1. **Revisiting Java programming construct**

   Classes, types, and objects, Methods, Expressions, Control flow, Arrays, input and output, Packages, Utilities in the java.lang package

2. **Object Oriented Design & Analysis of Algorithms**

   Inheritance, and polymorphism, Exceptions, Interfaces, Abstract Classes, and Casting, Recursion and Other Design patterns, Pseudo-Code, Simple justification Techniques

   Measures algorithmic complexity, Space complexity, Time complexity, Some mathematics needed in measuring complexity, The big O-notation used in measuring complexity

3. **Stacks, Queues, and Recursion**

   Recursion, Stacks, Queues, Linked Lists, Double-ended Queues

4. **Vectors, Lists, and Sequences**

   Vectors and Array Lists, Lists, Sequences, Favorite lists and the move-to-Front Heuristic

5. **Trees**

   The tree Abstract Data Type, basic Algorithms on Tree, binary Tree, data Structures for representing

   Tree
6. **Priority queues**

The priority queues Abstract data Type, Implementing a Priority queues with a List

Heaps, Adaptable priority queues

7. **Maps and dictionaries**

The Map Abstract data Type , Hahs Tables, The dictionary data Type, Skip Lists, Extensions and Applications for dictionaries

8. **Search Trees**


9. **Sorting Sets, and Selection**

Merge Sort, Heap Sort, Quick Sort, and A Lower Bound on comparison – Based Sorting

BUCKET Sort and radix Sort, the complexity of some sorting algorithms , omparison of Sorting

Algorithms , The Set ADT and union / file Structures

10. **Text Processing**

String operations, Pattern Matching Algorithms, Tries, Text compression , Text similarity Testing

11. **Graphs**

The graph Abstract Data Type , Data Structures for Graphs , Graph Traversals

Directed Graphs, Weighted Graphs, Shortest Paths, Minimum spanning Trees

**Text Book**

1. Micheal T Goodrich , Roberto Tamassia,(2007) *Data Structure and Algorithm in Java*  3rd Edition  Wiley India,
2. Langsam , Data Structure using JAVA, Pearson Education
3. Jhon R. HubbardSchaum’s outline of data structures with JAVA, McGraw Hill
4. Hubbard, Data Structure with JAVA, Pearson Education
Reference book


Term Work:

Term work shall consist of at least 20 debugged programs and one written test.

Distribution of marks for term work shall be as follows:

1. Attendance (Theory and Practical) 05 Marks
2. Laboratory work (Experiments and Journal) 10 Marks
3. Test (at least one) 10 Marks

The final certification and acceptance of TW ensures the satisfactory Performance of laboratory Work and Minimum Passing in the term work.