	Programming Examples	L+D	BB + LCD	1	27	14-07-2022
MODULE 3: Classes, Inheritance, Exception Handling						
28	Classes: Classes fundamentals	L+D	BB + LCD	1	28	15-07-2022

29	Declaring objects	L+D	BB + LCD	1	29	16-07-2022
30	Constructors	L+D	BB + LCD	1	30	18-07-2022
31	this keyword, garbage collection	L+D	BB + LCD	1	31	19-07-2022
32	**Inheritance:** inheritance basics	L+D	BB + LCD	1	32	21-07-2022
35	using super	L+D	BB + LCD	1	33	22-07-2022
	Second Test					27-07-2022
36	creating multi level hierarchy	L+D	BB + LCD	1	34	28-07-2022
37	method overriding	L+D	BB + LCD	1	35	29-07-2022
38	**Exception handling:** Exception handling in Java	L+D	BB + LCD	1	36	30-07-2022
39	Programming Examples	L+D	BB + LCD	1	37	01-08-2022
MODULE 4: Packages and Interfaces						
40	Packages, Access Protection, Importing Packages	L+D	BB + LCD	1	38	02-08-2022
41	Packages, Access Protection, Importing Packages	L+D	BB + LCD	1	39	04-08-2022
42	Interfaces	L+D	BB + LCD	1	40	08-08-2022
43	**Multi Threaded Programming:** What are threads?	L+D	BB + LCD	1	41	11-08-2022
44	How to make the classes threadable	L+D	BB + LCD	1	42	12-08-2022
45	Extending threads , Implementing runnable	L+D	BB + LCD	1	43	13-08-2022

46	Synchronization	L+D	BB + LCD	1	44	16-08-2022
47	Changing state of the thread	L+D	BB + LCD	1	45	18-08-2022
48	Bounded buffer problems	L+D	BB + LCD	1	46	19-08-2022
49	Producer consumer problems.	L+D	BB + LCD	1	47	22-08-2022
MODULE 5: Event Handling						
50	Two event handling mechanisms	L+D	BB + LCD	1	48	23-08-2022
	Third Test					27-08-2022
51	The delegation event model	L+D	BB + LCD	1	49	29-08-2022
52	Event classes	L+D	BB + LCD	1	50	29-08-2022
53	Sources of events; Event listener interfaces	L+D	BB + LCD	1	51	29-08-2022
54	Using the delegation event model	L+D	BB + LCD	1	52	30-08-2022
55	Adapter classes; Inner classes	L+D	BB + LCD	1	53	30-08-2022
56	**Swings:** Swings: The origins of Swing; Two key Swing features	L+D	BB + LCD	1	54	01-09-2022
57	Components and Containers	L+D	BB + LCD	1	55	01-09-2022
58	The Swing Packages; A simple Swing Application	L+D	BB + LCD	1	56	02-08-2022
59	Create a Swing Applet; Jlabel and ImageIcon	L+D	BB + LCD	1	57	02-08-2022
60	JTextField;The Swing Buttons	L+D	BB + LCD	1	58	03-08-2022

	JTabbedpane; JScrollPane; JList; JComboBox; JTable					
61	Programming Examples	L+D	BB + LCD	1	59	03-08-2022

Text Books

1. Sourav Sahay, Object Oriented Programming with C++ , 2nd Ed, Oxford University Press,2006
2. Herbert Schildt, Java The Complete Reference, 7th Edition, Tata McGraw Hill, 2007.

Reference Books (specify minimum two foreign authors text books)

1. Mahesh Bhave and Sunil Patekar, "Programming with Java", First Edition, Pearson Education,2008, ISBN:9788131720806
2. Herbert Schildt, The Complete Reference C++, 4th Edition, Tata McGraw Hill, 2003.
3. Stanley B.Lippmann, Josee Lajore, C++ Primer, 4th Edition, Pearson Education, 2005.
4. Rajkumar Buyya,S Thamarasi selvi, xingchen chu, Object oriented Programming with java, Tata McGraw Hill education private limited.
5. Richard A Johnson, Introduction to Java Programming and OOAD, CENGAGE Learning.
6. E Balagurusamy, Programming with Java A primer, Tata McGraw Hill companies.

Useful Websites

1. https://www.topcoder.com/
2. https://www.coderbyte.com/
3. https://www.codechef.com/#

K S INSTITUTE OF TECHNOLOGY, BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : Mr. RAGHAVENDRACHAR.S
SUBJECT CODE/NAME : 18CS45/ OBJECT ORIENTED CONCEPTS
SEMESTER/SEC/YEAR : IV / B / II
ACADEMIC YEAR : 2021-2022 [EVEN SEMESTER]

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 1: Introduction to Object Oriented Concepts:						
1	A Review of structures	L+D	BB + LCD	1	1	23-05-2022
2	Procedure–Oriented Programming system	L+D	BB + LCD	1	2	24-05-2022
3	Object Oriented Programming System	L+D	BB + LCD	1	3	26-05-2022
4	Comparison of Object Oriented Language with C	L+D	BB + LCD	1	4	27-05-2022
5	Console I/O, variables and reference variables	L+D	BB + LCD	1	5	30-05-2022
6	Function Prototyping	L+D	BB + LCD	1	6	31-05-2022
7	Function Overloading	L+D	BB + LCD	1	7	02-06-2022
8	**Class and Objects :** Introduction	L+D	BB + LCD	1	8	03-06-2022
9	member functions and data	L+D	BB + LCD	1	9	06-06-2022
10	objects and functions	L+D	BB + LCD	1	10	07-06-2022

11	Programming Examples	L+D	BB + LCD	1	11	09-06-2022
12	Programming Examples	L+D	BB + LCD	1	12	10-06-2022
13	Programming Examples	L+D	BB + LCD	1	13	11-06-2022
14	Programming Examples	L+D	BB + LCD	1	14	13-06-2022
15	Objects and arrays	L+D	BB + LCD	1	15	14-06-2022
16	Namespaces	L+D	BB + LCD	1	16	16-06-2022
17	Nested classes, Constructors, Destructors	L+D	BB + LCD	1	17	17-06-2022
						22-06-2022
18	**Introduction to Java**	L+D	BB + LCD	1	18	23-06-2022
19	Java"s magic: the Byte code; Java Development Kit (JDK)	L+D	BB + LCD	1	19	24-06-2022
20	the Java Buzzwords	L+D	BB + LCD	1	20	04-07-2022
21	Object-oriented programming	L+D	BB + LCD	1	21	05-07-2022
22	Simple Java programs. Data types, variables	L+D	BB + LCD	1	22	07-07-2022
23	arrays, Operators	L+D	BB + LCD	1	23	08-07-2022
24	Control Statements	L+D	BB + LCD	1	24	09-07-2022
25	Programming Examples	L+D	BB + LCD	1	25	11-07-2022
26	Programming Examples	L+D	BB + LCD	1	26	12-07-2022
27	Programming Examples	L+D	BB + LCD	1	27	14-07-2022
MODULE 3: Classes, Inheritance, Exception Handling						
28	Classes: Classes fundamentals	L+D	BB + LCD	1	28	15-07-2022

29	Declaring objects	L+D	BB + LCD	1	29	16-07-2022
30	Constructors	L+D	BB + LCD	1	30	18-07-2022
31	this keyword, garbage collection	L+D	BB + LCD	1	31	19-07-2022
32	**Inheritance:** inheritance basics	L+D	BB + LCD	1	32	21-07-2022
35	using super	L+D	BB + LCD	1	33	22-07-2022
	Second Test					27-07-2022
36	creating multi level hierarchy	L+D	BB + LCD	1	34	28-07-2022
37	method overriding	L+D	BB + LCD	1	35	29-07-2022
38	**Exception handling:** Exception handling in Java	L+D	BB + LCD	1	36	30-07-2022
39	Programming Examples	L+D	BB + LCD	1	37	01-08-2022
MODULE 4: Packages and Interfaces						
40	Packages, Access Protection, Importing Packages	L+D	BB + LCD	1	38	02-08-2022
41	Packages, Access Protection, Importing Packages	L+D	BB + LCD	1	39	04-08-2022
42	Interfaces	L+D	BB + LCD	1	40	08-08-2022
43	**Multi Threaded Programming:** What are threads?	L+D	BB + LCD	1	41	11-08-2022
44	How to make the classes threadable	L+D	BB + LCD	1	42	12-08-2022
45	Extending threads , Implementing runnable	L+D	BB + LCD	1	43	13-08-2022

46	Synchronization	L+D	BB + LCD	1	44	16-08-2022
47	Changing state of the thread	L+D	BB + LCD	1	45	18-08-2022
48	Bounded buffer problems	L+D	BB + LCD	1	46	19-08-2022
49	Producer consumer problems.	L+D	BB + LCD	1	47	22-08-2022
MODULE 5: Event Handling						
50	Two event handling mechanisms	L+D	BB + LCD	1	48	23-08-2022
Third Test						27-08-2022
51	The delegation event model	L+D	BB + LCD	1	49	29-08-2022
52	Event classes	L+D	BB + LCD	1	50	29-08-2022
53	Sources of events; Event listener interfaces	L+D	BB + LCD	1	51	29-08-2022
54	Using the delegation event model	L+D	BB + LCD	1	52	30-08-2022
55	Adapter classes; Inner classes	L+D	BB + LCD	1	53	30-08-2022
56	**Swings:** Swings: The origins of Swing; Two key Swing features	L+D	BB + LCD	1	54	01-09-2022
57	Components and Containers	L+D	BB + LCD	1	55	01-09-2022
58	The Swing Packages; A simple Swing Application	L+D	BB + LCD	1	56	02-08-2022
59	Create a Swing Applet; Jlabel and ImageIcon	L+D	BB + LCD	1	57	02-08-2022
60	JTextField;The Swing Buttons	L+D	BB + LCD	1	58	03-08-2022

	JTabbedpane; JScrollPane; JList; JComboBox; JTable					
61	Programming Examples	L+D	BB + LCD	1	59	03-08-2022

Text Books

1. Sourav Sahay, Object Oriented Programming with C++ , 2nd Ed, Oxford University Press,2006
2. Herbert Schildt, Java The Complete Reference, 7th Edition, Tata McGraw Hill, 2007.

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1. Mahesh Bhave and Sunil Patekar, "Programming with Java", First Edition, Pearson Education,2008, ISBN:9788131720806
2. Herbert Schildt, The Complete Reference C++, 4th Edition, Tata McGraw Hill, 2003.
3. Stanley B.Lippmann, Josee Lajore, C++ Primer, 4th Edition, Pearson Education, 2005.
4. Rajkumar Buyya,S Thamarasi selvi, xingchen chu, Object oriented Programming with java, Tata McGraw Hill education private limited.
5. Richard A Johnson, Introduction to Java Programming and OOAD, CENGAGE Learning.
6. E Balagurusamy, Programming with Java A primer, Tata McGraw Hill companies.

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3. https://www.codechef.com/#

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : Mr. Manoj Kumar S, Mr. Sanjoy Das & Mrs. Supreetha Ganesh

COURSE CODE/TITLE : 18CSL48/ MICROCONTROLLER & EMBEDDED SYSTEMS LABORATORY

SEMESTER/SEC/YEAR : IV /A/ II

ACADEMIC YEAR : 2021-2022

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Write a program to multiply two 16-bit binary numbers Write a program to find the sum of first 10 integer numbers	LCD	3	A1	31-05-2022
		LCD	3	A2	27-05-2022
		LCD	3	A3	28-05-2022
2	Write a program to find factorial of a number. Write a program to add an array of 16 bit numbers and store the 32 bit result in internal RAM	LCD	3	A1	07-06-2022
		LCD	3	A2	03-06-2022
		LCD	3	A3	01-06-2022
3	Write a program to find the square of a number (1 to 10) using look-up table. Write a program to find the largest/smallest number in an array of 32 numbers.	LCD	3	A1	14-06-2022
		LCD	3	A2	10-06-2022
		LCD	3	A3	08-06-2022

4	Write a program to arrange a series of 32-bit numbers in ascending/descending order. Write a program to count the number of ones and zeros in two consecutive memory locations	LCD	3	A1	05-07-2022
		LCD	3	A2	24-06-2022
		LCD	3	A3	15-06-2022
5	Display "Hello World" message using Internal UART	LCD	3	A1	09-07-2022
		LCD	3	A2	08-07-2022
		LCD	3	A3	25-06-2022
6	Interface and Control a DC Motor.	LCD	3	A1	12-07-2022
		LCD	3	A2	15-07-2022
		LCD	3	A3	06-07-2022
7	Interface a Stepper motor and rotate it in clockwise and anti-clockwise direction.	LCD	3	A1	19-07-2022
		LCD	3	A2	16-07-2022
		LCD	3	A3	13-07-2022

8	Determine Digital output for a given Analog input using Internal ADC of ARM controller. Interface a DAC and generate Triangular and Square waveforms	LCD	3	A1	02-08-2022
		LCD	3	A2	22-07-2022
		LCD	3	A3	20-07-2022

9	Interface a 4x4 keyboard and display the key code on an LCD.	LCD	3	A1	13-08-2022
		LCD	3	A2	29-07-2022
		LCD	3	A3	03-08-2022

10	Demonstrate the use of an external interrupt to toggle an LED On/Off.	LCD	3	A1	16-08-2022
		LCD	3	A2	12-08-2022
		LCD	3	A3	10-08-2022

11	Display the Hex digits 0 to F on a 7-segment LED interface, with an appropriate delay in between	LCD	3	A1	23-08-2022
		LCD	3	A2	19-08-2022
		LCD	3	A3	17-08-2022

12	Lab Internals	LCD	3	A1	29-08-2022
		LCD	3	A2	30-08-2022
		LCD	3	A3	02-09-2022

Course in charge **Module Coordinator** **HOD** **Principal**

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

LESSON PLAN 2021-22 EVEN SEMESTER

COURSE INCHARGE : **Deepa .S.R**

COURSE CODE/TITLE : **18CS61/ System Software and Compilers**

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

BRANCH : **Computer Science & Engineering**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 1: System Software, Assemblers						
1	Introduction to System Software, Machine Architecture of SIC	L+D+I	BB, PPT	3	3	4/4/22,5/4/22, 6/4/22
2	Machine Architecture of SIC/XE	L+D+I	BB, PPT	3	6	8/4/22, 11/4/22, 12/4/22
3	**Assemblers:** Basic assembler functions	L+D+I	BB, PPT	1	7	13/4/22
4	Machine dependent assembler features,	L+D+PS	BB, PPT	1	8	13/4/22
5	Machine independent assembler features	L+D+I	BB, PPT	1	9	18/4/22
6	Assembler design options.	L+D+I	BB, PPT	1	10	19/4/22

7	Basic Loader Functions	L+D+I	BB, PPT	1	11	20/4/22
8	Pedagogy activity	L+D+I	BB, PPT	1	12	20/4/22
	MODULE 2:Introduction, lexical analysis					
9	**Introduction:** Language Processors, The structure of a compiler	L+D+I	BB, PPT	1	13	25/4/22
10	The evaluation of programming languages, The science of building compiler,	L+D,PS	BB, PPT	2	15	27/4/22, 27/4/22
11	Applications of compiler technology, Programming language basics	L+D+I	BB, PPT	2	17	29/4/22 2/5/22
12	1st Internal Assessment		BB, PPT	1	18	4/5/22
13	**Lexical Analysis:** The role of lexical analyzer, Input buffering	L+D+I	BB, PPT	2	20	9/5/22, 10/5/22
14	Specifications of token	L+D+I	BB, PPT	2	22	11/5/22 11/5/22
15	recognition of tokens	L+D+I	BB, PPT	2	24	13/5/22 16/5/22
16	Pedagogy activity	L+D+I	BB, PPT	1	25	17/5/22
	MODULE 3 : Syntax Analysis					
17	**Syntax Analysis:** Introduction, Role Of Parsers, Context Free Grammars	L+D+I	BB, PPT	1	26	18/5/22
18	Writing a grammar	L+D+I	BB, PPT	1	27	18/5/22
19	Top Down Parsers	L+D+I	BB, PPT	4	31	20/5/22 23/5/22, 24/5/22, 25/5/22,
20	Bottom-Up Parsers	L+D+I	BB, PPT	4	35	25/5/22 27/5/22 28/5/22 28/5/22,
	MODULE 4:Lex and Yacc					
21	The Simplest Lex Program, Grammars, Parser-Lexer Communication	L+D+I	BB, PPT	1	36	30/5/22

22	A YACC Parser, The Rules Section, Running LEX and YACC	L+D+I	BB, PPT	3	39	31/5/22 6/6/22 7/6/22
23	2nd Internal Assessment			1	40	1/6/22
24	LEX and Hand- Written Lexers	L+D+I	BB, PPT	1	41	8/6/22
25	Using LEX - Regular Expression, Examples of Regular Expressions, A Word Counting Program,	L+D+I	BB, PPT	2	43	8/6/22 10/6/22
26	Using YACC – Grammars, Recursive Rules, Shift/Reduce Parsing	L+D+I	BB, PPT	1	44	13/6/22
27	What YACC Cannot Parse, A YACC Parser - The Definition Section, The Rules Section	L+D+I	BB, PPT	1	45	14/6/22
28	The LEXER, Compiling and Running a Simple Parse	L+D+I	BB, PPT	2	47	15/6/22 15/6/22
29	Arithmetic Expressions and Ambiguity.	L+D+I	BB, PPT	1	48	17/6/22
MODULE 5						
30	Syntax Directed Translation	L+D+I	BB, PPT	4	52	20/6/22 21/6/22 22/6/22, 22/6/22,
31	Intermediate code generation	L+D+I	BB, PPT	4	56	27/6/22 28/6/22, 29/6/22 29/6/22
32	Code generation	L+D+I	BB, PPT	2	58	1/7/22
33	3rd Internal Assessment			1	60	4/7/22
34	Revision	L+D+I	BB, PPT	1	61	8/7/22
35	Revision	L+D+I	BB, PPT	1	62	15/7/22
36	Revision	L+D+I	BB, PPT	1	63	16/7/22

Text Books:

1. System Software by Leland. L. Beck, D Manjula, 3rd edition, 2012

2. Alfred V Aho, Monica S. Lam, Ravi Sethi, Jeffrey D. Ullman , Compilers-Principles, Techniques and Tools, Pearson, 2nd edition, 2007

3. Doug Brown, John Levine, Tony Mason, lex & yacc, O'Reilly Media, October 2012.

Reference Books:

1. Systems programming – Srimanta Pal , Oxford university press, 2016

2. System programming and Compiler Design, K C Louden, Cengage Learning

3. System software and operating system by D. M. Dhamdhere TMG

4. Compiler Design, K Muneeswaran, Oxford University Press 2013.

Details for the teaching Aids

Black Board, PPTs

deepa
Course Incharge

deepa
Module coordinator

HOD-CSE

PRINCIPAL

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

LESSON PLAN 2021-22 EVEN SEMESTER

COURSE INCHARGE : **Deepa .S.R**

COURSE CODE/TITLE : **18CS61/ System Software and Compilers**

YEAR/ SEMESTER/SECTION : **III/VI/B**

BRANCH : **Computer Science & Engineering**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
MODULE 1: System Software, Assemblers						
1	Introduction to System Software, Machine Architecture of SIC	L+D+I	BB, PPT	3	3	4/4/22, 5/4/22, 6/4/22
2	Machine Architecture of SIC/XE	L+D+I	BB, PPT	3	6	7/4/22, 8/4/22, 11/4/22
3	**Assemblers:** Basic assembler functions	L+D+I	BB, PPT	1	7	12/4/22
4	Machine dependent assembler features,	L+D+PS	BB, PPT	1	8	13/4/22
5	Machine independent assembler features	L+D+I	BB, PPT	1	9	18/4/22
6	Assembler design options.	L+D+I	BB, PPT	1	10	19/4/22

7	Basic Loader Functions	L+D+I	BB, PPT	1	11	20/4/22
8	Pedagogy activity	L+D+I	BB, PPT	1	12	21/4/22
	MODULE 2:Introduction, lexical analysis					
9	**Introduction:** Language Processors, The structure of a compiler	L+D+I	BB, PPT	1	13	22/4/22
10	The evaluation of programming languages, The science of building compiler,	L+D,PS	BB, PPT	2	15	25/4/22, 26/4/22
11	Applications of compiler technology, Programming language basics	L+D+I	BB, PPT	2	17	27/4/22, 28/4/22
12	**Lexical Analysis:** The role of lexical analyzer, Input buffering	L+D+I	BB, PPT	2	19	29/4/22, 2/5/22
13	1st Internal Assessment		BB, PPT	1	20	4/5/22
14	Specifications of token	L+D+I	BB, PPT	2	22	9/5/22, 10/5/22
15	recognition of tokens	L+D+I	BB, PPT	2	24	11/5/22
16	Pedagogy activity	L+D+I	BB, PPT	1	25	12/5/22
	MODULE 3 : Syntax Analysis					
17	**Syntax Analysis:** Introduction, Role Of Parsers, Context Free Grammars	L+D+I	BB, PPT	1	26	13/5/22
18	Writing a grammar	L+D+I	BB, PPT	1	27	14/5/22
19	Top Down Parsers	L+D+I	BB, PPT	4	31	16/5/22, 17/5/22, 18/5/22, 19/5/22
20	Bottom-Up Parsers	L+D+I	BB, PPT	4	35	20/5/22, 23/5/22, 24/5/22, 25/5/22
	MODULE 4:Lex and Yacc					
21	The Simplest Lex Program, Grammars, Parser-Lexer Communication	L+D+I	BB, PPT	1	36	26/5/22

22	A YACC Parser, The Rules Section, Running LEX and YACC	L+D+I	BB, PPT	3	39	27/5/22, 28/5/22, 30/5/22
23	LEX and Hand- Written Lexers	L+D+I	BB, PPT	1	40	31/5/22
24	2nd Internal Assessment			1	41	1/6/22
25	Using LEX - Regular Expression, Examples of Regular Expressions, A Word Counting Program,	L+D+I	BB, PPT	2	43	6/6/22, 7/6/22
26	Using YACC – Grammars, Recursive Rules, Shift/Reduce Parsing	L+D+I	BB, PPT	1	44	8/6/22
27	What YACC Cannot Parse, A YACC Parser - The Definition Section, The Rules Section	L+D+I	BB, PPT	1	45	9/6/22
28	The LEXER, Compiling and Running a Simple Parse	L+D+I	BB, PPT	2	47	10/6/22,13/6/22
29	Arithmetic Expressions and Ambiguity.	L+D+I	BB, PPT	1	48	14/6/22
MODULE 5						
30	Syntax Directed Translation	L+D+I	BB, PPT	4	52	15/6/22, 16/6/22, 17/6/22, 20/6/22
31	Intermediate code generation	L+D+I	BB, PPT	4	56	21/6/22, 22/6/22, 27/6/22, 28/6/22
32	Code generation	L+D+I	BB, PPT	2	58	29/6/22, 30/6/22
33	Revision	L+D+I	BB, PPT	1	59	1/7/22
34	3rd Internal Assessment			1	60	4/7/22
35	Revision	L+D+I	BB, PPT	1	61	7/7/22
36	Revision	L+D+I	BB, PPT	1	62	8/7/22
37	Revision	L+D+I	BB, PPT	1	63	15/7/22
38	Revision	L+D+I	BB, PPT	1	64	16/7/22

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Reference Books:

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3. System software and operating system by D. M. Dhamdhere TMG
4. Compiler Design, K Muneeswaran, Oxford University Press 2013.

Details for the teaching Aids

Black Board, PPTs

deepa
Course Incharge

deepa
Module coordinator

HOD-CSE

PRINCIPAL

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
LESSON PLAN 2021-22 EVEN SEMESTER

COURSE INCHARGE : **Dr. REKHA B VENKATAPUR**

COURSE CODE/TITLE : **18CS645/ SYSTEM MODELLING AND SIMULATION**

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

BRANCH : **2021-2022**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Dat
	MODULE 1					
1.	When simulation is appropriate, When it is not appropriate?	L+D	LCD	1	1	04-04-2022
2.	Advantages, Disadvantages	L+D	LCD	1	2	05-04-2022
3.	Areas applications, Systems, System Environment	L+D	BB	1	3	06-04-2022
4.	Components of a system, Discrete and continuous Systems	L+D	BB	1	4	07-04-2022
5.	Model of a System, Types of Models Sys, Discrete Event System Simulation;	L+D	BB	1	5	08-04-2022
6.	Simulation Examples – Queuing Problem	L+D	BB	1	6	11-04-2022
7.	Simulation Examples – Queuing Problem - Introduction	L+D	BB	1	7	12-04-2022
8.	Simulation examples – Single server Queue	PS(TXT)	BB	1	8	13-04-2022
9.	Simulation Example – Able Baker Problem	PS	BB	1	9	18-04-2022
10.	General principles, Simulation Software - Concepts	L+D	Animation - LCD	1	10	19-04-2022

11.	Event scheduling /Time Advance alg(hm, Manual simulation	PS(TXT)	BB	1	11	20-04-2022
12.	Pedagogy activity – Group Discussion – Analysis of simulation results through Spread sheet exercise Queuing Problems etc.		LCD			21-04-2022
	MODULE 3					
13.	Random Number Generation – Properties of random numbers	L+D	BB	1	12	22-04-2022
14.	Generation of pseudo random numbers	PS(TXT)	BB	1	13	25-04-2022
15.	Techniques for generating random numbers	PS(TXT)	BB	1	14	26-04-2022
16.	Tests for random numbers	PS(TXT)	BB	1	15	27-04-2022
17.	Random variate generation –Inverse transform technique	PS(TXT)	BB	1	16	28-04-2022
18.	Inverse transform technique – continued	PS(TXT)	BB	1	17	29-04-2022
19.	Acceptance – Rejection Technique	PS(TXT)	BB	1	18	30-04-2022
	1ST INTERNAL					05-05-2022
20.	Continued	PS(TXT)	BB	1	19	07-05-2022
	MODULE 4					
21.	Input modeling –	L+D	LCD	1	20	09-05-2022
22.	Data collection	L+D	LCD	1	21	10-05-2022
23.	Identifying the distribution with data	L+D	LCD	1	22	11-05-2022
24.	Parameter estimation	PS(TXT)	BB	1	23	12-05-2022
25.	Goodness of fit test	PS(TXT)	BB	1	24	13-05-2022
26.	Fitting of non-stationary Poisson process	PS(TXT)	BB	1	25	14-05-2022

27.	Selecting input models without data	PS(TXT)	BB	1	26	16-05-2022
28.	Multivariate	PS(TXT)	BB	1	27	17-05-2022
29.	Time series input models	PS(TXT)	BB	1	28	18-05-2022
30.	Estimation of Absolute Performance	PS(TXT)	BB	1	29	19-05-2022
31.	Types of simulation w.r.t output analysis	PS(TXT)	BB	1	30	20-05-2022
32.	Stochastic nature of output data	L+D	LCD	1	31	23-05-2022
33.	Measures of performance	L+D	LCD	1	32	24-05-2022
34.	Estimation of Performance	L+D	LCD	1	33	25-05-2022
	MODULE 5					
35.	Measures of performance and their estimation	L+D	LCD	1	34	26-05-2022
36.	Output analysis for terminating simulations	L+D	LCD	1	35	27-05-2022
37.	Output analysis for terminating – continued	L+D	LCD	1	36	28-05-2022
38.	Verification, Calibration and Validation	L+D	LCD	1	37	30-05-2022
39.	Optimization Model Building	L+D	LCD	1	38	31-05-2022
	2ND INTERNAL					02-06-2022
40.	Verification of simulation models	PS(TXT)	BB	1	39	06-06-2022
41.	Calibration and validation of Models	PS(TXT)	BB	1	40	07-06-2022
42.	Verification & Validation	PS(TXT)	BB	1	41	08-06-2022
43.	Optimization Via Simulation	PS(TXT)	BB	1	42	09-06-2022

44.	**MODULE 2**					
45.	Statistical Models in Simulation : Review of terminology and concepts	L+D	LCD	1	43	10-06-202
46.	Useful statistical models – Discrete distributions	PS(TXT)	BB	1	44	11-06-202
47.	Continuous distributions – Poisson Process, empirical distributions	PS(TXT)	BB	1	45	13-06-202
48.	Queuing Models – Characteristics of queuing systems	L+D	LCD	1	46	14-06-202
49.	Queuing notation, Long run measures of performance	L+D	BB	1	47	15-06-202
50.	Long run measures of performance of queuing system	PS(TXT)	BB	1	48	16-06-202
51.	Steady state behavior of M/G/1queue	PS(TXT)	LCD	1	49	17-06-2022
52.	Network of Queues	L+D	LCD	1	50	20-06-2022
53.	Revision					21-06-2022 To 09-07-2022
	3RD INTERNAL					12-07-2022

Text Books:

T1.Jerry Banks, John S. Carson II, Barry L. Nelson, David M. Nicol: Discrete-Event System Simulation, 5th Edition, Pearson Education, 2010.

Reference Books:

R1. Lawrence M. Leemis, Stephen K. Park: Discrete – Event Simulation: A First Course, Pearson Education, 2006.
R2. Averill M. Law: Simulation Modeling and Analysis, 4th Edition, Tata McGraw-Hill, 2007.

WEB MATERIALS:

W1: http://nptel.ac.in/courses/ 112107220/2

W2: https://onlinecourses.nptel.ac.in/noc17_me35
W3:www.bcnn.org/source/SimulationToolsGuide.pdf

Details of the teaching aids:

1. Black Board and Chalk
2. Power Point Presentations, Animation
3. Digitalized portal and Institute website for sharing teaching material (e content- Notes, assignments, Question Bank, Links)
4. Recorded Videos – NPTEL

Course Incharge **Module coordinator** **HOD ECE** **PRINCIPAL**

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
LESSON PLAN 2021-22 EVEN SEMESTER

COURSE INCHARGE : **Dr. REKHA B VENKATAPUR**

COURSE CODE/TITLE : **18CS645/ SYSTEM MODELLING AND SIMULATION**

YEAR/ SEMESTER/SECTION : **III/ VI A&B**

BRANCH : **2021-2022**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Dat
	MODULE 1					
1.	When simulation is appropriate, When it is not appropriate?	L+D	LCD	1	1	04-04-2022
2.	Advantages, Disadvantages	L+D	LCD	1	2	05-04-2022
3.	Areas applications, Systems, System Environment	L+D	BB	1	3	06-04-2022
4.	Components of a system, Discrete and continuous Systems	L+D	BB	1	4	07-04-2022
5.	Model of a System, Types of Models Sys, Discrete Event System Simulation;	L+D	BB	1	5	08-04-2022
6.	Simulation Examples – Queuing Problem	L+D	BB	1	6	11-04-2022
7.	Simulation Examples – Queuing Problem - Introduction	L+D	BB	1	7	12-04-2022
8.	Simulation examples – Single server Queue	PS(TXT)	BB	1	8	13-04-2022
9.	Simulation Example – Able Baker Problem	PS	BB	1	9	18-04-2022
10.	General principles, Simulation Software - Concepts	L+D	Animation - LCD	1	10	19-04-2022

11.	Event scheduling /Time Advance algorithm, Manual simulation	PS(TXT)	BB	1	11	20-04-2022
12.	Pedagogy activity – Group Discussion – Analysis of simulation results through Spread sheet exercise Queuing Problems etc.		LCD			21-04-2022
	MODULE 3					
13.	Random Number Generation – Properties of random numbers	L+D	BB	1	12	22-04-2022
14.	Generation of pseudo random numbers	PS(TXT)	BB	1	13	25-04-2022
15.	Techniques for generating random numbers	PS(TXT)	BB	1	14	26-04-2022
16.	Tests for random numbers	PS(TXT)	BB	1	15	27-04-2022
17.	Random variate generation –Inverse transform technique	PS(TXT)	BB	1	16	28-04-2022
18.	Inverse transform technique – continued	PS(TXT)	BB	1	17	29-04-2022
19.	Acceptance – Rejection Technique	PS(TXT)	BB	1	18	30-04-2022
	1ST INTERNAL					05-05-2022
20.	Continued	PS(TXT)	BB	1	19	07-05-2022
	MODULE 4					
21.	Input modeling –	L+D	LCD	1	20	09-05-2022
22.	Data collection	L+D	LCD	1	21	10-05-2022
23.	Identifying the distribution with data	L+D	LCD	1	22	11-05-2022
24.	Parameter estimation	PS(TXT)	BB	1	23	12-05-2022
25.	Goodness of fit test	PS(TXT)	BB	1	24	13-05-2022
26.	Fitting of non-stationary Poisson process	PS(TXT)	BB	1	25	14-05-2022

27.	Selecting input models without data	PS(TXT)	BB	1	26	16-05-2022
28.	Multivariate	PS(TXT)	BB	1	27	17-05-2022
29.	Time series input models	PS(TXT)	BB	1	28	18-05-2022
30.	Estimation of Absolute Performance	PS(TXT)	BB	1	29	19-05-2022
31.	Types of simulation w.r.t output analysis	PS(TXT)	BB	1	30	20-05-2022
32.	Stochastic nature of output data	L+D	LCD	1	31	23-05-2022
33.	Measures of performance	L+D	LCD	1	32	24-05-2022
34.	Estimation of Performance	L+D	LCD	1	33	25-05-2022
	MODULE 5					
35.	Measures of performance and their estimation	L+D	LCD	1	34	26-05-2022
36.	Output analysis for terminating simulations	L+D	LCD	1	35	27-05-2022
37.	Output analysis for terminating – continued	L+D	LCD	1	36	28-05-2022
38.	Verification, Calibration and Validation	L+D	LCD	1	37	30-05-2022
39.	Optimization Model Building	L+D	LCD	1	38	31-05-2022
	2ND INTERNAL					02-06-2022
40.	Verification of simulation models	PS(TXT)	BB	1	39	06-06-2022
41.	Calibration and validation of Models	PS(TXT)	BB	1	40	07-06-2022
42.	Verification & Validation	PS(TXT)	BB	1	41	08-06-2022
43.	Optimization Via Simulation	PS(TXT)	BB	1	42	09-06-2022

44.	**MODULE 2**					
45.	Statistical Models in Simulation : Review of terminology and concepts	L+D	LCD	1	43	10-06-2022
46.	Useful statistical models – Discrete distributions	PS(TXT)	BB	1	44	11-06-2022
47.	Continuous distributions – Poisson Process, empirical distributions	PS(TXT)	BB	1	45	13-06-2022
48.	Queuing Models – Characteristics of queuing systems	L+D	LCD	1	46	14-06-2022
49.	Queuing notation, Long run measures of performance	L+D	BB	1	47	15-06-2022
50.	Long run measures of performance of queuing system	PS(TXT)	BB	1	48	16-06-2022
51.	Steady state behavior of M/G/1queue	PS(TXT)	LCD	1	49	17-06-2022
52.	Network of Queues	L+D	LCD	1	50	20-06-2022
53.	Revision					21-06-2022 To 09-07-2022
	3RD INTERNAL					12-07-2022

Text Books:

T1.Jerry Banks, John S. Carson II, Barry L. Nelson, David M. Nicol: Discrete-Event System Simulation, 5th Edition, Pearson Education, 2010.

Reference Books:

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R2. Averill M. Law: Simulation Modeling and Analysis, 4th Edition, Tata McGraw-Hill, 2007.

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W2: https://onlinecourses.nptel.ac.in/noc17_me35
W3:www.bcnn.org/source/SimulationToolsGuide.pdf

Details of the teaching aids:

1. Black Board and Chalk
2. Power Point Presentations, Animation
3. Digitalized portal and Institute website for sharing teaching material (e content- Notes, assignments, Question Bank, Links)
4. Recorded Videos – NPTEL

Course Incharge **Module coordinator** **HOD ECE** **PRINCIPAL**

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **GEETHA.R & KAVYA.M.S**
SUBJECT CODE/NAME : **18CSL67/ COMPUTER GRAPHICS LAB**
SEMESTER/YEAR/SEC : **VI / III /B**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction to CG Program	BB+LCD	3	B1	07/04/2022
		BB+LCD	3	B2	04/04/2022
		BB+LCD	3	B3	06/04/2022
2	Implement Brenham's line drawing algorithm for all types of slope.	BB+LCD	3	B1	21/04/2022
		BB+LCD	3	B2	11/04/2022
		BB+LCD	3	B3	13/04/2022
3	Create and rotate a triangle about the origin and a fixed point.	BB+LCD	3	B1	28/04/2022
		BB+LCD	3	B2	18/04/2022
		BB+LCD	3	B3	20/04/2022
4	Draw a colour cube and spin it using OpenGL transformation matrices.	BB+LCD	3	B1	12/05/2022
		BB+LCD	3	B2	25/04/2022
		BB+LCD	3	B3	27/04/2022
5	Draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing.	BB+LCD	3	B1	14/05/2022
		BB+LCD	3	B2	02/05/2022
		BB+LCD	3	B3	30/04/2022
6	Clip a lines using Cohen-Sutherland algorithm.	BB+LCD	3	B1	19/05/2022
		BB+LCD	3	B2	09/05/2022
		BB+LCD	3	B3	11/05/2022
7	To draw a simple shaded scene consisting of a tea pot	BB+LCD	3	B1	26/05/2022

	on a table. Define suitably the position and properties of the light source along with the properties of the surfaces of the solid object used in the scene	BB+LCD	3	B2	16/05/2022
		BB+LCD	3	B3	18/05/2022
8	Design, develop and implement recursively subdivide a tetrahedron to form 3D sierpinski gasket. The number of recursive steps is to be specified by the user.	BB+LCD	3	B1	09/06/2022
		BB+LCD	3	B2	23/06/2022
		BB+LCD	3	B3	25/06/2022
9	Develop a menu driven program to animate a flag using Bezier Curve algorithm	BB+LCD	3	B1	11/06/2022
		BB+LCD	3	B2	30/05/2022
		BB+LCD	3	B3	28/05/2022
10	Develop a menu driven program to fill the polygon using scan line algorithm	BB+LCD	3	B1	16/06/2022
		BB+LCD	3	B2	06/06/2022
		BB+LCD	3	B3	08/06/2022
11	Revision	BB+LCD	3	B1	23/06/2022
		BB+LCD	3	B2	13/06/2022
		BB+LCD	3	B3	15/06/2022
12	Revision	BB+LCD	3	B1	30/06/2022
		BB+LCD	3	B2	20/06/2022
		BB+LCD	3	B3	22/06/2022
13	Revision	BB+LCD	3	B1	07/07/2022
		BB+LCD	3	B2	27/06/2022
		BB+LCD	3	B3	29/06/2022
14	Internal Test 1	BB	3	B1	14/07/2022
		BB	3	B2	11/07/2022
		BB	3	B3	13/07/2022

WEB MATERIALS:

https://nptel.ac.in/courses/106106090
https://www.udemy.com/course/computer_graphics_subject
https://www.coursera.org/for-university-and-college-students

Details for the teaching Aids

BB-Black Board

LCD-Projector

Faculty

Module Coordinator

HOD

Head of the Department
Dept. of Computer Science & Engg.
K.S. Institute of Technology
Bengaluru -560 109

PRINCIPAL

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
LESSON PLAN 2021-22 EVEN SEMESTER

COURSE INCHARGE : **DR. VANEETA M**

COURSE CODE/TITLE : **18CS81 / INTERNET OF THINGS**

YEAR/ SEMESTER/SECTION : **IV/VIII/A**

BRANCH : **COMPUTER SCIENCE AND ENGINEERING**

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	Module 1					
1	What is IoT, Genesis of IoT	L+D	LCD+BB	1	1	4-4-2022
2	IoT and Digitization, IoT Impact	L+D	LCD+BB	1	2	4-4-2022
3	IoT Impact	L+D	LCD+BB	1	3	5-4-2022
4	Convergence of IT and IoT, IoT Challenges	L+D	LCD+BB	1	4	5-4-2022
5	IoT Network Architecture and Design	L+D	LCD+BB	1	5	11-4-2022
6	Drivers Behind New Network Architectures	L+D	LCD+BB	1	6	11-4-2022
7	Comparing IoT Architectures	L+D	LCD+BB	1	7	12-4-2022
8	A Simplified IoT Architecture, The Core IoT Functional Stack	L+D	LCD+BB	1	8	12-4-2022
9	IoT Data Management and Compute Stack	L+D	LCD+BB	1	9	18-4-2022

Module 5						
10	IoT Physical Devices and Endpoints - Arduino UNO: Introduction to Arduino, Arduino UNO	L+D	LCD+BB	1	10	19-4-2022
11	Installing the Software, Fundamentals of Arduino Programming. Online Arduino Board Simulator	L+D+I	LCD+BB	1	11	19-4-2022
12	IoT Physical Devices and Endpoints - RaspberryPi: Introduction to RaspberryPi, About the RaspberryPi Board: Hardware Layout	L+D	LCD+BB	1	12	25-4-2022
13	Operating Systems on RaspberryPi, Configuring RaspberryPi, Programming RaspberryPi with Python	L+D	LCD+BB	1	13	26-4-2022
14	**Internal Assessment Test 1**			1	14	**06-5-2022**
15	Wireless Temperature Monitoring System Using Pi	L+D	LCD+BB	1	15	26-4-2022
16	DS18B20 Temperature Sensor, Connecting Raspberry Pi via SSH	L+D	LCD+BB	1	16	9-5-2022
17	Accessing Temperature from DS18B20 sensors, Remote access to RaspberryPi	L+D	LCD+BB	1	17	10-5-2022
18	Smart and Connecting Cities, An IoT Strategy for Smarter Cities, Smart City IoT Architecture, Smart City Security, Smart City Use-Case Examples	L+D	LCD+BB	1	18	10-5-2022
	Pedagogy Written Assignment: IoT Use Cases					
Module 2						
19	Smart Objects: The "Things" in IoT: Sensors	L+D	LCD+BB	1	19	16-5-2022
20	Actuators, Smart Objects	L+D	LCD+BB	1	20	17-5-2022
21	Sensors Networks	L+D	LCD+BB	1	21	17-5-2022
22	Connecting Smart Objects	L+D	LCD+BB	1	22	23-5-2022
23	Communication Criteria	L+D	LCD+BB	1	23	24-5-2022
24	IoT Access Technologies	L+D	LCD+BB	1	24	24-5-2022
25	IoT Access Technologies	L+D	LCD+BB	2	26	30-5-2022, 31-5-2022

26	**Internal Assessment Test 2**			1	27	3-6-2022
Module 3						
27	IP as the IoT Network Layer: The Business Case for IP	L+D	LCD+BB	1	28	31-5-2022
28	The need for Optimization, Optimizing IP for IoT	L+D	LCD+BB	1	29	6-6-2022
29	Profiles and Compliances	L+D	LCD+BB	1	30	7-6-2022
30	Application Protocols for IoT: The Transport Layer	L+D	LCD+BB	1	31	7-6-2022
31	IoT Application Transport Methods	L+D	LCD+BB	2	33	13-6-2022, 14-6-2022
Module 4						
32	Data and Analytics for IoT, An Introduction to DataAnalytics for IoT, Machine Learning	L+D	LCD+BB	1	34	14-6-2022
33	Big Data Analytics Tools and Technology, Edge Streaming Analytics	L+D	LCD+BB	1	35	20-6-2022
34	Network Analytics, Securing IoT: A Brief History of OT Security	L+D	LCD+BB	1	36	21-6-2022
35	Common Challenges in OT Security	L+D	LCD+BB	1	37	21-6-2022
36	How IT and OT Security Practices and SystemsVary,	L+D	LCD+BB	1	38	27-6-2022
37	Formal Risk Analysis Structures: OCTAVE andFAIR	L+D	LCD+BB	1	39	28-6-2022
38	The Phased Application of Security in an Operational Environment	L+D	LCD+BB	1	40	28-6-2022
39	**Internal Assessment Test 3**				41	29-6-2022

Text Books:

1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", 1st Edition, Pearson Education (Cisco Press Indian Reprint). (ISBN: 978-9386873743)
2. Srinivasa K G, "Internet of Things", CENGAGE Leaning India, 2017

Reference Books:

1. Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Hands-on-Approach)", 1st Edition, VPT, 2014. (ISBN: 978-8173719547)
2. Raj Kamal, "Internet of Things: Architecture and Design Principles", 1 st Edition, McGraw Hill Education, 2017. (ISBN: 978-9352605224)

Details of the teaching aids:

- **LCD**
- **Black Board**
- **Online Arduino simulator**

Course Incharge **Module coordinator** **HOD** **PRINCIPAL**

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF : **GEETHA.R & KAVYA.M.S**
SUBJECT CODE/NAME : **18CSL67/ COMPUTER GRAPHICS LAB**
SEMESTER/YEAR/SEC : **VI / III /B**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction to CG Program	BB+LCD	3	B1	07/04/2022
		BB+LCD	3	B2	04/04/2022
		BB+LCD	3	B3	06/04/2022
2	Implement Brenham's line drawing algorithm for all types of slope.	BB+LCD	3	B1	21/04/2022
		BB+LCD	3	B2	11/04/2022
		BB+LCD	3	B3	13/04/2022
3	Create and rotate a triangle about the origin and a fixed point.	BB+LCD	3	B1	28/04/2022
		BB+LCD	3	B2	18/04/2022
		BB+LCD	3	B3	20/04/2022
4	Draw a colour cube and spin it using OpenGL transformation matrices.	BB+LCD	3	B1	12/05/2022
		BB+LCD	3	B2	25/04/2022
		BB+LCD	3	B3	27/04/2022
5	Draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing.	BB+LCD	3	B1	14/05/2022
		BB+LCD	3	B2	02/05/2022
		BB+LCD	3	B3	30/04/2022
6	Clip a lines using Cohen-Sutherland algorithm.	BB+LCD	3	B1	19/05/2022
		BB+LCD	3	B2	09/05/2022
		BB+LCD	3	B3	11/05/2022
7	To draw a simple shaded scene consisting of a tea pot	BB+LCD	3	B1	26/05/2022

	on a table. Define suitably the position and properties of the light source along with the properties of the surfaces of the solid object used in the scene	BB+LCD	3	B2	16/05/2022
		BB+LCD	3	B3	18/05/2022
8	Design, develop and implement recursively subdivide a tetrahedron to form 3D sierpinski gasket. The number of recursive steps is to be specified by the user.	BB+LCD	3	B1	09/06/2022
		BB+LCD	3	B2	23/06/2022
		BB+LCD	3	B3	25/06/2022
9	Develop a menu driven program to animate a flag using Bezier Curve algorithm	BB+LCD	3	B1	11/06/2022
		BB+LCD	3	B2	30/05/2022
		BB+LCD	3	B3	28/05/2022
10	Develop a menu driven program to fill the polygon using scan line algorithm	BB+LCD	3	B1	16/06/2022
		BB+LCD	3	B2	06/06/2022
		BB+LCD	3	B3	08/06/2022
11	Revision	BB+LCD	3	B1	23/06/2022
		BB+LCD	3	B2	13/06/2022
		BB+LCD	3	B3	15/06/2022
12	Revision	BB+LCD	3	B1	30/06/2022
		BB+LCD	3	B2	20/06/2022
		BB+LCD	3	B3	22/06/2022
13	Revision	BB+LCD	3	B1	07/07/2022
		BB+LCD	3	B2	27/06/2022
		BB+LCD	3	B3	29/06/2022
14	Internal Test 1	BB	3	B1	14/07/2022
		BB	3	B2	11/07/2022
		BB	3	B3	13/07/2022

WEB MATERIALS:

https://nptel.ac.in/courses/106106090
https://www.udemy.com/course/computer_graphics_subject
https://www.coursera.org/for-university-and-college-students

Details for the teaching Aids

BB-Black Board

LCD-Projector

Faculty

Module Coordinator

HOD

Head of the Department
Dept. of Computer Science & Engg.
K.S. Institute of Technology
Bengaluru -560 109

PRINCIPAL

K S INSTITUTE OF TECHNOLOGY BENGALURU
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NAME OF THE STAFF :**BEENA K & GEETHA . R**
SUBJECT CODE/NAME : **18CSL67/ COMPUTER GRAPHICS WITH MINI PROJECT**
SEMESTER/YEAR/SEC : **VI / III/A**
ACADEMIC YEAR : **2021-2022**

Sl. No.	Topic to be covered	Teaching Aid	No. of Periods	Batch No.	Proposed Date
1	Introduction to CG Programs	BB+LCD	3	A1	8/4/22
		BB+LCD	3	A2	4/4/22
		BB+LCD	3	A3	7/4/22
2	Implement Brenham"s line drawing algorithm for all types of slope.	BB+LCD	3	A1	22/4/22
		BB+LCD	3	A2	11/4/22
		BB+LCD	3	A3	21/4/22
3	Create and rotate a triangle about the origin and a fixed point.	BB+LCD	3	A1	29/4/22
		BB+LCD	3	A2	18/4/22
		BB+LCD	3	A3	28/4/22
4	Draw a colour cube and spin it using OpenGL transformation matrices.	BB+LCD	3	A1	13/5/22
		BB+LCD	3	A2	25/4/22
		BB+LCD	3	A3	12/5/22
5	Draw a color cube and allow the user to move the camera suitably to experiment with perspective viewing.	BB+LCD	3	A1	20/5/22
		BB+LCD	3	A2	9/5/22
		BB+LCD	3	A3	14/5/22
6	Clip a lines using Cohen-Sutherland algorithm	BB+LCD	3	A1	27/5/22
		BB+LCD	3	A2	16/5/22
		BB+LCD	3	A3	19/5/22
7	To draw a simple shaded scene consisting of a tea pot on a table. Define suitably the position and properties of	BB+LCD	3	A1	10/6/22
		BB+LCD	3	A2	23/5/22

	the light source along with the properties of the surfaces of the solid object used in the scene	BB+LCD	3	A3	26/5/22
8	Design, develop and implement recursively subdivide a tetrahedron to form 3D sierpinski gasket. The number of recursive steps is to be specified by the user.	BB+LCD	3	A1	17/6/22
		BB+LCD	3	A2	30/5/22
		BB+LCD	3	A3	9/6/22
9	Develop a menu driven program to animate a flag using Bezier Curve algorithm	BB+LCD	3	A1	24/6/22
		BB+LCD	3	A2	6/6/22
		BB+LCD	3	A3	11/6/22
10	Develop a menu driven program to fill the polygon using scan line algorithm	BB+LCD	3	A1	1/7/22
		BB+LCD	3	A2	13/6/22
		BB+LCD	3	A3	6/6/22
11	REVISION	BB+LCD	3	A1	8/7/22
		BB+LCD	3	A2	20/6/22
		BB+LCD	3	A3	23/6/22
12	REVISION	BB	3	A1	15/7/22
		BB	3	A2	27/6/22
		BB	3	A3	30/6/22
13	REVISION	BB	3	A3	7/722

Web Materials:

https://nptel.ac.in/courses/106106090
https://www.udemy.com/course/computer_graphics_subject
https://www.coursera.org/for-university-and-college-students

Details for the teaching Aids

BB-Black Board
LCD-Projector

Signature of the Faculty **Signature of Module Coordinator** **Signature of HOD** **Signature of Principal**

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
LESSON PLAN 2021-22 EVEN SEMESTER

COURSE INCHARGE : GEETHA R

COURSE CODE/TITLE : 18CS652/INTRODUCTION TO DATA STRUCTURES AND ALGORITHM

YEAR/ SEMESTER/SECTION : III/VI/A

BRANCH : ELECTRONICS AND COMMUNICATION ENGINEERING

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
Module 1: Introduction to C						
1	Introduction to C, Constants,	L+D	BB+LCD+Code Block	1	1	4/4/2022
2	Variables ,Data Types , Input output operations,	L+D	BB+LCD+Code Block	2	3	5/4/2022 5/4/2022
3	Operators an expression	L+D	BB+LCD+Code Block	1	4	7/4/2022
4	Control statements	L+D	BB+LCD+Code Block	1	5	8/4/2022
5	Arrays ,Strings,	L+D	BB+LCD+Code Block	1	6	11/4/2022
6	Built in function ,User Defined Function	L+D	BB+LCD+Code Block	2	8	12/4/2022 12/4/2022
7	Structures and Unions	L+D	BB+LCD+Code Block	1	9	18/4/2022

8	Pointers ,Programming examples	L+D	BB+LCD+Code Block	2	11	19/4/2022
9	Revision	L+D	BB+LCD+Code Block	1	12	21/4/2022
Module 2: Algorithms, Arrays						
10	Algorithms	L+D	BB+LCD+Code Block	1	13	22/4/2022
11	Asymptotic Notation	L+D	BB+LCD+Code Block	1	14	25/4/2022
12	Introduction to Data Structures, Types of Data structures	L+D	BB+LCD+Code Block	2	16	26/4/2022 26/4/2022
13	Arrays, Types of Arrays, One dimensional array,	L+D	BB+LCD+Code Block	1	17	28/4/2022
14	Traversal, Insertion and Deletion	L+D	BB+LCD+Code Block	1	18	29/4/2022
15	Sorting and Searching	L+D	BB+LCD+Code Block	1	19	2/5/2022
16	Multi Dimensional Array, Realizing Matrices using 2D array	L+D	BB+LCD+Code Block	2	21	7/5/2022 7/5/2022
17	Matrix Operations	L+D	BB+LCD+Code Block	1	22	9/5/2022
18	Revision	L+D,GD	BB+LCD+Code Block	1	23	10/5/2022
Module 3: Linked Lists and Stacks						
18	Introduction, Linked lists Basic concepts	L+D	BB+LCD+Code Block	1	24	10/5/2022
19	Linked Lists Implementation	L+D	BB+LCD+Code Block	1	25	12/5/2022
20	Linked Lists Implementation ,Types of Linked Lists	L+D	BB+LCD+Code Block	1	26	13/5/2022
21	Circular Linked lists	L+D	BB+LCD+Code Block	1	27	14/5/2022
22	Doubly linked Lists ,	L+D	BB+LCD+Code Block	1	28	16/5/2022

23	Introduction to Stacks, Stack Operations	L+D	BB+LCD+Code Block	1	29	23/5/2022
24	Stack Implementation	L+D	BB+LCD+Code Block	2	31	24/5/2022 24/5/2022
25	Problems of stacks, Revision	L+D,GD	BB+LCD+Code Block	1	32	24/5/2022
Module 4: Queues and Tress						
26	Introduction to Queues, Queue Operations	L+D	BB+LCD+Code Block	1	33	26/5/2022
27	Queue Implementation[Array implementation]	L+D	BB+LCD+Code Block	1	34	27/5/2022
28	Queue Implementation[Linked lists implementation],	L+D	BB+LCD+Code Block	1	35	30/5/2022
29	Circular Queues , Priority Queues	L+D	BB+LCD+Code Block	2	37	31/5/2022 31/5/2022
30	Double Ended Queues	L+D	BB+LCD+Code Block	1	38	06/06/22
31	Introduction to Trees, Binary Tree	L+D	BB+LCD+Code Block	2	40	07/06/22 07/06/22
32	Binary Tree Representation,	L+D	BB+LCD+Code Block	1	41	09/06/22
33	Traversal	L+D	BB+LCD+Code Block	1	42	10/6/2022
34	Binary Search Tree	L+D	BB+LCD+Code Block	1	43	13/6/2022
35	Tree Variants	L+D	BB+LCD+Code Block	2	45	14/6/2022 14/6/2022
36	Revision	L+D,GD	BB+LCD+Code Block	1	46	16/6/2022
Module 5: Graphs, Sorting and Searching						
37	Introduction, Basic concept, Graph Terminology	L+D	BB+LCD+Code Block	1	47	17/6/2022
38	Graph Implementation	L+D	BB+LCD+Code Block	1	48	20/6/2022
39	Graph Implementation, Shortest Path Algorithm	L+D	BB+LCD+Code Block	2	50	21/6/2022 21/6/2022

40	Graph Traversal, Sorting Technique	L+D	BB+LCD+Code Block	1	51	27/6/2022
41	Selection sort, Insertion sort, Bubble sort,	L+D	BB+LCD+Code Block	2	53	28/6/2022 28/6/2022
42	Quick sort, Merge Sort, Bucket Sort,	L+D	BB+LCD+Code Block	1	54	30/6/2022
43	Linear Search, Binary Search	L+D	BB+LCD+Code Block	1	55	01/7/2022
44	Hashing	L+D	BB+LCD+Code Block	1	56	07/07/2022
45	Revision	L+D	BB+LCD+Code Block	1	57	08/07/2022
46	Pedagogy Activity	L+D	BB+LCD+Code Block	1	58	09/07/2022
47	Pedagogy Activity	L+D	BB+LCD+Code Block	2	60	15/7/2022
48	Pedagogy Activity	L+D,GD	BB+LCD+Code Block	1	61	16/07/2022

Text Books:

1. Data structures using C , E Balagurusamy, McGraw Hill education (India) Pvt. Ltd, 2013.`

Reference Books:

1. Ellis Horowitz and Sartaj Sahni, Fundamentals of Data Structures in C, 2nd Ed, Universities Press, 2014.
2. Seymour Lipschutz, Data Structures Schaum's Outlines, Revised 1st Ed, McGraw Hill, 2014.

Geetha

Course In Charge

Module Coordinator

HOD ECE

KS INSTITUTE OF TECHNOLOGY, BANGALORE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

NAME OF THE STAFF : Mrs. V SANGEETHA

SUBJECT CODE/NAME : 18EC52/DIGITAL SIGNAL PROCESSING

SEMESTER/YEAR : V/ III-A

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: Discrete Fourier Transforms (DFT)						
1	Discrete Fourier Transforms (DFT): Frequency domain sampling and reconstruction of discrete time signals	L+D	BB	1	1	01.10.2021
2	DFT as a linear transformation	L+D	BB	1	2	04.10.2021
3	DFT and its relationship with other transforms	L+D	BB	1	3	05.10.2021
4	Properties of DFT-Linearity, Periodicity	L+D	BB	1	4	08.10.2021
5	Properties of DFT-Symmetry	L+D	BB	1	5	11.10.2021
6	Multiplication of two DFTs- the circular convolution.	L+D	BB	1	6	12.10.2021
7	Multiplication of two DFTs- the circular convolution.	L+D	BB	1	7	18.10.2021
8	Additional DFT Properties-Circular Time, frequency shift problems	L+D	BB	1	8	19.10.2021
9	Circular convolution in time, Parseval's Theorem	L+D	BB	1	9	22.10.2021
10	Problems on different properties	L+PS	BB	1	10	23.10.2021
11	Problems on different properties	L+PS	BB	1	11	25.10.2021
MODULE 2: Linear Filtering methods based on the DFT						
12	Use of DFT in linear filtering	L+ D	BB	1	12	26.10.2021

13	Filtering of long data sequences	L+D	BB	1	13	27.10.2021
14	Overlap-save problems	L+D	BB	1	14	29.10.2021
15	Kahoot Quiz	L+AV	LCD	1	15	02.11.2021
16	overlap-add method problems	L+D	BB	1	16	08.11.2021
17	Fast-Fourier-Transform (FFT) algorithms:	L+D	BB	1	17	09.11.2021
18	Direct computation of DFT, need for efficient computation of the DFT (FFT algorithms).	L+D	BB	1	18	10.11.2021
19	Internal Assessment -I			1	19	11.11.2021
20	Radix-2 FFT algorithm for the computation of DFT and IDFT–. decimation-in-time and decimation-in-frequency algorithms	L+PS	BB	1	20	15.11.2021
21	Problems on DIT FFT	L+PS	BB	1	21	16.11.2021
22	Problems on DIF FFT	L+PS	BB	1	22	17.11.2021
23	Problems on DIT,DIF FFT	L+PS	BB	1	23	19.11.2021
	MODULE 3: Design of FIR Filters					
24	Structure for FIR Systems:	L+AV	LCD	1	24	23.11.2021
25	Direct form, Linear Phase	L+D	BB	1	25	24.11.2021
26	Kahoot Quiz Guess What Properties of DFT?	L+AV	LCD	1	26	26.11.2021
27	Lattice structure	L+D	BB	1	27	29.11.2021
28	FIR filter design: Introduction to FIR filters	L+D	BB	1	28	30.11.2021
29	design of FIR filters using - Rectangular	L+D	BB	1	29	01.12.2021
30	Hamming, Hanning and Bartlett windows.	L+D	BB	1	30	03.12.2021
31	Hamming, Hanning and Bartlett windows.	L+D	BB	1	31	04.12.2021
32	Hamming, Hanning and Bartlett windows.	L+PS	BB	1	32	06.12.2021
33	Problems on Hamming window	L+PS	BB	1	33	07.12.2021
	MODULE 4: IIR Filter Design					
34	Structure for IIR Systems: Direct form, Parallel form structures	L+D	BB	1	34	08.12.2021
35	Cascade form structure	L+D	BB	1	35	10.12.2021
36	IIR filter design: Characteristics of commonly used analog filter – Butterworth and Chebyshev filters	L+D	LCD,BB	1	36	13.12.2021
37	Analog to analog frequency transformations.	L+D	BB	1	37	14.12.2021
38	Design of IIR Filters from analog filter using	L+D	BB	1	38	15.12.2021

	Butterworth filter:					
39	Internal Assessment –II			1	39	16.12.2021
40	Problems on Impulse invariance	L+PS	BB	1	40	20.12.2021
41	Problems on Impulse invariance	L+D	BB	1	41	21.12.2021
42	Bilinear transformation	L+D	BB	1	42	22.12.2021
43	Problems on Bilinear transformation	L+PS	BB	1	43	24.12.2021
44	Problems on Bilinear transformation	L+PS	BB	1	44	27.12.2021
45	Problems on Bilinear transformation	L+PS	BB	1	45	28.12.2021
46	Problems on IIR Filter Structure	L+PS	BB	1	46	29.12.2021
	MODULE 5: Digital Signal Processors					
47	DSP Architecture	L+D	BB	1	47	31.12.2021
48	DSP Hardware Units	L+D	BB	1	48	03.01.2022
49	Fixed point format, Floating point Format	L+D	BB	1	49	04.01.2022
50	IEEE Floating point formats, Fixed point digital signal processors	L+D	BB	1	50	05.01.2022
51	Floating point processors	L+D	BB	1	51	07.01.2022
52	FIR filter implementations in Fixed point systems.	L+D	BB	1	52	08.01.2022
53	IIR filter implementations in Fixed point systems.	L+D	BB	1	53	10.01.2022
54	Revision of module 1,2	L+D	BB	1	54	11.01.2022
55	Revision of module 3,4	L+D	BB	1	55	12.01.2022
56	Revision of module 5	L+D	BB	1	56	17.01.2022
57	Revision of University QP	L+D	BB	1	57	18.01.2022
58	Internal Assessment –III			1	58	20.01.2022
59	Revision of University QP	L+D	BB	1	59	31.01.2022

Text Books:

1. Digital signal processing – Principles Algorithms & Applications, Proakis&Monalakis, Pearson education, 4th Edition, New Delhi, 2007.
2. Li Tan,Jean Jiang," Digital Signal processing-Fundamentals and Applications",Academic press,2013,ISBN:978-0-12-415893

Reference Books:

1. Sanjit K Mitra,"Digital Signal Processing,A Computer Based Approach",4th Edition,McGraw Hill education,2013
2. Oppenheim &schaffer,"Discrete Time Signal Processing ",PHI,2003.

3. D.GaneshRao and Vineeth P Gejji,"Digital Signal processing"Cengage India Private Limited,2017,ISBN"9386858231

WEB Materials:

- https://nptel.ac.in/courses/117/102/117102060
- https://www.youtube.com/watch?v=6dFnpz_AEyA
- https://ocw.mit.edu/resources/res-6-008-digital-signal-processing-spring-2011/video-lectures/
- https://www.tutorialspoint.com/digital_signal_processing/index.htm

Details for Teaching Aids:

1. Black Board
2. Laptop,PPT

Course In-charge **Module coordinator** **HOD-ECE** **Principal**

KS INSTITUTE OF TECHNOLOGY, BANGALORE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

NAME OF THE STAFF : Mrs. V SANGEETHA

SUBJECT CODE/NAME : 18EC52/DIGITAL SIGNAL PROCESSING

SEMESTER/YEAR : V/ III-B

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: Discrete Fourier Transforms (DFT)						
1	Discrete Fourier Transforms (DFT): Frequency domain sampling and reconstruction of discrete time signals	L+D	BB	1	1	04.10.2021
2	DFT as a linear transformation	L+D	BB	1	2	05.10.2021
3	DFT and its relationship with other transforms	L+D	BB	1	3	09.10.2021
4	Properties of DFT-Linearity, Periodicity	L+D	BB	1	4	11.10.2021
5	Properties of DFT-Symmetry	L+D	BB	1	5	12.10.2021
6	Multiplication of two DFTs- the circular convolution	L+D	BB	1	6	18.10.2021
7	Multiplication of two DFTs- the circular convolution	L+D	BB	1	7	19.10.2021
8	Additional DFT Properties-Circular Time, frequency shift problems	L+D	BB	1	8	21.10.2021
9	Circular convolution in time, Parseval's Theorem	L+D	BB	1	9	23.10.2021
10	Problems on different properties	L+PS	BB	1	10	25.10.2021
11	Problems on different properties	L+PS	BB	1	11	26.10.2021
MODULE 2: Linear Filtering methods based on the DFT						
12	Use of DFT in linear filtering	L+D	BB	1	12	27.10.2021

13	Filtering of long data sequences	L+D	BB	1	13	30.10.2021
14	Overlap-save problems	L+D	BB	1	14	02.11.2021
15	Kahoot Quiz	L+AV	LCD	1	15	08.11.2021
16	Overlap-add method problems	L+D	BB	1	16	09.11.2021
17	Fast-Fourier-Transform (FFT) algorithms:	L+D	BB	1	17	10.11.2021
18	Internal Assessment –I			1	18	11.11.2021
19	Direct computation of DFT, need for efficient computation of the DFT (FFT algorithms)	L+D	BB	1	19	15.11.2021
20	Radix-2 FFT algorithm for the computation of DFT and IDFT–. decimation-in-time and decimation-in-frequency algorithms	L+PS	BB	1	20	16.11.2021
21	Problems on DIT FFT	L+PS	BB	1	21	17.11.2021
22	Problems on DIF FFT	L+PS	BB	1	22	18.11.2021
23	Problems on DIT,DIF FFT	L+PS	BB	1	23	23.11.2021
MODULE 3: Design of FIR Filters						
24	Structure for FIR Systems	L+AV	LCD	1	24	24.11.2021
25	Direct form, Linear Phase	L+D	BB	1	25	25.11.2021
26	KahootQuizGuess What Properties of DFT?	L+AV	LCD	1	26	27.11.2021
27	Lattice structure	L+D	BB	1	27	29.11.2021
28	FIR filter design: Introduction to FIR filters	L+D	BB	1	28	30.11.2021
29	design of FIR filters using - Rectangular	L+D	BB	1	29	01.12.2021
30	Hamming, Hanning and Bartlett windows	L+D	BB	1	30	02.12.2021
31	Hamming, Hanning and Bartlett windows	L+D	BB	1	31	06.12.2021
32	Hamming, Hanning and Bartlett windows	L+PS	BB	1	32	07.12.2021
33	Problems on Hamming window	L+PS	BB	1	33	08.12.2021
MODULE 4: IIR Filter Design						
34	Structure for IIR Systems: Direct form, Parallel form structures	L+D	BB	1	34	09.12.2021
35	Cascade form structure	L+D	BB	1	35	13.12.2021
36	IIR filter design: Characteristics of commonly used analog filter – Butterworth and Chebyshev filters	L+D	BB	1	36	14.12.2021
37	Analog to analog frequency transformations	L+D	BB	1	37	15.12.2021
38	Internal Assessment –II			1	38	16.12.2021

39	Design of IIR Filters from analog filter using Butterworth filter	L+D	BB	1	39	20.12.2021
40	Problems on Impulse invariance	L+PS	BB	1	40	21.12.2021
41	Problems on Impulse invariance	L+PS	BB	1	41	22.12.2021
42	Bilinear transformation	L+D	BB	1	42	23.12.2021
43	Problems on Bilinear transformation	L+PS	BB	1	43	27.12.2021
44	Problems on Bilinear transformation	L+PS	BB	1	44	28.12.2021
45	Problems on Bilinear transformation	L+PS	BB	1	45	29.12.2021
46	Problems on IIR Filter Structure	L+PS	BB	1	46	30.12.2021
	MODULE 5: Digital Signal Processors					
47	DSP Architecture	L+D	BB	1	47	03.01.2022
48	DSP Hardware Units	L+D	BB	1	48	04.01.2022
49	Fixed point format, Floating point Format	L+D	BB	1	49	05.01.2022
50	IEEE Floating point formats, Fixed point digital signal processors	L+D	BB	1	50	06.01.2022
51	Floating point processors	L+D	BB	1	51	10.01.2022
52	FIR filter implementations in Fixed point systems	L+D	BB	1	52	11.01.2022
53	IIR filter implementations in Fixed point systems	L+D	BB	1	53	12.01.2022
54	Revision of module 1,2	L+D	BB	1	54	13.01.2022
55	Revision of module 3,4	L+D	BB	1	55	17.01.2022
56	Revision of module 5	L+D	BB	1	56	18.01.2022
57	Revision of University QP	L+D	BB	1	57	19.01.2022
58	Internal Assessment –III			1	58	20.01.2022
59	Revision of University QP	L+D	BB	1	59	31.01.2022

Text Books:

1. Digital signal processing – Principles Algorithms & Applications, Proakis&Monalakis, Pearson education, 4th Edition, New Delhi, 2007.

2. Li Tan, Jean Jiang," Digital Signal processing-Fundamentals and Applications", Academic press, 2013, ISBN:978-0-12-415893

Reference Books:

1. Sanjit K Mitra,"Digital Signal Processing, A Computer Based Approach",4th Edition, McGraw Hill education,2013
2. Oppenheim &schaffer,"Discrete Time Signal Processing ", PHI, 2003.
3. D. GaneshRao and Vineeth P Gejji,"Digital Signal processing" Cengage India Private Limited,2017,ISBN"9386858231

WEB Materials:

- https://nptel.ac.in/courses/117/102/117102060
- https://www.youtube.com/watch?v=6dFnpz_AEyA
- https://ocw.mit.edu/resources/res-6-008-digital-signal-processing-spring-2011/video-lectures/
- https://www.tutorialspoint.com/digital_signal_processing/index.htm

Details for Teaching Aids:

1. Black Board
2. Laptop, PPT

Course In-charge **Module coordinator** **HOD-ECE** **Principal**

K.S. INSTITUTE OF TECHNOLOGY BANGALORE
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
COURSE PLAN 2022-23 EVEN SEMESTER

COURSE INCHARGE : Dr. P N SUDHA
COURSE CODE/NAME : 18EC43/CONTROL SYSTEM
YEAR/ SEMESTER/SECTION: 2nd / 4th /A
BRANCH: Electronics & Communication Engg.

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 Control Systems: Types of Control Systems, Effect of Feedback Systems,	L+D	BB	1	1	23rd May 2022
2.	Differential equation of Physical Systems – Mechanical Systems,	L+ D	BB	4	5	23rd - 26th May 2022
3.	Differential equation of Electrical Systems,	L+ D	BB	2	7	30th - 31th May 2022
4.	Analogous Systems	L+D	BB	2	9	1st - 5th June 2022
Module 2:						
5.	Block diagrams: Transfer functions	L+D	BB	4	13	6st - 9th June 2022

6.	Signal flow graphs: Transfer functions, Block diagram algebra and Signal Flow graphs.	L+DE	BB	3	16	11th - 14th June 2022
7.	Signal flow graphs: Transfer functions, Block diagram algebra and Signal Flow graphs.	L+ PS	BB	2	18	15th - 16th June 2022
	Module 3:					
8.	Time Response of feedback control systems: Standard test signals,	L+ DE	BB	2	20	27th - 28th June 2022
9.	Unit step response of First order Systems.	L+D	BB	1	21	29th June 2022
10.	Second order Systems	L+D	BB	2	23	30th - 5th July2022
11.	Time response specifications of second order systems	L+D	BB	3	26	6th - 9th July2022
12.	Steady state errors and error constants.	L+D	BB	2	28	11th - 12th July2022
13.	Introduction to PI, PD	L+DE	LCD	1	29	13th July2022
14.	PID Controllers	T+ STx	BB	1	30	14th July2022
	Module 4:					
15.	Stability analysis: Concepts of stability, Necessary conditions for Stability, Routh stability criterion	L+D	LCD	1	31	18th July2022
16.	Relative stability analysis: more on the Routh stability criterion	L+D	BB	1	32	19th July2022
17.	Introduction to Root-Locus Techniques	L+D	BB	1	33	20th July 2022
18.	The root locus concepts, Construction of root loci.	L+D	BB	4	37	21st July to 1st Aug 2022
19.	Frequency domain analysis and stability: Correlation between time and frequency response,	L+D	BB	1	38	2nd Aug 2022

20.	Bode Plots, Experimental determination of transfer function	L+D	BB	3	41	3rd to 8th Aug 2022
	Module 5:					
21.	Introduction to Polar Plots,	L+PS(Tx)	BB	2	43	10th -11th Aug 2022
22.	Nyquist Stability criterion	L+PS(Tx)	BB	4	47	13th - 17th Aug 2022
23.	Introduction to lead, lag and lead-lag compensating networks (excluding design).	L+D	LCD	1	48	18th Aug 2022
24.	Introduction to State variable analysis: Introduction, Concept of State,	L+D	LCD	1	49	22nd Aug 2022
25.	State variables & State model	L+D	LCD	1	50	22nd Aug 2022
26.	State model for electrical systems,	L+D	BB	1	51	23rd Aug 2022
27.	Solution of state equations	L+D	BB	1	52	24th Aug 2022

Text Book:

1. J. Nagarath and M.Gopal, — Control Systems Engineering‖, New Age International
3. Feedback and Control System ‖ Joseph J Distefano III et al., Schaum's Outlines, TMH, 2nd Edition 2007

Reference Books:

1. Modern Control Engineering ‖ K.Ogata, Pearson Education Asia/PHI, 4th Edition, 2002. ISBN 978-81-203-40107.
2. Automatic Control Systems‖, Benjamin C. Kuo, John Wiley India Pvt. Ltd., 8th Edition, 2008.

Details of the teaching aids: Black Board, LCD Projector

10/5/22	10/5/22	10/5/22	
Course In charge	**Module coordinator**	**HOD ECE**	**PRINCIPAL**

K.S. INSTITUTE OF TECHNOLOGY BANGALORE
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
COURSE PLAN 2022-23 EVEN SEMESTER

COURSE INCHARGE : Dr. P N SUDHA
COURSE CODE/NAME : 18EC43/CONTROL SYSTEM
YEAR/ SEMESTER/SECTION: 2nd / 4th /B
BRANCH: Electronics & Communication Engg.

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 Control Systems: Types of Control Systems, Effect of Feedback Systems,	L+D	BB	1	1	24th May 2022
2.	Differential equation of Physical Systems – Mechanical Systems,	L+ D	BB	4	5	25th - 28th May 2022
3.	Differential equation of Electrical Systems,	L+ D	BB	2	7	31th May 2022 -1st June 2022
4.	Analogous Systems	L+D	BB	2	9	2nd – 3rd June 2022
	Module 2:					
5.	Block diagrams: Transfer functions	L+D	BB	4	13	7th - 10th June 2022

6.	Signal flow graphs: Transfer functions, Block diagram algebra and Signal Flow graphs.	L+DE	BB	3	16	11th - 15th June 2022
7.	Signal flow graphs: Transfer functions, Block diagram algebra and Signal Flow graphs.	L+ PS	BB	2	18	16th - 17th June 2022
	Module 3:					
8.	Time Response of feedback control systems: Standard test signals,	L+ DE	BB	2	20	28th - 29th June 2022
9.	Unit step response of First order Systems.	L+D	BB	1	21	30th June 2022
10.	Second order Systems	L+D	BB	2	23	1st - 6th July2022
11.	Time response specifications of second order systems	L+D	BB	3	26	7th - 9th July2022
12.	Steady state errors and error constants.	L+D	BB	2	28	12th - 13th July2022
13.	Introduction to PI, PD	L+DE	LCD	1	29	14th July2022
14.	PID Controllers	T+ STx	BB	1	30	15th July2022
	Module 4:					
15.	Stability analysis: Concepts of stability, Necessary conditions for Stability, Routh stability criterion	L+D	LCD	1	31	16th July2022
16.	Relative stability analysis: more on the Routh stability criterion	L+D	BB	1	32	20th July2022
17.	Introduction to Root-Locus Techniques	L+D	BB	1	33	21th July 2022
18.	The root locus concepts, Construction of root loci.	L+D	BB	4	37	22nd - 30th July 2022
19.	Frequency domain analysis and stability: Correlation between time and frequency response,	L+D	BB	1	38	2nd Aug 2022
20.	Bode Plots, Experimental determination of transfer function	L+D	BB	3	41	3rd -8th Aug 2022

	Module 5:					
21.	Introduction to Polar Plots,	L+PS(Tx)	BB	2	43	10th-11th Aug 2022
22.	Nyquist Stability criterion	L+PS(Tx)	BB	4	47	12th - 17th Aug 2022
23.	Introduction to lead, lag and lead-lag compensating networks (excluding design).	L+D	LCD	1	48	18th Aug 2022
24.	Introduction to State variable analysis: Introduction, Concept of State,	L+D	LCD	1	49	19th Aug 2022
25.	State variables & State model	L+D	LCD	1	50	19th Aug 2022
26.	State model for electrical systems,	L+D	BB	1	52	23rd Aug 2022
27.	Solution of state equations	L+D	BB	1	52	24th Aug 2022

Text Book:

1. J. Nagarath and M.Gopal, — Control Systems Engineering‖, New Age International
3. Feedback and Control System ‖ Joseph J Distefano III et al., Schaum's Outlines, TMH, 2nd Edition 2007

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2. Automatic Control Systems‖, Benjamin C. Kuo, John Wiley India Pvt. Ltd., 8th Edition, 2008.

Details of the teaching aids: Black Board, LCD Projector

10/5/22 **Course In charge**

10/5/22 **Module coordinator**

10/5/22 **HOD ECE**

PRINCIPAL

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN 2021-22 ODD SEMESTER

COURSE INCHARGE : RANGANATH N

COURSE CODE/TITLE : 21CIV14/ ELEMENTS OF CIVIL ENGG AND MECHANICS

YEAR/ SEMESTER/SECTION : I/I/B

BRANCH : COMPUTER SCIENCE ENGG

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	Module 1: Introduction to Civil Engineering					
1	Scope of different fields of Civil Engineering - Surveying, Building Materials, Construction Technology, Geotechnical Engineering, Structural Engineering,	Offline	LCD	1	1	20/12/2021
2	Scope of different fields of Civil Engineering - Hydraulics, Water Resources and Irrigation Engineering, Transportation Engineering, Environmental Engineering, Earthquake Engg, GIS.	Offline	LCD	1	2	21/12/2021
3	Infrastructure: Types of infrastructure	Offline	LCD	1	3	23/12/2021
4	Role of Civil Engineer in the Infrastructural Development	Offline	LCD		4	24/12/2021
5	Effect of the infrastructural facilities On socio-economic development of a country.	Offline	LCD	1	5	24/12/2021
6	Dams: Different types of Dams based on Material, Structural behavior and functionality with simple sketches	Offline	LCD	1	6	27/12/2021
	Module 2: Analysis of force system and Friction					
7	Basic idealizations - Particle, Continuum and Rigid body; Newton's Laws, Force and its characteristics,	Offline	Black Board	1	7	28/12/2021

8	Types of forces-Gravity, Lateral and its distribution on surfaces, Classification of force systems, Principle of physical independence, superposition, transmissibility of forces	Offline	Black Board	1	8	30/12/2021
9	Composition of forces - Definition of Resultant; Composition of coplanar -concurrent force system	Offline	Black Board	1	9	3/1/2022
10	Introduction to SI units. Couple, Moment of a couple, Characteristics of couple, Moment of a force, Parallelogram Law of forces, Principle of resolved parts;	Offline	Black Board	1	10	4/1/2022
11	Equivalent force - Couple system; Numerical problems on Moment of forces and couples, on equivalent force - couple system.	Offline	Black Board	1	11	6/1/2022
12	Equivalent force - Couple system; Numerical problems on moment of forces and couples, on equivalent force - couple system.	Offline	Black Board	1	12	7/1/2022
13	Composition of coplanar - non-concurrent force system, Varignon's principle of moments;	Offline	Black Board	1	13	10/1/2022
14	Numerical problems on composition of coplanar Non-concurrent Force system.	Offline	Black Board	1	14	11/1/2022
15	Numerical problems on composition of coplanar Non-concurrent Force system.	Offline	Black Board	1	15	13/1/2022
16	Lami's theorem and Equilibrium and force introduction with examples	Offline	Black Board	1	16	14/1/2022
17	Lami's theorem; Numerical problems on equilibrium of coplanar – concurrent and non-concurrent force systems.	Offline	Black Board	1	17	17/1/2022
18	**Application- Static Friction in rigid bodies in contact** Types of friction, Laws of static friction, Limiting friction,	Offline	Black Board	1	18	18/1/2022
19	Angle of friction, angle of repose; Impending motion on horizontal and inclined planes.	Offline	Black Board	1	19	20/1/2022
20	Numerical Problems on single and two blocks on inclined planes	Offline	Black Board	1	20	21/1/2022
21	Seminar activity	Offline	Black Board	1	21	24/1/2022
22	Seminar activity	Offline	Black Board	1	22	25/1/2022
	Module 3: Centroid and Moment of inertia					
23	**Centroids** Introduction to the concept, centroid of line and area, centroid	Offline	Black Board	1	23	27/1/2022

	of basic geometrical figures, computing centroid for– T, L, I, Z and Full/quadrant circular sections and their built up sections. Numerical problems					
24	Numerical problems	Offline	Black Board	1	24	28/1/2022
25	Numerical problems	Offline	Black Board	1	25	2/2/2022
26	Numerical problems	Offline	Black Board	1	26	4/2/2022
27	**Moment of Inertia** Introduction to the concept, Radius of gyration, Parallel axis theorem, Perpendicular axis theorem,	Offline	Black Board	1	27	7/2/2022
28	Moment of Inertia of basic planar figures, computing moment of Inertia for – T, L, I, Z and full/quadrant circular sections and their built up sections. Numerical problems	Offline	Black Board	1	28	8/2/2022
29	Numerical problems	Offline	Black Board	1	29	14/2/2022
30	Numerical problems	Offline	Black Board	1	30	15/2/2022
31	Numerical problems	Offline	Black Board	1	31	17/2/2022
32	Numerical problems	Offline	Black Board	1	32	18/2/2022
33	Numerical problems	Offline	Black Board	1	33	19/2/2022
34	Numerical problems	Offline	Black Board	1	34	21/2/2022
	Module 4: Support Reactions and Analysis of Trusses					
35	**Application-Support Reaction in beams** Types of Loads and Supports, statically determinate beams,	Offline	Black Board	1	35	22/2/2022
36	Numerical problems on support reactions for statically determinate beams with Point load (Normal and inclined) and uniformly distributed and uniformly varying loads and Moments	Offline	Black Board	1	36	24/2/2022
37	Numerical problems on support reactions for statically determinate beams with Point load (Normal and inclined) and uniformly distributed and uniformly varying loads and Moments	Offline	Black Board	1	37	2/3/2022
38	Numerical problems on support reactions for statically determinate beams with Point load (Normal and inclined) and	Offline	Black Board	1	38	7/3/2022

	uniformly distributed and uniformly varying loads and Moments					
39	Numerical problems on support reactions for statically determinate beams with Point load (Normal and inclined) and uniformly distributed and uniformly varying loads and Moments	Offline	Black Board	1	39	8/3/2022
40	Trusses and types of trusses	Offline	Black Board	1	40	9/3/2022
41	Problems on determinate trusses methods of sections	Offline	Black Board	1	41	11/3/2022
42	Problems on determinate trusses methods of sections	Offline	Black Board	1	42	11/3/2022
43	Problems on determinate trusses methods of sections	Offline	Black Board	1	43	14/3/2022
44	Problems on determinate trusses methods of joints	Offline	Black Board	1	44	17/3/2022
45	Problems on determinate trusses methods of joints	Offline	Black Board	1	45	18/3/2022
46	Quiz Activity	Offline	Black Board	1	46	19/3/2022
	Module 5: Kinematics					
47	**Concepts and Applications** Definitions – Displacement – Average velocity – Instantaneous velocity– Speed	Offline	Black Board	1	47	28/3/2022
48	Acceleration - Average acceleration – Variable acceleration – Acceleration due to gravity – Newton's Laws of Motion	Offline	Black Board	1	48	29/3/2022
49	Rectilinear Motion–Numerical problems	Offline	Black Board	1	49	31/3/2022
50	Rectilinear Motion–Numerical problems	Offline	Black Board	1	50	1/4/2022
51	Rectilinear Motion–Numerical problems.	Offline	Black Board	1	51	5/4/2022
52	Curvilinear Motion – Super elevation – Projectile Motion – Relative motion – Numerical problems.	Offline	Black Board	1	52	7/4/2022
53	Curvilinear Motion – Super elevation – Projectile Motion – Relative motion – Numerical problems.	Offline	Black Board	1	53	18/4/2022
54	Curvilinear Motion – Super elevation – Projectile Motion – Relative motion – Numerical problems.	Offline	Black Board	1	54	19/4/2022
55	Conduction of Quiz activity.	Offline	Black Board	1	55	25/4/2022
56	Motion under gravity – Numerical problems	Offline	Black Board	1	56	26/4/2022

57	Motion under gravity – Numerical problems	Offline	Black Board	1	57	28/4/2022
58	Motion under gravity – Numerical problems	Offline	Black Board	1	58	29/4/2022
60	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	60	5/5/2022
61	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	61	6/5/2022
62	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	62	7/5/2022
63	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	63	9/5/2022
64	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	64	10/5/2022

Text Books:

1. R. C. Hibbbler, Engineering Mechanics: Principles of Statics and Dynamics, Pearson Press.
2. Bansal R. K., A Text Book of Engineering Mechanics, Laxmi Publications.
3. Andy Ruina and Rudra Pratap, Introducing to Statics and Dynamics. Oxford University Press
4. Reddy Vijaykumar K and K Suresh Kumar, Engineering Mechanics

Reference Books:

1. Elements of civil Engg and Engg mechanics by B.K. Kolhapure
2. Elements of civil Engg and Engg mechanics by Nitsur Sawant
3.. F.P. Beer and E. R. Johnston, Mechanics for Engineers, Statics and Dynamics, McGraw Hill.
4.. Irving H. Shames, Engineering Mechanics, Prentice-Hall

Details of the teaching aids: Chalk and talk, videos, ppt, animations, NPTEL videos, NPTEL lectures etc.,

Course Incharge

Module coordinator

HOD
Head of the Department
Dept. of Mechanical Engg.
K.S. Institute of Technology
Bengaluru - 560 109.

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

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN 2021-22 EVEN SEMESTER

COURSE INCHARGE : RANGANATH N

COURSE CODE/TITLE : 21CIV24/ ELEMENTS OF CIVIL ENGG AND MECHANICS

YEAR/ SEMESTER/SECTION : I/II/E

BRANCH : ELECTRONICS & COMMUNICATION ENGINEERING

Sl. No.	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
	Module 1: Introduction to Civil Engineering					
1	Scope of different fields of Civil Engineering - Surveying, Building Materials, Construction Technology, Geotechnical Engineering, Structural Engineering,	Offline	LCD	1	1	7/6/2022
2	Scope of different fields of Civil Engineering - Hydraulics, Water Resources and Irrigation Engineering, Transportation Engineering, Environmental Engineering, Earthquake Engg, GIS.	Offline	LCD	1	2	8/6/2022
3	Infrastructure: Types of infrastructure	Offline	LCD	1	3	9/6/2022
4	Role of Civil Engineer in the Infrastructural Development	Offline	LCD		4	10/6/2022
5	Effect of the infrastructural facilities On socio-economic development of a country.	Offline	LCD	1	5	14/6/2022
6	Dams: Different types of Dams based on Material, Structural behavior and functionality with simple sketches	Offline	LCD	1	6	15/6/2022
	Module 2: Analysis of force system and Friction					
7	Basic idealizations - Particle, Continuum and Rigid body; Newton's Laws, Force and its characteristics,	Offline	Black Board	1	7	21/6/2022

8	Types of forces-Gravity, Lateral and its distribution on surfaces, Classification of force systems, Principle of physical independence, superposition, transmissibility of forces	Offline	Black Board	1	8	22/6/2022
9	Composition of forces - Definition of Resultant; Composition of coplanar -concurrent force system	Offline	Black Board	1	9	23/6/2022
10	Introduction to SI units. Couple, Moment of a couple. Characteristics of couple, Moment of a force, Parallelogram Law of forces, Principle of resolved parts;	Offline	Black Board	1	10	24/6/2022
11	Equivalent force - Couple system; Numerical problems on Moment of forces and couples, on equivalent force - couple system.	Offline	Black Board	1	11	25/6/2022
12	Equivalent force - Couple system; Numerical problems on moment of forces and couples, on equivalent force - couple system.	Offline	Black Board	1	12	5/7/2022
13	Composition of coplanar - non-concurrent force system, Varignon's principle of moments;	Offline	Black Board	1	13	6/7/2022
14	Numerical problems on composition of coplanar Non-concurrent Force system.	Offline	Black Board	1	14	7/7/2022
15	Numerical problems on composition of coplanar Non-concurrent Force system.	Offline	Black Board	1	15	8/7/2022
16	Lami's theorem and Equilibrium and force introduction with examples	Offline	Black Board	1	16	9/7/2022
17	Lami's theorem; Numerical problems on equilibrium of coplanar – concurrent and non-concurrent force systems.	Offline	Black Board	1	17	14/7/2022
18	**Application- Static Friction in rigid bodies in contact** Types of friction, Laws of static friction, Limiting friction,	Offline	Black Board	1	18	15/7/2022
19	Angle of friction, angle of repose; Impending motion on horizontal and inclined planes.	Offline	Black Board	1	19	16/7/2022
20	Numerical Problems on single and two blocks on inclined planes	Offline	Black Board	1	20	19/7/2022
21	Seminar activity	Offline	Black Board	1	21	20/7/2022
22	Seminar activity	Offline	Black Board	1	22	21/7/2022
	Module 3: Centroid and Moment of inertia					
23	**Centroids** Introduction to the concept, centroid of line and area, centroid	Offline	Black Board	1	23	22/7/2022

	of basic geometrical figures, computing centroid for– T. L, I, Z and Full/quadrant circular sections and their built up sections. Numerical problems					
24	Numerical problems	Offline	Black Board	1	24	26/7/2022
25	Numerical problems	Offline	Black Board	1	25	27/7/2022
26	Numerical problems	Offline	Black Board	1	26	28/7/2022
27	**Moment of Inertia** Introduction to the concept, Radius of gyration, Parallel axis theorem, Perpendicular axis theorem.	Offline	Black Board	1	27	29/7/2022
28	Moment of Inertia of basic planar figures, computing moment of Inertia for – T. L. I. Z and full/quadrant circular sections and their built up sections. Numerical problems	Offline	Black Board	1	28	30/7/2022
29	Numerical problems	Offline	Black Board	1	29	30/7/2022
30	Numerical problems	Offline	Black Board	1	30	2/8/2022
31	Numerical problems	Offline	Black Board	1	31	2/8/2022
32	Numerical problems	Offline	Black Board	1	32	3/8/2022
33	Numerical problems	Offline	Black Board	1	33	3/8/2022
34	Numerical problems	Offline	Black Board	1	34	4/8/2022
	Module 4: Support Reactions and Analysis of Trusses					
35	**Application-Support Reaction in beams** Types of Loads and Supports, statically determinate beams,	Offline	Black Board	1	35	4/8/2022
36	Numerical problems on support reactions for statically determinate beams with Point load (Normal and inclined) and uniformly distributed and uniformly varying loads and Moments	Offline	Black Board	1	36	13/8/2022
37	Numerical problems on support reactions for statically determinate beams with Point load (Normal and inclined) and uniformly distributed and uniformly varying loads and Moments	Offline	Black Board	1	37	13/8/2022
38	Numerical problems on support reactions for statically determinate beams with Point load (Normal and inclined) and	Offline	Black Board	1	38	16/8/2022

	uniformly distributed and uniformly varying loads and Moments					
39	Numerical problems on support reactions for statically determinate beams with Point load (Normal and inclined) and uniformly distributed and uniformly varying loads and Moments	Offline	Black Board	1	39	16/8/2022
40	Trusses and types of trusses	Offline	Black Board	1	40	17/8/2022
41	Problems on determinate trusses methods of sections	Offline	Black Board	1	41	18/8/2022
42	Problems on determinate trusses methods of sections	Offline	Black Board	1	42	19/8/2022
43	Problems on determinate trusses methods of sections	Offline	Black Board	1	43	19/8/2022
44	Problems on determinate trusses methods of joints	Offline	Black Board	1	44	22/8/2022
45	Problems on determinate trusses methods of joints	Offline	Black Board	1	45	22/8/2022
46	Quiz Activity	Offline	Black Board	1	46	22/8/2022
	Module 5: Kinematics					
47	Concepts and Applications Definitions – Displacement – Average velocity – Instantaneous velocity– Speed	Offline	Black Board	1	47	23/8/2022
48	Acceleration - Average acceleration – Variable acceleration – Acceleration due to gravity – Newton's Laws of Motion	Offline	Black Board	1	48	24/8/2022
49	Rectilinear Motion–Numerical problems	Offline	Black Board	1	49	25/8/2022
50	Rectilinear Motion–Numerical problems	Offline	Black Board	1	50	26/8/2022
51	Rectilinear Motion–Numerical problems.	Offline	Black Board	1	51	27/8/2022
52	Curvilinear Motion – Super elevation – Projectile Motion – Relative motion – Numerical problems.	Offline	Black Board	1	52	29/8/2022
53	Curvilinear Motion – Super elevation – Projectile Motion – Relative motion – Numerical problems.	Offline	Black Board	1	53	30/8/2022
54	Curvilinear Motion – Super elevation – Projectile Motion – Relative motion – Numerical problems.	Offline	Black Board	1	54	1/9/2022
55	Conduction of Quiz activity.	Offline	Black Board	1	55	2/9/2022
56	Motion under gravity – Numerical problems	Offline	Black Board	1	56	3/9/2022

57	Motion under gravity – Numerical problems	Offline	Black Board	1	57	5/9/2022
58	Motion under gravity – Numerical problems	Offline	Black Board	1	58	6/9/2022
60	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	60	13/9/2022
61	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	61	14/9/2022
62	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	62	15/9/2022
63	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	63	16/9/2022
64	D' Alembert's Principle and concept, Numerical problems	Offline	Black Board	1	64	17/9/2022

Text Books:

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3. Andy Ruina and Rudra Pratap. Introducing to Statics and Dynamics. Oxford University Press
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3.. F.P. Beer and E. R. Johnston. Mechanics for Engineers, Statics and Dynamics, McGraw Hill.
4.. Irving H. Shames, Engineering Mechanics, Prentice-Hall

Details of the teaching aids: Chalk and talk, videos, ppt, animations, NPTEL videos, NPTEL lectures etc.,

Course Incharge

Module coordinator

HOD

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BENGALURU - 560 109.

K S INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF MECHANICAL ENGINEERING

NAME OF THE STAFF : L.NIRMALA

SUBJECT CODE/NAME :18ME34/MATERIAL SCIENCE

SEMESTER/YEAR : III / II

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						
1	Introduction to Crystal Structure: Coordination number,	L+D	BB	1	1	19-10-2021
2	Atomic packing factor, Simple Cubic, BCC	L+ D	BB	1	2	21-10-2021
3	FCC and HCP Structures, Crystal	L+ D	BB	1	3	22-10-2021
4	Imperfections – point, line,	L+D	LCD	1	4	23-10-2021
5	Surface ,volume imperfections, Atomic Diffusion	L+D	LCD	1	5	26-10-2021
6	Fick's laws of diffusion; Factors affecting diffusion.	L+D	LCD	1	6	27-10-2021
7	Mechanical Behaviour:Engineering and true strains, Linear and non-linear elastic behavior	L+D	BB	1	7	28-10-2021
8	Properties, Mechanical properties in plastic range. Stiffness, Yield strength, Offset Yield strength.	L+D	BB	1	8	29-10-2021
9	Plastic deformation of single crystal by slip and twinning, Mechanisms of strengthening in metals.	L+D	BB	1	9	30-10-2021
10	**MODULE-2Fracture:** Type I, Type II and Type III	L+D	BB	1	10	02-11-2021
11	**Fatigue:** Types of fatigue loading with examples, Mechanism of fatigue	L+ D	LCD	1	11	04-11-2021
12	Fatigue properties, S-N diagram, Fatigue testing.	L+D	BB	1	12	09-11-2021
13	**Creep:** Description of the phenomenon with	L+D	BB	1	13	10-11-2021

	examples, three stages of creep, creep properties.					
14	Stress relaxation. Concept of fracture toughness.	L+D	BB	1	14	11-11-2021
15	Substitutional and interstitial solid solutions and factors affecting solid solubility	L+D	BB	1	15	12-11-2021
16	Hume Rothery rules Solidification: Mechanism of solidification	L+D	BB	1	16	13-11-2021
17	Homogenous and Heterogeneous nucleation, Crystal growth	L+D	BB	1	17	16-11-2021
18	Binary phase diagrams: Eutectic, and Eutectoid systems	L+D	BB	1	18	17-11-2021
19	Lever rule,Intermediate phases, Gibbs phase rule Effect of nonequilibrium cooling,	L+D	LCD	1	19	18-11-2021
20	Coring and Homogenization Iron-Carbon (Cementite) diagram	L+D	LCD	1	20	19-11-2021
21	Description of phases, Specifications of steels.,	L+D	BB	1	21	26-11-2021
22	Numerical on lever rule.	L+D	BB	1	22	27-11-2021
23	Numerical on lever rule.	L+D	BB	1	23	30-11-2021
24	MODULE-3Time-Temperature-Transformation (TTT) curves	L+D	BB	1	24	01-12-2021
25	Continuous Cooling Transformation (CCT) curves	L+D	LCD	1	25	02-12-2021
26	Annealing: Recovery, Recrystallization and Grain growth	L+D	LCD	1	26	03-12-2021
27	Types of annealing	L+D	BB	1	27	04-12-2021
28	Normalizing, Hardening	L+D	BB	1	28	07-12-2021
29	Tempering, Martempering, Austempering	L+D	BB	1	29	08-12-2021
30	Concept of hardenability	L+D	BB	1	30	09-12-2021
31	Factors affecting hardenability, surface hardening methods	L+D	LCD	1	31	10-12-2021
32	carburizing, cyaniding,	L+D	BB	1	32	14-12-2021
33	nitriding, flame hardening and induction hardening,	L+D	BB	1	33	15-12-2021
34	hardening of aluminum-copper alloys and PH steels	L+D	BB	1	34	16-12-2021
35	Ferrous materials: Properties, Compositions and uses of Grey cast iron and steel	L+D	BB	1	35	17-12-2021
36	MODULE-4Composite materials - Definition,	L+D	BB	1	36	18-12-2021

	classification, types of matrix materials					
37	Reinforcements, Metal Matrix Composites (MMCs), Ceramic Matrix Composites	L+D	BB	1	37	21-12-2021
38	Polymer Matrix Composites (PMCs), Particulate-reinforced	L+D	BB	1	38	22-12-2021
39	fiber-reinforced composites, Fundamentals of production of composites	L+D	BB	1	39	23-12-2021
40	Processes for production of composites	L+D	LCD	1	40	24-12-2021
41	Constitutive relations of composites,	L+D	BB	1	41	28-12-2021
42	Numerical problems on determining properties of composites	L+D	LCD	1	42	29-12-2021
43	**Ceramics:** Structure types and properties	L+D	BB	1	43	30-12-2021
44	Applications of ceramics. Mechanical / Electrical behavior	L+D	BB	1	44	31-12-2021
45	Processing of Ceramics.	L+D	BB	1	45	06-01-2022
46	**Plastics:** Various types of polymers/plastics and their applications	L+D	BB	1	46	07-01-2022
47	Mechanical behaviors and processing of plastics	L+D	BB	1	47	08-01-2022
48	Failure of plastics	L+D	LCD	1	48	11-01-2022
49	**Other materials:** Smart materials and Shape Memory alloys	L+D	BB	1	49	12-01-2022
50	Properties and applications.	L+D	LCD	1	50	13-01-2022
51		L+D	LCD	1	51	18-01-2022
52		L+D	BB	1	52	19-01-2022
53	Revision	L+D	BB	1	53	20-01-2022
54	Revision	L+D	BB	1	68	21-01-2022/17/02.2022

Signature of course in charge

Signature of Module coordinator

Signature of HOD

Head of the Department
Dept. of Mechanical Engg.
K.S. Institute of Technology
Bengaluru - 560 109.

Signature of Principal

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

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF MECHANICAL ENGINEERING

Date: 19-05-2022

LESSON PLAN

Academic Year	**2021-2022**							
Batch	**2019-2023**							
Year/Semester/section	**II/IV/B**							
Course Component	**Core**							
Subject Code-Title	**18ME42-APPLIED THERMODYNAMICS**							
No. of Students	**11**							
Schedule	**L**	**3**	**T**	**2**	**P**	-		
Name of the Instructor	**Mr. Prasad K**						**Dept**	**Mech.**

Prerequisite Courses	• Basic knowledge in Engineering Thermodynamics	
Course Objectives	The course objective is to make students of mechanical engineering to learn the basics of automobile engineering and its application.	
Course Outcomes (Min 4 Max 6. Out of which one for content beyond syllabus)	CO1	**Identify** the basic thermodynamic cycles like Otto, Diesel, Dual and Stirling cycles applied in IC engine and gas turbine Applications and testing of IC engines.
	CO2	**Apply** thermo dynamic concepts to analyze gas turbine cycles and gas turbine Applications
	CO3	**Apply** Basic thermo dynamic cycles used in the steam power plants for power productions based on Rankine cycle .
	CO4	**Construct** refrigeration systems based on various refrigeration cycles along with air conditioning systems .
	CO5	**Make use of** the basic formulations for reciprocating compressors and steam nozzles for efficiency and effect of friction. .
Assessment pattern	• Internal Assessment1, Internal Assessment2 & Internal Assessment3 for 30 marks • Model examination for 100 marks • Assignment for 100 marks Portions Covered: • Internal Test1- Module 1 & First Half of Module2. • Internal Test2- Second Half of Module2 & 3rd Module. • Internal Test3- 4th Module and First Half of 5th Module. Model examination- All 5 Modules.	

Sl.No	Topic to be covered	Mode of Delivery	Teaching Aid	No. of Periods	Cumulative No. of Periods	Proposed Date
1	Air standard cycles; Carnot,	L	BB	1	1	19/4/2021
2	Efficiency & MEP of Otto cycle	L	BB	1	2	20/4/2021
3	Efficiency & MEP of Diesel cycle	L	BB	1	3	21/4/2021
4	Efficiency & MEP of Dual cycle	L	BB	1	4	21/4/2021
5	Stirling cycle	L	BB	1	5	23/4/2021
6	Comparison of Otto & Diesel cycle	L	BB	1	6	26/4/2021
7	Classification of IC engines Combustion of SI engine and CI engine	L	BB	1	7	27/4/2021
8	Detonation and factors affecting detonation	L	BB	1	8	28/4/2021
9	Performance analysis of I.C Engines,	L	BB	1	9	28/4/2021
10	IC Engine fuels, Ratings and Alternate Fuels.	L	BB	1	10	30/4/2021
11	Gas turbine (Brayton) cycle	L	BB	1	11	3/5/2021
12	Types of gas turbine cycle	L	BB	1	12	4/5/2021
13	Description and analysis. Regenerative gas turbine cycle	L	BB	1	13	5/5/2021
14	Problems on regenerative cycle	L	BB	1	14	5/5/2021
15	Intercooling methods	L	BB	1	15	7/5/2021

16	Problems on intercooling method	L	BB	1	16	10/5/2021
17	Reheating in gas turbine cycle	L	BB	1	17	11/5/2021
18	Problems on Reheating	L	BB	1	18	12/5/2021
19	Jet propulsion: Turbojet, Ram jet	L	BB	1	19	17/5/2021
20	Pulse jet & Rocket propulsion	L	BB	1	20	18/5/2021
21	**Carnot** vapour power cycle	L	BB	1	21	19/5/2021
22	drawbacks as a reference cycle	L	BB	1	22	19/5/2021
23	Simple Rankine cycle; description, T-s diagram, analysis for performance, Problems on simple rankine cycle	L	BB	1	23	21/5/2021
24	Comparison of Carnot and Rankine cycles	L	BB	1	24	22/5/2021
25	Effects of pressure and temperature on Rankine Cycle performance. Actual vapour power cycles.	L	BB	1	25	24/5/2021
26	Ideal and practical regenerative Rankine cycles	L	BB	1	26	28/5/2021
27	open and closed feed water heaters.	L	BB	1	27	31/5/2021
28	Reheat Rankine cycle.	L	BB	1	28	1/6/2021

29	Characteristics of an Ideal working fluid in Vapour power cycles,	L	BB	1	29	2/6/2021
30	Binary Vapour cycles.	L	BB	1	30	2/6/2021
31	Vapour compression refrigeration system; description, analysis, refrigerating effect.	L	BB	1	31	4/6/2021
32	COP, refrigerants and their desirable properties	L	BB	1	32	5/6/2021
33	alternate Refrigerants. Any one case study on cold storage or industrial refrigerator.	L	BB	1	33	5/6/2021
34	Air cycle refrigeration; reversed Carnot cycle, reversed Brayton cycle	L	BB	1	34	7/6/2021
35	Vapour absorption refrigeration system. Steam jet refrigeration.	L	BB	1	35	8/6/2021
36	Properties of Atmospheric air, and Psychometric properties of Air,	L	LCD	1	36	9/6/2021
37	Psychometric Chart, Analyzing Air-conditioning Processes;	L	LCD	1	37	9/6/2021
38	Heating, Cooling, Dehumidification and Humidification	L	LCD	2	38	11/6/2021
39	Evaporative Cooling Adiabatic mixing of two moist air streams.	L	LCD	2	39	14/6/2021
40	Cooling towers.	L	BB	1	40	15/6/2021
41	**Operation** of a single stage reciprocating compressors. Work input through p-v diagram and steady state steady flow analysis.	L	BB	1	41	16/6/2021

42	Effect of Clearance and Volumetric efficiency.	L	BB	1	42	16/6/2021
43	Adiabatic, Isothermal and Mechanical efficiencies.	L	BB	1	43	18/6/2021
44	Multistage compressor, saving in work, Optimum intermediate pressure,	L	BB	1	44	19/6/2021
45	Inter-cooling, Minimum work for compression	L	BB	1	45	21/6/2021
46	Flow of steam through nozzles,	L	BB	1	46	22/6/2021
47	Shape of nozzles, effect of friction	L	BB	1	47	23/6/2021
48	Critical pressure ratio	L	BB	1	48	25/6/2021
49	Supersaturated flow.	L	BB	1	49	28/6/2021
	2/7/2021					
50	Problems on steam nozzles	L	BB+LCD	1	50	5/7/2021
51	Problems on steam nozzles	L	BB+LCD	1	51	6/7/2021
52	Problems on steam nozzles	L	BB+LCD	1	52	7/7/2021
53	REVISION MODULE-1	L	BB+LCD	1	53	7/7/2021
54	REVISION MODULE-1	L	BB+LCD	1		9/7/2021
55	REVISION MODULE-1	L	BB+LCD	1		12/7/2021
56	REVISION MODULE-1	L	BB+LCD	1		13/7/2021
57	REVISION MODULE-2	L	BB+LCD	1		14/7/2021
58	REVISION MODULE-2	L	BB+LCD	1		14/7/2021
59	REVISION MODULE-2	L	BB+LCD	1		16/7/2021
60	REVISION MODULE-2	L	BB+LCD	1		17/7/2021
61	REVISION MODULE-3	L	BB+LCD	1		19/7/2021
62	REVISION MODULE-3	L	BB+LCD	1		23/7/2021
63	REVISION MODULE-3	L	BB+LCD	1		26/7/2021
64	REVISION MODULE-3	L	BB+LCD	1		27/7/2021
65	REVISION MODULE-4	L	BB+LCD	1		28/7/2021
66	REVISION MODULE-4	L	BB+LCD	1		28/7/2021

67	REVISION MODULE-4	L	BB+LCD	1		29/7/2021
68	REVISION MODULE-5	L	BB+LCD	1		6/8/2021
69	REVISION MODULE-5	L	BB+LCD	1		7/8/2021
70	REVISION MODULE-5	L	BB+LCD	1		7/8/2021

TEXT BOOK:

1. Thermodynamics an engineering approach, by Yunus A. Cenegal and Michael A. Boles. Tata McGraw hill Pub. Sixth edition, 2008.
2. Basic and Applied Thermodynamics" by P .K. Nag, Tata McGraw Hill, 2nd Edi. 2009
3. Fundamentals of Thermodynamics by G.J. Van Wylen and R.E. Sonntag, Wiley Eastern. Fourth edition 19993.

Reference Books:

1. Thermodynamics for engineers, Kenneth A. Kroos and Merle C. Potter, Cengage Learning, 2016
2. Principles of Engineering Thermodynamics, Michael J,Moran, Howard N. Shapiro, Wiley, 8th Edition
3. An Introduction to Thermo Dynamics by Y.V.C.Rao, Wiley Eastern Ltd, 2003.
4. Thermodynamics by Radhakrishnan. PHI, 2nd revised edition.
5. I.C Engines by Ganeshan.V. Tata McGraw Hill, 4rth Edi. 2012.
6. I.C.Engines by M.L.Mathur & Sharma. Dhanpat Rai& sons- India

WEB MATERIALS:

Useful Websites:https://nptel.ac.in/course.php

Journ

Useful Journals

- Journal of Fluid Mechanics
- Journal of Applied Fluid Mechanics
- Journal of Applied Thermal Engineering

Course In charge **HOD/ME**

K.S. INSTITUTE OF TECHNOLOGY BANGALORE
#14, Raghuvanahalli, Kanakapura Main Road, Bengaluru-5600109

DEPARTMENT OF MECHANICAL ENGINEERING

Design of Machine Elements-1 - Course Plan

COURSE INCHARGE : **Mr. Anilkumar A**
COURSE CODE/NAME : **18ME52 / DESIGN OF MACHINE ELEMENTS-1**
SEMESTER/SEC/YEAR : **V / III**
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					
1.	**Introduction to Mechanical engineering design:** Design Process: Definition of design, phases of design	L+AV	Projectors	1	1	04/10/2021
2.	Review of engineering materials and their properties and manufacturing processes; use of codes and standards, selection of preferred sizes. Factor of safety & Service factor.	L+D	Projectors	3	4	05/10/2021 07/10/2021 07/10/2021
3.	Review of axial, bending, shear and torsion loading on machine components, combined loading, two- and three dimensional stresses, principal stresses, stress tensors, Mohr's circles. Numericals on Static stresses	L+ D	BB	3	7	11/10/2021 12/10/2021 13/10/2021
4.	Failure mode: definition and types. , Failure of brittle and ductile materials; even and uneven materials;	L+ D	BB	1	8	18/10/2021
5.	Theories of failure: maximum normal stress theory, maximum shear stress theory, distortion energy theory, strain energy theory, Columba –Mohr theory and modified Mohr's theory.	L+D	BB	2	10	19/10/2021 21/10/2021
6.	Stress concentration, stress concentration factor and methods of reducing stress concentration.	L+D	BB	1	11	21/10/2021

	MODULE 2					
8.	**Impact Strength:** Introduction, Impact stress due to Axial, Bending and Torsional loads	L+D	Projectors	1	13	25/10/2021
9.	Numericals on Impact stresses	L+D	BB	2	15	26/10/2021 27/10/2021
10.	**Fatigue failure**: Endurance limit, S-N Diagram, Low cycle fatigue, High cycle fatigue	L+D	Projectors	1	16	28/10/2021
11.	Fatigue loading: Introduction to fatigue failure, Mechanism of fatigue failure, types of fatigue loading, S-N Diagram, Low cycle fatigue, High cycle fatigue, Endurance limit.	L+D	Projectors	2	18	28/10/2021 30/10/2021
12.	Modifying factors: size effect, surface effect, Stress concentration effects Notch sensitivity	L+D	BB	1	19	30/10/2021
13.	Goodman and Soderberg relationship, stresses due to combined loading, cumulative fatigue damage, and Miner's equation.	L+D	BB	2	21	02/11/2021 04/11/2021
14.	Numericals on Fatigue loading	L+D	BB	3	24	04/11/2021 08/11/2021 09/11/2021
	MODULE 3					
15.	**Design of Shafts:** Torsion of shafts, solid and hollow shaft design with steady loading based on strength and rigidity	L+D	Projectors	1	25	10/11/2021
16.	**FIRST CIE**					
17.	ASME and BIS codes for power transmission shafting, design of shafts subjected to combined bending, torsion and axial loading. Design of shafts subjected to fluctuating loads.	L+D	Projectors	1 2	26 28	11/11/2021 15/11/2021 16/11/2021
18.	Numericals on design of shafts	L+D	BB	3	31	17/11/2021 18/11/2021

19.	Design of keys and couplings: Keys: Types of keys and their applications, design considerations in parallel and tapered sunk keys, Design of square and rectangular sunk keys.	L+D	Projectors	2	33	23/11/2021 24/11/2021
20.	Couplings: Rigid and flexible coupling-types and applications, design of Flange coupling, and Bush and Pin type coupling.	L+D	BB	2	35	25/11/2021 25/11/2021
21.	Numericals on Design of Keys and Couplings	L+D	BB	4	39	27/11/2021 27/11/2021 29/11/2021 30/11/2021
	MODULE 4					
22.	Design of Permanent Joints: Types of permanent joints-Riveted and Welded Joints.	L+D	Projectors	1	40	01/12/2021
23.	**Riveted joints:** Types of rivets, rivet materials, Caulking and Fullering, analysis of riveted joints, joint efficiency, Failures of riveted joints, boiler joints, riveted brackets.	L+D	Projectors	2	42	02/12/2021 02/12/2021
24.	Numericals on Riveted Joints	L+D	BB	4	46	06/12/2021 07/12/2021 08/12/2021 09/12/2021
25.	**Welded joints:** Types, strength of butt and fillet welds, eccentrically loaded welded joints	L+D	BB	1	47	09/12/2021
26.	Numericals on welded Joints	L+D	BB	3	50	13/12/2021 14/12/2021 15/12/2021
27.	**SECOND CIE**			1	51	16/12/2021
	MODULE 5					
28.	Design of Temporary Joints: Types of temporary joints-cotter joints, knuckle joint and fasteners. Design of Cotter and Knuckle Joint.	L+D	Projectors	2	53	20/12/2021 21/12/2021
29.	**Numericals on Design of cotter & Knuckle joint**	L+D	BB	4	57	22/12/2021 23/12/2021

						23/12/2021 27/12/2021
30.	Threaded Fasteners: Stresses in threaded fasteners, effect of initial tension, design of threaded fasteners under static, dynamic and impact loads, design of eccentrically loaded bolted joints.	L+D	BB	2	59	28/12/2021 29/12/2021
31.	Numericals on Threaded Fasteners.	L+D	BB	3	62	30/12/2021 30/12/2021 03/01/2022
32.	Power screws: Mechanics of power screw, stresses in power screws, efficiency and self-locking, design of power screws.	L+D	BB	4	66	04/01/2022 05/01/2022 06/01/2022 06/01/2022
33.	Numericals on Power screws	L+D	BB	4	70	10/01/2022 11/01/2022 12/01/2022 13/01/2022
34.	Numericals on Complete Design of Screw Jack.	L+D	BB	4	74	13/01/2022 17/01/2022 18/01/2022 19/01/2022
35.	**THIRD CIE**			1	75	20/01/2022

Text Books:

1. Design of Machine Elements, V.B. Bhandari, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2nd Edition 2007
2. Mechanical Engineering Design, Joseph E Shigley and Charles R. Mischke. McGraw Hill International edition, 6th Edition, 2009.

Reference Books:

1. Machine Design, Robert L. Norton, Pearson Education Asia, 2001
2. Engineering Design, George E. Dieter, Linda C Schmidt, McGraw Hill Education, Indian Edition, 2013.

Web Materials:

W1: https://nptel.ac.in/downloads/112105125/

W2: https://proceedings.asmedigitalcollection.asme.org/

W3: https://stemez.com/subjects/technology_engineering/1GMachineDesign/1GMachineDesign.php

Details for the teaching Aids

LCD projectors will be used where ever necessary and since this is problematic subject Black Board Teaching will be used.

Signature of Course In charge

Signature of Module Coordinator

Signature of HOD

Head of Department
Dept. of Mechanical Engg.
K.S. Institute of Technology
Bengaluru - 560 109.

K.S. INSTITUTE OF TECHNOLOGY BANGALORE

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

DEPARTMENT OF MECHANICAL ENGINEERING

Design of Machine Elements-2 - Course Plan

COURSE INCHARGE : Mr. Anilkumar A
COURSE CODE/NAME : 18ME62 / DESIGN OF MACHINE ELEMENTS-2
SEMESTER/SEC/YEAR : VI / III
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					
1.	Springs: Types of springs, spring materials, stresses in helical coil springs of circular and non-circular cross sections, Tension and compression, springs, concentric springs; springs under fluctuating loads.	L+D	BB	2	2	04/04/2022 05/04/2022
2.	Leaf Springs: Stresses in leaf springs, equalized stresses, and nipping of leaf springs. Introduction to torsion and Belleville springs. Numerical Problems	L+D	BB	3	5	06/04/2022 07/04/2022 08/04/2022
3.	Numerical Problems on Springs	L+DE	BB	4	9	11/04/2022 12/04/2022 13/04/2022 18/04/2022
4.	Belts: Materials of construction of flat and V belts, power rating of belts, concept of slip and creep, Initial tension, effect of centrifugal tension, maximum power condition	L+AV	LCD	2	11	19/04/2022 20/04/2022
5.	Selection of flat and V belts-length & cross section from manufacturers' catalogues. Construction and application of timing belts. Numerical Problems	L+D	BB	2	13	21/04/2022 22/04/2022
6.	Wire ropes: Construction of wire ropes, stresses in wire ropes, and selection of wire ropes.	L+ D	BB	1	14	25/04/2022

7.	Chain drive: Types of power transmission chains, modes of failure for chain, and lubrication of chains	L+ D	BB	1	15	26/04/2022
	MODULE 2					
8.	Gear drives: Classification of gears, materials for gears, standard systems of gear tooth, gear tooth failure modes and lubrication of gears.	L+D	LCD	2	17	27/04/2022 28/04/2022
9.	Spur Gears: Definitions, stresses in gear tooth: Lewis equation, form factor, design for strength, dynamic load and wear.	L+D	BB	2	19	29/04/2022 30/04/2022
10.	Numerical Problems on Spur Gears	L+D	BB	4	23	02/05/2022 07/05/2022 09/05/2022 10/05/2022
11.	FIRST CIE			1	24	04/05/2022
12.	Helical Gears: Definitions, transverse and normal module, formative number of teeth	L+D	LCD	1	25	11/05/2022
13.	Design based on strength, dynamic load and wear.	L+D	BB	1	26	12/05/2022
14.	Numerical Problems on Helical Gears	L+D	BB	4	30	13/05/2022 14/05/2022 16/05/2022 23/05/2022
	MODULE 3					
15.	Bevel Gears: Definitions, formative number of teeth, design based on strength, dynamic load and wear.	L+D	BB	2	32	24/05/2022 25/05/2022
16.	Numerical Problems Based on Bevel Gears	L+D	BB	3	35	26/05/2022 27/05/2022 28/05/2022
17.	Worm Gears: Definitions, types of worm and worm gears, and materials for worm and worm wheel, Design based on strength, dynamic, wear loads and efficiency of worm gear drives	L+D	LCD	1	36	30/05/2022

18.	Numerical Problems Based on Worm Gears	L+D	BB	3	49	31/05/2022 06/06/2022 07/06/2022
	MODULE 4					
19.	SECOND CIE			1	40	01/06/2022
20.	Design of Clutches: Necessity of a clutch in automobile, Types of clutches, friction materials and their applications.	L+D	LCD	1	42	08/06/2022
21.	Design of single plate, multi-plate and cone clutches based on uniform pressure and uniform wear theories.	L+D	LCD	1	43	09/06/2022
22.	Numerical examples on single and multi-plate clutches	L+D	BB	2	45	10/06/2022 13/06/2022
23.	Design of Brakes: Different Types of Brakes, Concept of self-energizing and self-locking of brakes. Practical examples	L+D	BB	3	48	14/06/2022 15/06/2022 20/06/2022
24.	Design of band brakes, block brakes and internal expanding brakes.	L+D	LCD	1	49	21/06/2022
25.	Numerical Problems based on Brakes	L+D	BB	3	52	22/06/2022 23/06/2022 24/06/2022
	MODULE 5					
26.	Lubrication and Bearings: Lubricants and their properties, bearing materials, properties; mechanisms of lubrication, hydrodynamic lubrication, pressure development in oil film, bearing modulus, coefficient of friction	L+D	LCD	2	54	25/06/2022 27/06/2022
27.	Minimum oil film thickness, heat generated, and heat dissipated	L+D	LCD	1	55	28/06/2022
28.	Numerical examples on hydrodynamic journal bearing	L+D	BB	4	59	29/06/2022 30/06/2022 01/07/2022 07/07/2022
29.	THIRD CIE			1	60	05/07/2022

30.	Anti-friction bearings: Types of rolling contact bearings and their applications, static and dynamic load carrying capacities, equivalent bearing load, load life relationship, selection of deep grove ball bearings from the manufacturers' catalogue, election of bearings subjected to cyclic loads and speeds; probability of survival.	L+D	LCD + BB	1	61	08/07/2022
31.	Numerical on Anti friction Bearings	L+D	BB	1	62	16/07/2022

Text Books:

1. Design of Machine Elements, V.B. Bhandari, Tata McGraw Hill Publishing Company Ltd., New Delhi, 2nd Edition 2007
2. Richard G. Budynas,and J. Keith Nisbett,"Shigley's Mechanical Engineering Design", McGraw-Hill Education, 10th Edition, 2015.

Reference Books:

1. Robert L. Norton "Machine Design- an integrated approach", Pearson Education, 2nd edition.
2. Hall, Holowenko, Laughlin (Schaum's Outline Series), "Machine design" adapted by S.K.Somani, Tata McGrawHill Publishing Company Ltd., Special Indian Edition, 2008.

Web Materials:

W1: https://nptel.ac.in/downloads/112105125/

W2: https://proceedings.asmedigitalcollection.asme.org/

W3: https://stemez.com/subjects/technology_engineering/1GMachineDesign/1GMachineDesign.php

Details for the teaching Aids

LCD projectors will be used where ever necessary and since this is problematic subject Black Board Teaching will be used

Signature of Course In charge

Signature of Module Coordinator

Signature of HOD
Head of the Department
Dept. of Mechanical Engg
K.S. Institute of Technology
Bengaluru - 560 109.

KS INSTITUTE OF TECHNOLOGY BANGALORE

DEPARTMENT OF MECHANICAL ENGINEERING

NAME OF THE STAFF : Mr.MANJUNATHA.B.R

COURSE CODE/TITLE 18ME741 / ADDITIVE MANUFACTURING

SEMESTER/YEAR : VII/ IV

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: Introduction and basic principles						
1	Introduction and basic principles: Need for Additive Manufacturing	L+D	BB	1	1	04/10/2021
2	Generic AM process, stereoli tho graphy or 3dprinting, rapid proto typing	L+ D	BB	1	2	05/10/2021
3	The benefits of AM, distinction between AM and CNC machining	L+ D	BB	1	3	07/10/2021
4	Other related technologies- reverse engineering technology.	L+D	BB	1	4	11/10/2021
5	Development of Additive Manufacturing Technology: Introduction, computers	L+ D	BB	1	5	12/10/2021
6	computer-aidedde sign technology ,other associated technologies, the use of layers,	L+ D	BB	1	6	13/10/2021
7	classification of AM processes, metals ystems, hybrid systems, milestones in AM development.	L+D,	BB	1	7	18/10/2021
8	Additive Manufacturing Process chain: Introduction,	L+D	BB	1	8	19/10/2021
9	the eight steps in additive manufacture,,	L+D	BB	1	9	21/10/2021
10	Steps in AM	L+D	BB	1	10	23/10/2021
11	Variations from one AM machine to another ,metal	L+D	BB	1	11	24/10/2021

	systems					
12	Compressors. Structure of pneumatic control System	L+D	LCD	1	12	25/10/2021
13	Maintenance of equipment, materials handling issues, design for AM, and application areas.	L+D	LCD	1	13	26/10/2021
	Module 2: Photo polymerization process					
14	Photo polymerization processes: Stereolitho graphy (SL), Materials, SL resin curing process	L+D,	LCD	1	14	27/10/2021
15	Micro-stereoli thography, Process Benefits and Drawbacks, Applications of Photo polymerization Processes.	L+D,	BB	1	15	02/11/2021
16	Powder bedfusion processes: Introduction, Selective laser Sintering (SLS)	L+D	BB	1	16	04/11/2021
17	Materials, Powder fusion mechanism, SLS Metal and ceramic part creation, Electron Beam melting (EBM), Process Benefits and Drawbacks, Applications of Powder Bed Fusion Processes.	L+D	BB	1	17	08/11/2021
18	Extrusion-based systems: Fused Deposition Modelling (FDM), Principles, Materials, Plotting and path control,	L+D	LCD	1	18	09/11/2021
19	Bio-Extrusion, Process Benefits and Drawbacks	L+D	LCD	1	19	10/11/2021
	1ST INTERNAL ASSESSMENT					11/11/2021 12/11/2021 13/11/2021
20	Applications of Extrusion-Based Processes.	L+D	BB	1	20	11/11/2021
21	Printing process modeling, material modification	L+D	BB	1	21	15/11/2021
	Module 3: Printing Processes					
22	Printing Processes: evolution of printing as an additive manufacturing process	L+D	BB	1	22	16/11/2021
23	Research achievements in printing deposition, technical challenges of printing	L+D	BB	1	23	17/11/2021
24	Printing process modeling, material modification	L+D	BB	1	24	23/11/2021
25	Three-dimensional printing, advantages of binder printing .	L+D	BB	1	25	24/11/2021

26	Sheet Lamination Processes: Introduction	L+D	BB	1	26	25/11/2021
27	Sheet Lamination Processes: Materials	L+D	BB	1	27	27/11/2021
28	Laminated Object Manufacturing (LOM)	L+D	BB	1	28	01/12/2021
29	Ultrasonic Consolidation (UC),	L+D	BB	1	29	02/12/2021
30	Gluing, Thermal bonding, LOM	L+D	BB	1	30	06/12/2021
31	UC applications.	L+D	BB	1	31	07/12/2021
32	Introduction, general beam deposition process	L+D	BB	1	32	08/12/2021
33	Description material delivery, BD systems	L+D	BB	1	33	09/12/2021
34	Process parameters, typical materials and microstructure	L+D	BB	1	34	14/12/2021
35	Processing–structure–properties relationships, BD benefits and drawbacks	L+D	BB	1	35	15/12/2021
	IIND INTERNAL ASSESSMENT					16/12/2021 17/12/2021 18/12/2021
36	Direct Write Technologies: Background ,ink - basedDW,laser transfer	L+D	LCD	1	36	20/12/2021
37	DW beam deposition, DW liquid-phase direct deposition.	L+D	LCD	1	37	21/12/2021
	Module 4: Guidelines for Process Selection					
38	Guidelines for Process Selection: Introduction	L+D	BB	1	38	27/12/2021
39	Challenges of selection, example system for preliminary selection, production planning and control.	L+D	BB	1	39	28/12/2021
40	Software issues for Additive Manufacturing: Introduction, preparation of cad models	L+D	BB	1	40	29/12/2021
41	STL file, problems with STL files, STL file manipulation.	L+D	BB	1	41	30/12/2021
42	Post- Processing: Support material removal, surface texture improvements,	L+D	BB	1	42	03/01/2022
43	Preparation for use as a pattern,	L+D	BB	1	43	04/01/2022
44	Property enhancements using non-thermal techniques and thermal techniques.	L+D	LCD	1	44	05/01/2022
	Module 5: The use of multiple materials in additive manufacturing:					
45	The use of multiple materials in additive	L+D	LCD	1	45	06/01/2022

	manufacturing: Introduction, multiple material approaches					
46	Discrete multiple material processes, porous multiple material processes	L+D	BB	1	46	10/01/2022
47	Blended multiple material processes, commercial applications using multiple materials, future directions	L+D	BB	1	47	11/01/2022
48	AM Applications: Functional models, Pattern for investment and vacuum casting	L+D	BB	1	48	12/01/2022
49	Medical models, art models, Engineering analysis models, Rapid tooling, new materials development	L+D	BB	1	49	13/01/2022
50	Bi-metallic parts, Re- manufacturing. Application: Examples for Aerospace, defense, automobile, Bio-medical and general engineering industries.	L+D	BB	1	50	17/01/2022
51	Align Technology, siemens and phonak	L+D	LCD	1	51	18/01/2022
52	DDM drivers, manufacturing vs. prototyping, life-cycle costing, future of direct digital manufacturing.	L+D	LCD	1	52	19/01/2022
	3RD INTERNAL ASSESSMENT					20/01/2022 21/01/2022 22/01/2022

Course in charge

HOD/ME

K. S. INSTITUTE OF TECHNOLOGY, BENGALURU - 560109

DEPARTMENT OF MECHANICAL ENGINEERING

LESSON PLAN 2021-22 EVEN SEMESTER

COURSE INCHARGE : **Dr. SALEEM KHAN**

COURSE CODE/TITLE : **17ME82/Additive Manufacturing**

YEAR/ SEMESTER/SECTION : **IV/VIII/A & B**

BRANCH : **Mechanical Engineering**

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 AM, AM evolution, Distinction between AM & CNC machining	Offline	PPT	01	01	04/04/2022
2	**AM process chain:** Conceptualization, CAD, conversion to STL, Transfer to AM, STL file manipulation, Machine setup, build , removal and clean up, post processing.	Offline	PPT & VD	01	02	05/04/2022
3	**Classification of AM processes:** Liquid polymer system, Discrete particle system	Offline	PPT	01	03	06/04/2022
4	**Classification of AM processes:** Molten material systems and Solid sheet system.	Offline	PPT	01	04	06/04/2022
5	**Post processing of AM parts:** Support material removal, surface texture improvement, accuracy improvement, aesthetic improvement,	Offline	PPT	01	05	11/04/2022
6	**Post processing of AM parts:** preparation for use as a pattern, property enhancements using non-thermal and thermal techniques.	Offline	PPT	01	06	12/04/2022
7	**Guidelines for process selection:** Introduction	Offline	PPT	01	07	13/04/2022

8	**Guidelines for process selection**: selection methods for a part, challenges of selection	Offline	PPT	01	08	13/04/2022
9	**AM Applications:** Functional models, Pattern for investment and vacuum casting, Medical models, art models, Engineering analysis models, Rapid tooling, new materials development	Offline	PPT & VD	01	09	18/04/2022
10	**AM Applications:** Bi-metallic parts, Re-manufacturing. Application examples for Aerospace, defence, automobile, Bio- medical and general engineering industries.	Offline	PPT & VD	01	10	19/04/2022
	Module 2					
11	**System Drives and devices:** Hydraulic and pneumatic motors and their features	Offline	PPT	01	11	20/04/2022
12	Electrical motors AC/DC and their features	Offline	PPT	01	12	20/04/2022
13	Electrical Actuators; Solenoids	Offline	PPT	01	13	25/04/2022
14	Relays, Diodes, Thyristors, and Triacs	Offline	PPT	01	14	26/04/2022
15	Hydraulic and Pneumatic actuators	Offline	PPT	01	15	27/04/2022
16	Hydraulic and Pneumatic actuators	Offline	PPT	01	16	27/04/2022
17	Design of Hydraulic and Pneumatic circuits	Offline	PPT	01	17	02/05/2022
18	Design of Hydraulic and Pneumatic circuits	Offline	PPT	01	18	04/05/2022
19	Piezoelectric actuators	Offline	PPT	01	19	04/05/2022
20	Shape memory alloys.	Offline	PPT	01	20	09/05/2022
	Module 3					
21	Introduction to Polymers used for additive manufacturing: polyamide, PF resin, polyesters etc. Classification of polymers, Concept of functionality, Polydispersity and Molecular weight [MW], Molecular Weight Distribution [MWD]	Offline	PPT	01	21	10/05/2022
22	**Polymer Processing:** Methods of spinning for additive manufacturing: Wet spinning, [illegible] spinning. Biopolymers,	Offline	PPT	01	22	11/05/2022

	Compatibility issues with polymers. Moulding and casting of polymers, Polymer processing techniques					
23	Introduction and History of Powder Metallurgy (PM), Present and Future Trends of PM	Offline	PPT	01	23	11/05/2022
24	**Powder Production Techniques:** Different Mechanical and Chemical methods, Atomisation of Powder, other emerging processes.	Offline	PPT	01	24	16/05/2022
25	**Characterization Techniques:** Particle Size & Shape Distribution, Electron Microscopy of Powder, Interparticle Friction, Compression ability, Powder Structure, Chemical Characterization	Offline	PPT	01	25	17/05/2022
26	**Microstructure Control in Powder:** Importance of Microstructure Study, Microstructures of Powder by Different techniques.	Offline	PPT	01	26	18/05/2022
27	**Powder Shaping:** Particle Packing Modifications, Lubricants & Binders, Powder Compaction & Process Variables, Pressure & Density Distribution during Compaction, Isotactic Pressing, Injection Moulding, Powder Extrusion, Slip Casting, Tape Casting.	Offline	PPT	01	27	18/05/2022
28	**Sintering:** Theory of Sintering, Sintering of Single & Mixed Phase Powder, Liquid Phase Sintering	Offline	PPT	01	28	23/05/2022
29	Modern Sintering Techniques, Physical & Mechanical Properties Evaluation, Structure-Property Correlation Study, Modern Sintering techniques, Defects Analysis of Sintered Components	Offline	PPT	01	29	24/05/2022
30	Application of Powder Metallurgy: Filters, Tungsten Filaments, Self-Lubricating Bearings, Porous Materials, Biomaterials etc	Offline	PPT	01	30	25/05/2022
Module 4						
31	**Introduction:** Importance of Nano-technology, Emergence of Nanotechnology, Bottom-up and Top-down approaches, challenges in Nanotechnology.	Offline	PPT	01	31	25/05/2022

32	**Nano-materials Synthesis and Processing:** Methods for creating Nanostructures; Processes for producing ultrafine powders- Mechanical grinding	Offline	PPT	01	32	30/05/2022
33	Wet Chemical Synthesis of Nano-materials- sol-gel process; Gas Phase synthesis of Nano-materials- Furnace, Flame assisted ultrasonic spray pyrolysis; Gas Condensation Processing (GPC), Chemical Vapour Condensation(CVC).	Offline	PPT	01	33	31/05/2022
34	**Optical Microscopy** - principles, Imaging Modes, Applications, Limitations.	Offline	PPT	01	34	01/06/2022
35	**Scanning Electron Microscopy (SEM)** - principles, Imaging Modes, Applications, Limitations.	Offline	PPT	01	35	01/06/2022
36	**Transmission Electron Microscopy (TEM)** - principles, Imaging Modes, Applications, Limitations.	Offline	PPT	01	36	06/06/2022
37	**X- Ray Diffraction (XRD)** - principles, Imaging Modes, Applications, Limitations.	Offline	PPT	01	37	07/06/2022
38	**Scanning Probe Microscopy (SPM)** - principles, Imaging Modes, Applications, Limitations.	Offline	PPT	01	38	08/06/2022
39	**Atomic Force Microscopy (AFM)** - basic principles, instrumentation, operational modes, Applications, Limitations.	Offline	PPT	01	39	08/06/2022
40	**Electron Probe Micro Analyzer (EPMA)** - Introduction, Sample preparation, Working procedure, Applications, Limitations.	Offline	PPT	01	40	13/06/2022
	Module 5					
41	Introduction to NC/CNC/DNC machine tools, Classification of NC /CNC machine tools, Advantage, disadvantages of NC /CNC machine tools, Application of NC/CNC	Offline	PPT & VD	01	41	14/06/2022
42	**Part programming:** CNC programming and introduction, Manual part programming: Basic (Drilling, milling, turning etc.), Special part programming, Advanced part programming,	Offline	PPT & BB	01	42	15/06/2022
43	Computer aided part programming (APT)	Offline	PPT	01	43	15/06/2022

44	**Introduction:** Automation in production system principles and strategies of automation, basic Elements of an automated system.	Offline	PPT	01	44	20/06/2022
45	Advanced Automation functions.	Offline	PPT	01	45	21/06/2022
46	Levels of Automations,	Offline	PPT	01	46	22/06/2022
47	introduction to automation productivity	Offline	PPT	01	47	22/06/2022
48	**Control Technologies in Automation:** Industrial control system.	Offline	PPT	01	48	27/06/2022
49	Process industry vs discrete manufacturing industries. Continuous vs discrete control.	Offline	PPT	01	49	28/06/2022
50	Continuous process and its forms. Other control system components.	Offline	PPT	01	50	30/06/2022

TEXT BOOKS:

1. Chua Chee Kai, Leong Kah Fai, —Rapid Prototyping: Principles & Applications,World Scientific, 2003.
2. G Odian Principles of Polymerization, Wiley Interscience John Wiley and Sons, 4th edition, 2005
3. Mark James Jackson, Microfabrication and Nanomanufacturing, CRC Press, 2005.
4. Powder Metallurgy Technology, Cambridge International Science Publishing, 2002.
5. P. C. Angelo and R. Subramanian: Powder Metallurgy- Science, Technology and Applications, PHI, New Delhi, 2008.
6. Mikell P Groover, Automation, Production Systems and Computer Integrated Manufacturing, 3rd Edition, Prentice Hall Inc., New Delhi, 2007.

REFERENCE BOOKS:

1. Wohler's Report 2000 - Terry Wohlers - Wohler's Association -2000
2. Computer Aided Manufacturing - P.N. Rao, N.K. Tewari and T.K. Kundra Tata McGraw Hill 1999
3. Ray F. Egerton , Physical Principles of Electron Microscopy: An Introduction to TEM, SEM, and AEM , Springer, 2005.
4. P. C. Angelo and R. Subramanian: Powder Metallurgy- Science, Technology and Applications, PHI, New Delhi, 2008.

Details of the teaching aids:

1. Power point presentation (PPT)
2. Chalk and talk
3. Video demonstration (VD)

Course Incharge **Module coordinator** **HOD ME**

Dept. of Mechanical Engg
K.S. Institute of Technology
Bengaluru - 560 109.

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

KS INSTITUTE OF TECHNOLOGY, BANGALORE

DEPARTMENT OF TELECOMMUNICATION ENGINEERING

NAME OF THE STAFF : **Mr. SATISH KUMAR B**

SUBJECT CODE/NAME : **18TE72/ WIRELESS COMMUNICATIONS**

SEMESTER/YEAR : **VII/IV**

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 : MOBILE RADIO PROPAGATION – LARGE SCALE PATH LOSS						
1	**Mobile Radio Propagation**:Large Scale Path Loss	L+D	BB	1	1	1/10/21
2	Free Space Propagation Model	L+D	BB	1	2	4/10/21
3	Relating Power to Electric Field	L+D	BB	1	3	7/10/21
4	Three Basic Propagation Mechanisms	L+D	BB	1	4	8/10/21
5	Reflection	L+D	BB	1	5	9/10/21
6	Diffraction	L+D	BB	1	6	11/10/21
7	Scattering	L+D	BB	1	7	13/10/21
8	Practical Link Budget	L+D	BB	1	8	18/10/21
9	Outdoor Propagation Models	L+D	BB	1	9	21/10/21
10	Okumura	L+D	BB	1	10	22/10/21
11	Hata Model	L+D	BB	1	11	23/10/21
12	Problems	L+D	BB	1	12	25/10/21

MODULE 2 : MOBILE RADIO PROPAGATION – SMALL SCALE FADING AND MULTIPATH						
13	**Mobile Radio Propagation – Small Scale Fading**	L+D	BB	1	13	27/10/21
14	Impulse Response of Multipath Channel	L+D	BB	1	14	28/10/21
15	Small Scale Multipath Measurements	L+D	BB	1	15	29/10/21
16	Parameters of Mobile Multipath Channels	L+D	BB	1	16	30/10/21
17	Types of Small scale Fading	L+D	BB	1	17	4/11/21
18	Rayleigh and Rician Distributions	L+D	BB	1	18	8/11/21
19	**Cellular Concept**	L+D	BB	1	19	10/11/21
20	Frequency Reuse	L+D	BB	1	20	11/11/21
21	Channel Assignment Strategies	L+D	BB	1	21	15/11/21
22	Handoff Strategies	L+D	BB	1	22	17/11/21
23	Interference and System Capacity	L+D	BB	1	23	18/11/21
24	Trunking and Grade of Service	L+D	BB	1	24	19/11/21
MODULE 3: MULTIPLE ACCESS TECHNIQUES FOR WIRELESS COMMUNICATIONS						
25	**Multiple Access Techniques** Introduction	L+D	BB	1	25	24/11/21
26	Frequency Division Multi Access	L+D	BB	1	26	25/11/21
27	Time Division Multi Access	L+D	BB	1	27	26/11/21
28	Spread Spectrum Multi Access	L+D	BB	1	28	27/11/21
29	Frequency Flopped Multiple Access	L+D	BB	1	29	29/11/21
30	Space Division Multi Access	L+D	BB	1	30	1/12/21
31	Code Division Multi Access	L+D	BB	1	31	2/12/21

32	Packet Radio	L+D	BB	1	32	3/12/21
33	Capacity of Cellular systems	L+D	BB	1	33	4/12/21
34	Cell splitting	L+D	BB	1	34	6/12/21
35	Cell sectoring	L+D	BB	1	35	8/12/21
36	Problems	L+D	BB	1	36	9/12/21
MODULE 4 : GSM						
37	**GSM:** Historical Overview	L+D	BB	1	37	10/12/21
38	Network and Switching Subsystem	L+D	BB	1	38	13/12/21
39	The Air Interface	L+D	BB	1	39	15/12/21
40	Logical and Physical Channels	L+D	BB	1	40	21/12/21
41	Synchronization	L+D	BB	1	41	22/12/21
42	Coding	L+D	BB	1	42	23/12/21
43	Equalizer	L+D	BB	1	43	24/12/21
44	Circuit-Switched Data Transmission	L+D	BB	1	44	27/12/21
45	Examples for Establishment of a Connection	L+D	BB	1	45	29/12/21
46	Services and Billing	L+D	BB	1	46	30/12/21
47	General Packet Radio Service	L+D	BB	1	47	31/12/21
MODULE 5 : IS-95 and CDMA 2000						
48	**IS-95 and CDMA 2000** : System Overview	L+D	BB	2	48	3/1/22

49	Base Station Subsystem	L+D	BB	1	49	5/1/22
50	Air Interface	L+D	BB	1	50	6/1/22
51	Coding	L+D	BB	1	51	7/1/22
52	Spreading and Modulation	L+D	BB	1	52	8/1/22
53	Long and Short Spreading Codes	L+D	BB	1	53	10/1/22
54	Walsh Codes	L+D	BB	1	54	11/1/22
55	Logical and Physical Channels	L+D	BB	1	55	12/1/22
56	Pilot Channels	L+D	BB	1	56	13/1/22
57	CDMA 2000 –History	L+D	BB	1	57	17/1/22
58	1x Mode, 3x Mode	L+D	BB	1	58	19/1/22
59	1xEV-DO	L+D	BB	1	59	31/1/22

Course in charge

HOD TE

Principal.

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KS INSTITUTE OF TECHNOLOGY, BANGALORE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

NAME OF THE STAFF : Dr. REKHA N

SUBJECT CODE/NAME : 18EC61/DIGITAL COMMUNICATION

SEMESTER/YEAR : VI-B / III

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: Bandpass Signal to Equivalent Low pass						
1	Bandpass Signal to Equivalent Lowpass: Introduction	L+D	BB	1	1	4/4/22
2	Hilbert Transform and problems	L+D+PS	BB	1	2	5/4/22
3	Pre-envelopes, Complex envelopes	L+D	BB	1	3	6/4/22
4	Canonical representation of bandpass signals	L+D	BB	1	4	8/4/22
5	Complex low pass representation of bandpass systems and systems	L+D	BB	1	5	11/4/22
6	Line codes: Unipolar,Polar,Bipolar,Manchester code	L+D	BB	1	6	12/4/22
7	Unipolar & their spectral densities	L+D	BB	1	7	13/4/22
8	Polar, Bipolar (AMI) & their spectral densities	L+D	BB	1	8	18/4/22
9	Manchester code & their spectral densities	L+D	BB	1	9	19/4/22
10	Overview of HDB3, B3ZS, B6ZS	L+D+PS	BB	1	10	20/4/22
MODULE 2: Signaling over AWGN Channels						
11	Signaling over AWGN Channels- Introduction	L+ D	BB	1	11	22/4/22
12	Geometric representation of signals	L+D	BB	1	12	25/4/22

13	Gram-Schmidt Orthogonalization procedure	L+D	BB	1	13	26/4/22
14	Conversion of the continuous AWGN channel into a vector channel	L+D	BB	1	14	27/4/22
15	Optimum receivers using coherent detection: ML Decoding	L+D	BB	1	15	29/4/22
16	Correlation receiver	L+D	BB	1	16	30/4/22
17	matched filter receiver	L+D	BB	1	17	2/5/22
18	Numerical Problems	L+D+PS	BB	1	18	7/5/22
MODULE 3: Digital Modulation Techniques						
19	Digital Modulation Techniques: Phase shift Keying techniques using coherent detection:	L+D	BB	1	19	9/5/22
20	generation, detection and error probabilities of BPSK	L+D	BB	1	20	10/5/22
21	generation, detection and error probabilities of QPSK	L+D	BB	1	21	11/5/22
22	Signal Constellation .		BB		22	13/5/22
23	generation, detection and error probabilities of M–ary PSK	L+D	BB	1	23	16/5/22
24	generation, detection and error probabilities of M–ary QAM	L+D	BB	1	24	17/5/22
25	Frequency shift keying techniques using Coherent detection: BFSK generation, detection and error probability	L+D	BB	1	25	18/5/22
26	M-ary PSK,M-ary QAM	L+D	BB	1	26	20/5/22
27	QPSK probability Error	L+D	BB	1	27	23/5/22
28	Non coherent orthogonal modulation techniques: BFSK & probability of error,	L+D	BB	1	28	24/5/22
29	DPSK Symbol representation, Block diagrams treatment of Transmitter and Receiver, Probability of error (without derivation of probability of error equation)	L+D	BB	1	29	25/5/22

30	Numerical Problems on Coherent Detection techniques	L+D+PS	BB	1	30	27/5/22
31	Numerical Problems on BPSK,FSK	L+D+PS	BB	1	31	28/5/22
32	Numerical Problems on QPSK,DPSK	L+D+PS	BB	1	32	30/5/22
	MODULE 4: Communication through Band Limited Channels					
33	Communication through Band Limited Channels: Digital Transmission through Band limited channels:	L+D	BB	1	33	31/5/22
34	Digital PAM Transmission through Band limited Channels	L+D	BB	1	34	6/6/22
35	Signal design for Band limited Channels: Design of band 5limited signals for zero ISI–The Nyquist Criterion (statement only)	L+D	BB	1	35	7/6/22
36	The Nyquist Criterion (statement only)	L+D	BB	1	36	8/6/22
37	Design of band limited signals with controlled ISI-Partial Response signals	L+D	BB	1	37	10/6/22
38	Probability of error for detection of Digital PAM: Probability of error for detection of Digital PAM with Zero ISI	L+D	BB	1	38	13/6/22
39	Symbol–by–Symbol detection of data with controlled ISI	L+D	BB	1	39	14/6/22
40	Channel Equalization: Linear Equalizers (ZFE, MMSE)	L+D	BB	1	40	15/6/22
41	Adaptive Equalizers	L+D	BB	1	41	17/6/22
42	Numerical Problems	L+D+PS	BB	1	42	20/6/22
	MODULE 5: Principles of Spread Spectrum					
43	Principles of Spread Spectrum: Spread Spectrum Communication Systems: Model of a Spread Spectrum Digital Communication System,	L+D	BB	1	43	21/6/22
44	Direct Sequence Spread Spectrum Systems	L+D	BB	1	44	22/6/22
45	Effect of De-spreading on a narrowband Interference	L+D	BB	1	45	27/6/22
46	Probability of error (statement only),	L+D	BB	1	46	28/6/22

47	Some applications of DS Spread Spectrum Signals	L+D	BB	1	47	29/6/22
48	Generation of PN Sequences	L+D	BB	1	48	1/7/22
49	Frequency Hopped Spread Spectrum	L+D	BB	1	49	8/7/22
50	CDMA based on IS-95	L+D	BB	1	50	15/7/22
51	Numerical Problems on PN sequence	L+D+PS	BB	1	51	16/7/22

Text Books:

1. Simon Haykin, "Digital Communication Systems", John Wiley & sons, First Edition, 2014, ISBN 978-0-471-64735-5.
2. 2. John G Proakis and Masoud Salehi, "Fundamentals of Communication Systems", 2014 Edition, Pearson Education, ISBN 978-8-131-70573-5.

Reference Books:

1. B.P.Lathi and Zhi Ding, "Modern Digital and Analog communication Systems", Oxford University Press, 4th Edition, 2010, ISBN: 978-0-198-07380-2.
2. Ian A Glover and Peter M Grant, "Digital Communications", Pearson Education, Third Edition, 2010, ISBN 978-0-273-71830-7.
3. John G Proakis and Masoud Salehi, "Communication Systems Engineering", 2nd Edition, Pearson Education, ISBN 978-93-325-5513-6.

WEB Materials:

- nptel.ac.in/courses/117105077/pdf-m-7/m7l38.pdf
- nptel.ac.in/courses/117105077/20
- https://www.tutorialspoint.com/digital_communication/index.htm

Course In-charge **Module Coordinator** **Signature of HOD-ECE**

K S INSTITUTE OF TECHNOLOGY BANGALORE
DEPARTMENT OF TELECOMMUNICATION ENGINEERING

COURSE PLAN EVEN SEM-2021-22

NAME OF THE STAFF : Mrs. POOJA S

SUBJECT CODE/NAME : 18EC832/ RADAR ENGINEERING

SEMESTER/SEC : VIII SEM

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: Basics of Radar & Simple form of Radar Equation						
1	Basics of Radar	L+AV	LCD	1	1	04/4/2022
2	Introduction, Maximum Unambiguous Range	L+ D	LCD +BB	1	2	05/4/2022
3	Radar Waveforms	L+ D	LCD +BB	1	3	05/4/2022
4	Definitions w.r.t pulse waveforms- PRF, PRI, Duty Cycle,	L+D	LCD +BB	1	4	06/4/2022
5	Peak Transmitter Power, Average Transmitter Power	L+D	LCD +BB	1	5	11/4/2022
6	Simple form of Radar Equation	L+D	LCD +BB	1	6	12/4/2022
7	Radar Block Diagram & Operation	L+D	LCD +BB	1	7	12/4/2022
8	Radar Frequencies	L+D	LCD +BB	1	8	13/4/2022
9	Applications of Radar	L+D	BB	1	9	18/4/2022
10	The Origins of Radar, Problems	L+D	BB	1	10	19/4/2022
11	**Quiz and class test**	L+D	BB	1	11	19/4/2022
Module -2: The Radar Equation & Radar Cross Section of Targets						
12	Prediction of Radar Range Performance	L+ D	BB	1	12	20/4/2022
13	Detection of signal in Noise, Minimum Detectable Signal	L+D	BB	1	13	25/4/2022

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14	Receiver Noise, SNR	L+D, PS	BB	1	14	26/4/2022
15	Modified Radar Range Equation	L+D, PS	BB	1	15	26/4/2022
16	Envelope Detector – False Alarm Time & Probability, probability of detection	L+D, PS	BB	1	16	27/4/2022
17	Simple Targets- sphere, cone sphere	L+D, PS	BB	1	17	02/5/2022
17	Transmitter Power,	L+D, PS	BB	1	18	04/5/2022
18	PRF & Range Ambiguities	L+D	BB	1	19	09/5/2022
19	System Losses	L+D	BB	1	20	10/5/2022
20	Problems	L+D	BB	1	21	10/5/2022
21	**Quiz and class test**			1	22	11/5/2022
Module -3: MTI & Pulse Doppler Radar & Digital MTI Processing						
23	Introduction, Principle, Doppler Frequency Shift	L+D	BB	1	23	16/5/2022
24	Simple CW Radar, sweep to sweep subtraction Delay Line Canceler	L+D	BB	1	24	17/5/2022
25	MTI Radar with Power amplifier transmitter, Delay line canceler	L+D	BB	1	25	17/5/2022
26	Frequency Response of single delay line, blind speeds, clutter attenuation	L+D	BB	1	26	18/5/2022
27	MTI improvement factor	L+D	BB	1	27	23/5/2022
28	N pulse delay line canceler	L+D	BB	1	28	24/5/2022
29	Digital MTI Processing: Blind Phases, I & Q channels,	L+D	BB	1	29	24/5/2022
30	Digital MTI Doppler signal Processor	L+D	BB	1	30	25/5/2022
31	Moving Target Detector	L+D	BB	1	31	30/5/2022
32	Original MTD	L+D	BB	1	32	31/5/2022
Module -4: Tracking Radar & Sequential Lobing						
33	Types of Radar tracking systems	L+AV	LCD	1	33	31/5/2022
34	Monopulse tracking- Amplitude Comparison Monopulse (1D)	L+D	BB	1	34	06/6/2022
35	Monopulse (2D)	L+D	BB	1	35	07/6/2022
36	Phase comparison Monopulse	L+D	BB	1	36	07/6/2022
37	Sequential Lobing	L+D	BB	1	37	08/6/2022
38	Conical Scan Tracking Radar	L+D	BB	1	38	13/6/2022
39	Tracking in Range, Comparison of trackers	L+D	BB	1	39	14/6/2022

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Module -5: Radar Antenna & Radar Receiver						
40	Functions of the Radar Antenna	L+AV	LCD	1	40	14/6/2022
41	Antenna Parameters	L+D	BB	1	41	15/6/2022
42	Electronically steered phased array antennas	L+D	BB	1	42	20/6/2022
43	The Radar Receiver	L+D	BB	1	43	21/6/2022
44	Receiver Noise Figure	L+D	BB	1	44	21/6/2022
45	Superheterodyne receiver	L+D	BB	1	45	22/6/2022
46	Duplexers	L+D	BB	1	46	27/6/2022
47	Receivers Protectors	L+D	BB	1	47	28/6/2022
48	Quiz	L+D	BB	1	48	28/6/2022
49	Revision	L+D	BB	1	49	29/6/2022
50	Revision	L+D	BB	1	50	30/6/2022

Text Book:

Introduction to Radar Systems- Merrill I Skolink, 3e, TMH, 2001

Reference Books:

1. Radar Principles, Technology, Applications – Byron Edde Pearson Education, 2004.
2. Radar Principles – Peebles. Jr. P.Z. Wiley, New York,1998
3. Principles of Modern Radar: Basic Principles -Mark A. Rkhards, James A. Scheer, William A, Holm. Yesdee, 2013

Course In charge **Module Coordinator** **TCE - HOD**

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