

**LESSON PLAN: Data Structure and Data Structure Lab**

<b>Discipline :</b>	<b>Computer Science and Engineering</b>			
<b>Faculty :</b>	<b>Er. Ajit Dash</b>			
<b>Semester :</b>	<b>3<sup>rd</sup> Semester</b>			
<b>Duration :</b>	<b>14 WEEKS (01<sup>st</sup> August 2023 to 30<sup>th</sup> November 2023)</b>			
<b>Work Load :</b>	<b>Lecture :</b>	<b>4 Lectures per week (50 minutes per Class)</b>		
	<b>Practical:</b>	<b>2 Lab Classes (100 minutes per class) per week</b>		
<b>Week</b>	<b>Week Day</b>	<b>Theory</b>	<b>Week Day</b>	<b>Practical (Group: 1)</b>
1 <sup>st</sup>	1 <sup>st</sup>	Explanation of Data, Information and Data Types	1 <sup>st</sup>	Implementation of 1D Array
	2 <sup>nd</sup>	Explanation of Data Structure & Different Operations	1 <sup>st</sup>	Implementation of 1D Array
	3 <sup>rd</sup>	Explanation of Abstract data types	2 <sup>nd</sup>	Implementation of 1D Array
	4 <sup>th</sup>	Discussion Algorithm & its complexity	2 <sup>nd</sup>	Implementation of 1D Array
2 <sup>nd</sup>	5 <sup>th</sup>	Explanation of Time, space tradeoff	1 <sup>st</sup>	Implementation of 1D Array (Strings)
	6 <sup>th</sup>	Explanation of Basic Terminology, Storing Strings	1 <sup>st</sup>	Implementation of 1D Array (Strings)
	7 <sup>th</sup>	State Character Data Type	2 <sup>nd</sup>	Implementation of 1D Array (Strings)
	8 <sup>th</sup>	Discuss String Operations	2 <sup>nd</sup>	Implementation of 1D Array (Strings)
3 <sup>rd</sup>	9 <sup>th</sup>	Introduction about array	1 <sup>st</sup>	Implementation of 2D Array
	10 <sup>th</sup>	Discussion of Linear arrays, representation of linear array In memory	1 <sup>st</sup>	Implementation of 2D Array
	11 <sup>th</sup>	Explanation of traversing linear arrays, inserting & deleting elements	2 <sup>nd</sup>	Implementation of 2D Array
	12 <sup>th</sup>	Discuss multidimensional arrays	2 <sup>nd</sup>	Implementation of 2D Array
4 <sup>th</sup>	13 <sup>th</sup>	Representation of two dimensional arrays in memory row	1 <sup>st</sup>	Implementation of Stack
	14 <sup>th</sup>	Row major order & column major order and pointers	1 <sup>st</sup>	Implementation of Stack
	15 <sup>th</sup>	Explanation of sparse matrices	2 <sup>nd</sup>	Implementation of insertion & deletion in Stack
	16 <sup>th</sup>	Discussion and Doubt Clearing	2 <sup>nd</sup>	Implementation of insertion & deletion in Stack
5 <sup>th</sup>	17 <sup>th</sup>	Fundamental idea about Stacks and queues	1 <sup>st</sup>	Pointer and it's application
	18 <sup>th</sup>	Explanation of array representation of Stack	1 <sup>st</sup>	Pointer and it's application
	19 <sup>th</sup>	Explanation of arithmetic expression	2 <sup>nd</sup>	Pointer and it's application
	20 <sup>th</sup>	Polish notation & Conversion	2 <sup>nd</sup>	Pointer and it's application
6 <sup>th</sup>	21 <sup>st</sup>	Discuss application of stack, recursion	1 <sup>st</sup>	Structure & Union
	22 <sup>nd</sup>	Discuss queues, circular queue, priority queues	1 <sup>st</sup>	Structure & Union

	23 <sup>rd</sup>	Discuss queues, circular queue, priority queues	2 <sup>nd</sup>	Structure & Union
	24 <sup>th</sup>	Discuss queues, circular queue, priority queues	2 <sup>nd</sup>	Structure & Union
7 <sup>th</sup>	25 <sup>th</sup>	Introduction about linked list	1 <sup>st</sup>	Implementation of insertion & deletion in Queue
	26 <sup>th</sup>	Explanation of representation of linked list in memory	1 <sup>st</sup>	Implementation of insertion & deletion in Queue
	27 <sup>th</sup>	Discuss traversing a linked list, searching	2 <sup>nd</sup>	Implementation of insertion & deletion in Queue
	28 <sup>th</sup>	Discuss traversing a linked list, searching	2 <sup>nd</sup>	Implementation of insertion & deletion in Queue
8 <sup>th</sup>	29 <sup>th</sup>	Discussion on garbage collection	1 <sup>st</sup>	Job Test - 1
	30 <sup>th</sup>	Explanation of Insertion into a linked list	1 <sup>st</sup>	Job Test - 1
	31 <sup>st</sup>	Explanation of Deletion from a linked list	2 <sup>nd</sup>	Implementation of insertion & deletion in Linked list
	32 <sup>nd</sup>	Explanation of header linked list	2 <sup>nd</sup>	Implementation of insertion & deletion in Linked list
9 <sup>th</sup>	33 <sup>rd</sup>	Discussion and Doubt Clearing	1 <sup>st</sup>	Implementation of insertion & deletion in Linked list
	34 <sup>th</sup>	Explanation of Basic terminology of Tree	1 <sup>st</sup>	Implementation of insertion & deletion in Linked list
	35 <sup>th</sup>	Discussion of Binary tree, its representation and traversal	2 <sup>nd</sup>	Implementation of insertion & deletion in Linked list
	36 <sup>th</sup>	Discussion of Binary tree, its representation and traversal	2 <sup>nd</sup>	Implementation of insertion & deletion in Linked list
10 <sup>th</sup>	37 <sup>th</sup>	Discussion on binary search tree, searching	1 <sup>st</sup>	Implementation of Bubble sort
	38 <sup>th</sup>	Discussion on binary search tree, searching	1 <sup>st</sup>	Implementation of Bubble sort
	39 <sup>th</sup>	Explanation of insertion & deletion in a binary search trees	2 <sup>nd</sup>	Implementation of Quick sort
	40 <sup>th</sup>	Explanation of insertion & deletion in a binary search trees	2 <sup>nd</sup>	Implementation of Quick sort
11 <sup>th</sup>	41 <sup>st</sup>	Discussion of Algorithm for Bubble sort	1 <sup>st</sup>	Implementation of Quick sort
	42 <sup>nd</sup>	Discussion of Algorithm for Quick sort	1 <sup>st</sup>	Implementation of Quick sort
	43 <sup>rd</sup>	Discussion of Algorithm for Quick Sort	2 <sup>nd</sup>	Job Test - 2
	44 <sup>th</sup>	Discussion of Merging and Merge Sort	2 <sup>nd</sup>	Job Test - 2
12 <sup>th</sup>	45 <sup>th</sup>	Discussion of Merging and Merge Sort	1 <sup>st</sup>	Implementation of Binary tree traversal
	46 <sup>th</sup>	Linear searching	1 <sup>st</sup>	Implementation of Binary tree traversal
	47 <sup>th</sup>	Binary searching	2 <sup>nd</sup>	Implementation of Binary tree traversal
	48 <sup>th</sup>	Discussion of different types of files organization and their access method	2 <sup>nd</sup>	Implementation of Binary tree traversal

13th	49 <sup>th</sup>	Discussion of different types of files organization and their access method	1 <sup>st</sup>	Implementation of Linear search
	50 <sup>th</sup>	Introduction to Hashing, Hash function, collision resolution, open addressing	1 <sup>st</sup>	Implementation of Linear search
	51 <sup>st</sup>	Introduction to Hashing, Hash function, collision resolution, open addressing	2 <sup>nd</sup>	Implementation of Binary search
	52 <sup>nd</sup>	Introduction to Hashing, Hash function, collision resolution, open addressing	2 <sup>nd</sup>	Implementation of Binary search
14th	53 <sup>rd</sup>	Revision of Chapter 1 and 2	1 <sup>st</sup>	Job Test – 3
	54 <sup>th</sup>	Revision of Chapter 3 and 4	1 <sup>st</sup>	Job Test – 3
	55 <sup>th</sup>	Revision of Chapter 5 and 6	2 <sup>nd</sup>	Sessional Viva Voce
	56 <sup>th</sup>	Revision of Chapter 7, 8 and 9	2 <sup>nd</sup>	Sessional Viva Voce