Lecture Plan

Subject: **Data Structures (CSC 13102) [L-T-P = 3-1-0]**
Class: **III Semester B.Tech & Dual Degree (Computer Science & Engineering)**

Sl. No.	Name of the Topics	Number of Lectures
1	**Introduction to Data Structures** (Basic concepts, Mathematical Background, Complexity Analysis, Classifications, Primitive Data Structure & its Representation)	03
2.	**Linear Data Structures - ARRAY** (Linear Array & its Representation, Two Dimensional Array & its Representation, Multi Dimensional Array, Operations on Arrays, Applications – Linear System Equations, Polynomials, Sparse Matrix)	04
3.	**Linear Data Structures - STACK** (Stacks & its Representation, Operations on Stacks, Applications – Arithmetic Expression Evaluation, Parenthesis Matching, Recursion, Tower of Hanoi)	04
4.	**Linear Data Structures - QUEUE** (Queues & its Representation, Operations on Queues, Circular Queues, Double Ended Queue, Priority Queue, Applications)	04
5.	**Linear Data Structures – LINKED LIST** (Linked List, Operations on Linked List, Circularly Linked List, Doubly Linked List, Representing Stacks & Queues, Representing Polynomial, Applications – Polynomial Manipulation, Ordered Polynomial)	05
6.	**Non-Linear Data Structures - TREE** (Binary Tree & its Representation, Traversal Operation, Complete Binary Tree, Heap, Huffman Algorithm, Threaded Binary Tree, Binary Search Tree, Radix Tree, Height Balanced Tree, AVL Tree, 2-3 Tree, B-Trees, Red-Black Tree, Tries, Applications)	08
7.	**Non-Linear Data Structures - GRAPH** (Graph, Adjacency Matrix, Path Matrix, Warshall's Algorithm, Connected Components, Graph Traversal, Topological Sort, Spanning Tree, Kruskal's Algorithm, Prim's Algorithm, Shortest Paths and Transitive Closure, Applications)	05
8.	**Sorting & Searching** (Selection Sort, Bubble Sort, Quick Sort, Heap Sort, Merge Sort, Insertion Sort, Radix Sort, Linear and Binary Search)	04
9.	**Hashing** (Hashing, Hashing Techniques, Applications)	03
	TOTAL	**40**