CS9203   **PROGRAMMING AND DATA STRUCTURES II**   **L T P C**
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AIM:

The aim is to introduce the concepts of Object Oriented Programming and analyse the implementation of Advanced Data Structures using Object Oriented Programming Language.

OBJECTIVES:

- To introduce the concepts of Object Oriented Programming language.
- To introduce the concepts of Templates and Error Handling.
- To introduce the concepts of Advanced Data Structures.

UNIT I   **OOP CONCEPTS**   **9**

Introduction – Learning C++ - Design of C++ - History and Use – Programming Paradigms – Standard Library – Types and Declaration – Pointers, Arrays, Structures – Expressions and Statements – Functions – Namespaces and Exceptions – Source Files and Programs – Classes – User-Defined Types – Objects – Operator Overloading – Operator Functions – Complex Number

UNIT II   **INHERITANCE**   **9**

Type Conversion Operators – Friends – Large Objects – Essential Operators – Subscripting – Function Call – Dereferencing – Increment and Decrement – String Class – Derived Classes – Abstract Classes – Design of Class Hierarchies

UNIT III   **TEMPLATES AND EXCEPTIONS**   **9**

Templates – Function Templates – Error Handling – Grouping of Exceptions – Catching Exceptions – Resource Management – Multiple Inheritance – Access Control – Run Time Type Information

UNIT IV   **DATA STRUCTURES**   **9**

OO Perspective of List, Stack, Queue, and Search Tree ADTs – AVL Trees – Red Black Trees – Splay Trees – B-trees – Priority Queues (Heaps)

UNIT V   **SET AND GRAPHS**   **9**

Disjoint Set ADT – Graph Algorithms – Topological Sort – Shortest-Path Algorithm – Network Flow Problems – Minimum Spanning Tree – Applications of Depth-First Search

                                                        TOTAL= 45 PERIODS

TEXT BOOKS:

1. Bjarne Stroustrup, "The C++ Programming Language", 3rd ed., Pearson Education, 2007. (Units 1,2,3)
2. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C++", 2nd ed., Pearson Education, 2005. (Units 4,5)