

### Lesson Plan

**Name of Faculty :** Dr. Sanjay Dahiya, Associate Professor of CSE  
**Discipline :** Computer Science and Engineering  
**Semester :** 3<sup>rd</sup> (Odd)  
**Subject :** Data Structure & Algorithm (CSE-201- T)  
**Lesson Plan Duration :** 15 weeks (from August-December-2023)

**Work Load (Lecture/Practical) per week (in hours):** Lectures-03 hours

Week	Theory		Topic Covered Date and Remarks		
	Lecture-Day	Topic (Including Assignment/Test)	Date	HOD	Director- Principal
1 <sup>st</sup>	1	Data Structure: Definition and its types			
	2	Abstract Data Types			
	3	Static and dynamic memory storage			
	4	Query and Solution			
2 <sup>nd</sup>	5	Array and Matrices			
	6	Sparse matrices			
	7	Multi-dimensional arrays			
	8	Operations on arrays: Linear search			
3 <sup>rd</sup>	9	Binary search			
	10	Selection sort			
	11	Bubble sort			
	12	Insertion sort			
4 <sup>th</sup>	13	Merge Sort			
	14	Linked List: Type (singly, circular, header, doubly)			
	15	Linked List: Type (singly, circular, header, doubly)			
	16	Operations on Lists — create, Insert, display			
5 <sup>th</sup>	17	Operations on Lists — Search, delete			
	18	Application of Linked List			
	19	Stacks: Definition, POP and PUSH operation			
	20	Array implementation of stacks			
6 <sup>th</sup>	21	Linked implementation of stacks			
	22	Applications of Stacks: Infix, Prefix expression			
	23	Applications of Stacks: Postfix expression			
	24	Conversion and Evaluation of Expression			
7 <sup>th</sup>		<b>1<sup>st</sup> Minor Test</b>			
8 <sup>th</sup>	25	Recursion			
	26	Quick Sort			
	27	Queues: Definition, Array implementation of queues			
	28	Linked implementation of queues			
9 <sup>th</sup>	29	Circular queues			
	30	Double-ended queues			
	31	Priority Queue			
	32	Query and Solution			
10 <sup>th</sup>	33	Tree : Binary tree and their Properties			
	34	Complete Binary Tree and Threaded Tree			
	35	Linked and static representation of binary trees			
	36	Query and Solution			
11 <sup>th</sup>	37	Different tree traversal algorithms (non-recursive)			
	38	Different tree traversal algorithms (non-recursive)			
	39	Binary Search Tree (create, delete, search, insert, Display)			
	40	Heap Sort and its complexity analysis			
12 <sup>th</sup>	41	AVL Trees			
	42	Balanced multi-way search trees			
	43	Graphs: Definition, Array and linked representation of graphs			
	44	Traversal (BFS and DFS)			
13 <sup>th</sup>	45	Adjacency matrix and adjacency lists, path matrix			
	46	Finding Shortest Path - Warshall's Algorithm			
	47	Hashing, Hash table, Hash functions.			
	48	Running time: Time Complexity			
14 <sup>th</sup>		<b>2<sup>nd</sup> Minor Test</b>			
15 <sup>th</sup>	49	Big-Oh - notation, Best Case, Worst Case, Average Case			
	50	Factors depends on running time			
	51	Evaluating time Complexity			
	52	Query and Solution			