**Theory course**

1. Introduction to Data Structure: linear data structure
2. Complexity Analysis, Big Oh, Big Omega
3. Lower and Upper Limit, Best and Worst Cases
4. Arrays: Memory Mapping, Linear and Binary Search, Linear Time
5. Sorting (Counting Sort)
6. Arrays: Sorting, Merge Sort
7. Arrays: Sorting, Quick Sort
8. Linked Lists: Single Linked List
9. Linked Lists: Double Linked List, Circular Linked List
10. Linked Lists: Application
11. Stack: Implementation using Array and Linked Lists
12. Stack: Application, Tower of Hanoi, Recursion
13. Infix to Postfix and Postfix evaluation, Introduction to Queue
14. Implementation of Queue using Arrays and Linked lists
15. General Tree, Binary Tree Implementation using Array and left-rightpointers
16. Tree Traversal Algorithms, Tree Applications
17. Binary Search Trees, Insertion, Deletion
18. Binary Search Tree Properties
19. Heap and Priority Queue
20. Heap Sort and Application of Priority Queue
21. Graphs: Implementation using adjacency matrix and Adjacency lists
22. Sparse and Dense graph, Space requirements
23. Graphs: BFS using adjacency matrix and Adjacency lists
24. Graphs: DFS using adjacency matrix and Adjacency lists
25. Graphs: Application of Graphs, Directed Acyclic Graph, Topological Sort
26. Set Operations
27. Set Operations Continued

**Lab course**

**7. Week 7 - Stack**

**8. Week 8 - Queue**

**9. Week 9 - Online 3/ CT 3 + Offline 2**

**10. Week 10 - BFS/DFS**  **[Breadth First Search (BFS) / Depth-first search(DFS) ]**

**11. Week 11 - BST**

**12. Week 12 - Final**