**2IT04: OBJECT ORIENTED PROGRAMMING WITH C++**
**CREDITS – 4 (LTP:3,0,1)**

**Course Objective:**
Analyzing and solving the real-world problems using various concepts of object oriented programming.

**Teaching and Assessment Scheme:**

| Teaching Scheme (Hours per week) | | | Credits | Assessment Scheme | | | | Total Marks |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory | | Practical | | |
| L | T | P | C | ESE | CE | ESE | CE | |
| 3 | 0 | 2 | 4 | 60 | 40 | 20 | 30 | 150 |

**Course Contents:**

| Unit No. | Topics | Teaching Hours |
|---|---|---|
| 1 | **Introduction to C++:** Introduction OOP, Procedural VS. Object oriented Programming, Basic concept of OOP, Principals of OOP, Benefits and applications of OOP, Programming in C++ | 04 |
| 2 | **Data types, operators and Control Structures:** Data Types, Keyword, Tokens, identifiers, variables, constants, enum, operators, typecasting, control structures. | 04 |
| 3 | **C++ Functions:** Function Prototyping, Call by value and reference, Return by reference, Inline function and macro function, Default Arguments, Function Overloading. | 04 |
| 4 | **Class and Objects:** Structure vs Class, Member function Declaration, Access Specified for member function, Static data Member and Member Function, Friend Function, Object as Argument, Constructor, Types of Constructor, Destructor | 06 |
| 5 | **Operator Overloading and Type Conversion:** Unary and Binary Operator Overloading, Types of Type Conversion. | 05 |
| 6 | **Inheritance:** Inheritance, Types of Inheritance, Virtual Base Classes, Abstract Class, Constructor in Derived Class. | 06 |
| 7 | **Virtual Function and Polymorphism:** Polymorphism, Types of Polymorphism, this Pointer, Virtual Function, Pure Virtual Function. | 04 |
| 8 | **I/O functions:** Formatted and Unformatted I/O Operations, Manipulators. | 03 |
| 9 | **File Management:** Classes for File Operations, Basic File Operations, File Functions, Error Handling Operations, Command Line Arguments. | 04 |

| Unit No. | Topics | Teaching Hours |
|---|---|---|
| 10 | **Template and Exception Handling:** Template, Types of Template, Multiple Parameter in Class template and function template, Overloading of template function, Try, Catch and Throw, Multiple Catch, Re-throw Exception. | 05 |
| | **Total** | **45** |

**List of References:**


1. E Balagurusamy, "*Object Oriented Programming with C++",* Second Edition,Tata McGraw Hill.
2. Herbert Schlitz, "*The Compete Reference C++",* Second Edition, Tata McGraw Hill.
3. Ashok Kamthane, "*Object Oriented Programming with ANSI and Turbo C++",* Pearson.


**Course Outcomes (COs):**

At the end of this course students will be able to …

1. Design and analyze real world problem effectively.
2. Understand functions and parameter passing.
3. Differentiate the use of class and structure to develop a program.
4. Develop a program to utilize the memory using the concept of dynamic memory allocation.
5. Design effective program using various IOS functions.
6. Develop desktop application using object oriented concepts.