# PANIPAT INSTITUTE OF ENGINEERING AND TECHNOLOGY PANIPAT

## DEPARTMENT OF CYBER SECURITY

## LESSON PLAN

Subject: Data Structure                    Subject code:PC-CS-CYS-203A

Semester:3rd

| SNo | Topic | CO Covered | Teaching Methodology |
|---|---|---|---|
| 1 | Introduction to data structure, Data type, built in and | CO1 | Powerpoint, White Borad |
| 2 | Algorithm Analysis, Application of data structure | CO1 | Powerpoint, White Borad |
| 3 | Worst case analysis, Best and average case analysis | CO1 | Powerpoint, White Borad |
| 4 | Basic of recursion | CO1 | Powerpoint, White Borad |
| 5 | Array (one-Dimensional) | CO1 | Powerpoint, White Borad |
| 6 | 2D and Multidimensional array | CO1 | Powerpoint, White Borad |
| 7 | Sparse Matrix, Linear Search | CO1 | Powerpoint, White Borad |
| 8 | Binary Search algorithm | CO1 | Powerpoint, White Borad |
| 9 | Sorting using insertion sort | CO1 | Powerpoint, White Borad |
| 10 | Sorting using bubble sort, radix sort | CO1 | Powerpoint, White Borad |
| 11 | Stacks Introduction, Implementation of stacks and op | CO2 | Powerpoint, White Borad |
| 12 | Evaluation of postfix and prefix notation | CO2 | Powerpoint, White Borad |
| 13 | Interconversion of prefix to infix and postfix | CO2 | Powerpoint, White Borad |
| 14 | Quicksort Algorithm | CO2 | Powerpoint, White Borad |
| 15 | Queues introduction, Sequential Implementation of L | CO2 | Powerpoint, White Borad |
| 16 | operation of queues | CO2 | Powerpoint, White Borad |
| 17 | Circular Queue and Its Implementation | CO2 | Powerpoint, White Borad |
| 18 | Priority Queues and Its Implementation | CO2 | Powerpoint, White Borad |
| 19 | Applications of queues | CO2 | Powerpoint, White Borad |
| 20 | Introduction Linked List, Need of Dynamic Data Stru | CO3 | Powerpoint, White Borad |
| 21 | Traversing, Insertion, Deletion Operations on Single | CO3 | Powerpoint, White Borad |
| 22 | Comparison between Static and Dynamic, Implement | CO3 | Powerpoint, White Borad |
| 23 | Doubly Link List and its Dynamic Implementations | CO3 | Powerpoint, White Borad |
| 24 | Circular Link List and its Dynamic Implementations | CO3 | Powerpoint, White Borad |
| 25 | Dynamic Implementation of Stacks and Queues | CO3 | Powerpoint, White Borad |
| 26 | Trees: Definition, Basic Terminology, Binary tree | CO4 | Powerpoint, White Borad |
| 27 | External and Internal Nodes, Static andDynamic Imp | CO4 | Powerpoint, White Borad |
| 28 | Primitive operations on binary tree | CO4 | Powerpoint, White Borad |
| 29 | Binary Tree traversals: Preorder, Inorder and Postord | CO4 | Powerpoint, White Borad |
| 30 | Introduction to BST: B+ Trees, | CO4 | Powerpoint, White Borad |
| 31 | AVL Trees | CO4 | Powerpoint, White Borad |
| 32 | Threaded Binary Tree, Balanced m-way Tree | CO4 | Powerpoint, White Borad |
| 33 | Heap sort | CO4 | Powerpoint, White Borad |
| 34 | Graphs: Basic Terminology, Definition of Undirected | CO4 | Powerpoint, White Borad |

| 35 | Memory representation of graphs | CO4 | Powerpoint, White Borad |
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| 36 | MST, Warshall's Algorithm | CO4 | Powerpoint, White Borad |
| 37 | Graph Traversal Algorithms: BFS and dFS | CO4 | Powerpoint, White Borad |