

**PANIPAT INSTITUTE OF ENGINEERING AND TECHNOLOGY**  
**PANIPAT**  
**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**LESSON PLAN**

**Semester: 3<sup>rd</sup>**

**Subject Name: - Data Structure and Algorithms**

**Subject Code: PC-CS-201A**

<b>Sr. No.</b>	<b>Lecture No.</b>	<b>Description of Topic</b>
1	L 1	<b>Introduction to Data Structures:</b> Data Types
2	L 2	Built in and User Defined Data Structures, Applications of Data Structure
3	L 3	Algorithm Analysis, Worst, Best and Average Case Analysis
4	L 4	Notations of Space and Time Complexity
5	L 5	Basics of Recursion
6	L 6	<b>Arrays</b> , One Dimensional Arrays, Two Dimensional Arrays
7	L 7	Multi-Dimensional Arrays, Sparse Matrices
8	L 8	Searching from array using Linear and Binary Searching Algorithm
9	L 9	Sorting of array using Selection, Insertion
10	L 10	Bubble, Radix Algorithm
11	L 11	<b>Unit-2 Stacks:</b> Definition, Implementation of Stacks and Its Operations
12	L 12	Evaluation of Infix, prefix and Postfix Expression
13	L 13	Inter-conversion of Infix, Prefix and Post-Fix Expression

<b>14</b>	L 14	Implementation of Merge Sort
15	L 15	Quick Sort Algorithm
<b>16</b>	L16	<b>Queues:</b> Definition, Sequential Implementation of Linear Queues and Its Operations
17	L 17	Circular Queue and Its Implementation
18	L 18	Priority Queues and Its Implementation
19	L 19	Applications of queues
20	L 20	<b>Unit-3 Linked Lists:</b> Need of Dynamic Data Structures
21	L 21	Single Link List and Its Dynamic Implementation
22	L 22	Traversing, Insertion, Deletion Operations on Single Link Lists
23	L 23	Comparison between Static and Dynamic, Implementation of Linked List
24	L 24	Circular Link Lists and Doubly Link List,
25	L 25	Dynamic Implementation of Primitive Operations on Doubly Linked Lists and Circular Link List
26	L 26	Dynamic Implementation of Stacks and Queues
27	L 27	Unit 4 <b>Trees:</b> Definition, Basic Terminology, Binary Tree
28	L 28	External and Internal Nodes, Static and Dynamic Implementation of a Binary Tree
29	L 29	Primitive Operations on Binary Trees, Binary Tree

30	L 30	Traversals: Pre-Order
31	L 31	In-Order and Post-Order Traversals
<b>32</b>	L32	Representation of Infix, Post-Fix and Prefix Expressions using Trees.
33	L33	<b>Graphs:</b> Basic Terminology, Definition of Undirected and Directed Graphs
34	L34	Memory Representation of Graphs
35	L35	Minimum-Spanning Trees, Warshal Algorithm
36	L36	Graph Traversals Algorithms: Breadth First and Depth First
37	L37	Introduction to Binary Search Trees: B+ trees
38	L38	AVL Trees, Threaded Binary trees
39	L39	Balanced multi-way search trees
40	L40	Implementation of Heap Sort Algorithm