

SEMESTER-II	L	T	P	C
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**OBJECT ORIENTED PROGRAMMING THROUGH C++**

**COURSE OUTCOMES:**

At the end of the Course, Student will be able to:

1. Proficient in Principles of object oriented technology.
2. The Evolution and Purpose of Object Oriented Programming.
3. Mastering in basic Object Oriented programming concepts and logic implementations.
4. Knowledge in file I/O operations and exceptions
5. Ability to identify and implement appropriate Solution for a given Problem.
6. Know the terms Object oriented Programming, Class ,Object ,Constructor, Destructor, friend, static, Data Abstraction, Encapsulation, Inheritance, Polymorphism, File I/O, templates, Exceptions and where they are applicable

**UNIT I**

**INTRODUCTION:** The Object Oriented Technology, Disadvantages of Conventional Programming, Advantages of OOP, Structure of a C++ Program, Differences between C and C++

**INPUT AND OUTPUT IN C++:** Streams, Stream Classes Hierarchy, Bit Fields, Manipulators.

Tokens in C++, Data Types, Constants, L Value and R Values, Operators in C and C++, Scope Access Operator, Comma Operator, This Operator, Reference Variable, Decision and Loop Statements.

**UNIT II**

**FUNCTIONS IN C++:** Passing Arguments to a Function, Default Arguments, Const Arguments, Inputting Default Arguments, Inline Functions, Function Overloading.

**CLASSES AND OBJECTS:** Class Definition, Declaring Objects, Access specifiers and their scope, Member functions, Outside member functions as inline, Data Hiding or Encapsulation, Memory for Class and Objects, Static Member variables, Static Member Functions, Static Object, Array of Objects, Objects as Function Arguments, Friend Functions, Friend class, Local class, Empty Class, Qualifiers and Nested Classes, Member Function and Non-Member Function.

**UNIT III**

**CONSTRUCTORS AND DESTRUCTORS:** Introduction of Constructor, Destructor & Characteristics, Parameterized Constructor, Overloading Constructors, Constructor with Default Arguments, Copy Constructor

**OPERATOR OVERLOADING:** Introduction of Overloading, Overloading Unary Operators, Constraint on Increment and Decrement Operators, Overloading Binary Operators, Overloading with Friend Functions, Overloading Assignment Operator, Rules for Overloading Operators.

#### **UNIT IV**

**INHERITANCE:** Introduction of Inheritance, Access specifiers, Protected Data with Private Inheritance, Types of Inheritances, Virtual Base Class, Constructors and Destructors in Inheritance, Constructor and Destructor in Derived Class, Advantages and Disadvantages of Inheritance.

**POLYMORPHISM:** Polymorphism, Types, Pointer and Inheritance, Virtual and Pure Virtual Functions, Abstract Classes.

#### **UNIT V**

**APPLICATIONS WITH FILES:** File Stream Classes, File Opening Modes, File Pointers and Manipulators, Sequential Access Files, Binary and ASCII Files, Random Access Files.

#### **TEMPLATES & EXCEPTION HANDLING**

Principles of Exception Handling, Keywords, Exception Handling Mechanism, Multiple Catch Statements, Catching Multiple Exceptions.

Generic Programming with Templates, Need for Templates- Definition of class Templates.

Introduction to STL- Containers, Algorithms, Iterators.

#### **TEXT BOOKS**

1. Programming in C++, Ashok N Kamthane, Pearson, 4th edition
2. The C++ Programming Language, B. Stroustrup, Pearson Education. , 4th edition
3. The Complete Reference C++, Herbert Schildt, Tata McGraw Hill, 4th edition

#### **REFERENCES**

1. Object Oriented Programming C++, Joyce Farrell, Cengage, 4<sup>th</sup> edition
2. Mastering C++ , Venugopal, Raj Kumar, Ravi Kumar TMH, 2<sup>nd</sup> edition
3. Object Oriented Programming with C++, SouravSahay and OXFORD, 2<sup>nd</sup> edition

#### **LINKS**

<https://www.geeksforgeeks.org/object-oriented-programming-in-cpp/>

[https://www.tutorialspoint.com/cplusplus/cpp\\_object\\_oriented.htm](https://www.tutorialspoint.com/cplusplus/cpp_object_oriented.htm)