OOP with C++

Course Code	19IT2501A	Year	III	Semester	I
Course Category	Inter Disciplinary Elective-I	Branch	Common to All	Course Type	Theory
Credits	3	L – T – P	3-0-0	Prerequisites	C-language
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes		Levels
After successful completion of the course, the student will be able to		
CO1	Understand the fundamental programming concepts of C++	L2
CO2	Demonstrate the concepts of Object-Oriented Programming	L2
CO3	Outline the Exception Handling, Templates and STL concepts in C++.	L2
CO4	Apply OOP concepts to develop C++ programs for the given problems.	L3

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3-High, 2: Medium, 1: Low)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	1										2	2
CO2	2	2	1										2	2
CO3	2	2	1										2	2
CO4	2	2	1										2	2

Syllabus

Unit No.	Contents	Mapped COs
I	**Introduction to C++:** Difference between C and C++, Evolution of C++, Programming Paradigms, Key concepts of OOP, Advantages of OOP, Variable declaration, Data types in C++, Scope access operator, Name Space, Memory management operators, Decision Statements, Control Structures, Functions in C++, Input and Output in C++.	CO1, CO2
II	**Classes and Objects:** Introduction, Structure in C, Classes in C++, declaring Objects, Access specifiers and their scope, Defining member functions, Static member variable, static member functions, friend functions. **Constructors and Destructors:** Introduction, Constructors and destructors, Constructors with default arguments, Parameterized constructor, Overloading constructors, Array of objects using constructors, Constructors with default arguments.	CO2
III	**Operator Overloading:** Introduction, The keyword operator, overloading unary operators, Overloading binary operator. **Inheritance:** Introduction, Access Specifies and Simple inheritance, Types of inheritance, Single, Multiple, Hierarchical, Hybrid, Multipath inheritances, Virtual base classes, program on simple inheritance. **Pointers:** Introduction, Features of pointers, Pointer Declaration, void pointer, wild pointer, this pointer.	CO2, CO4

IV	**Binding and Polymorphism and Virtual Functions:** Introduction, Binding in C++, Pointer to base class and derived class objects, Virtual functions, Pure virtual functions, Abstract classes. **Exception Handling**: Introduction, Principles of exception handling, the keywords try, throw and catch, Multiple catch statements, Re-throwing an exception.	CO2, CO3, CO4
V	**Templates :** Introduction, need for templates, Definition of class templates, Definition of function templates, Overloading of template function. **STL(Standard Template Library) Introduction:** Algorithms, Containers and Iterators.	CO3

Learning Recourse(s)

Text Books

1. Programming in C++, Second Edition, by Ashok N Kamthane, Pearson Education.

References

1. C++ How To Program, Dietel and Dietel, Prentice Hal .
2. C++ The Complete Reference, 5th Edition, by Herbert Schildt, TMH.

E-Recourses and other Digital Material

1. http://www.cplusplus.com
2. https://www.w3schools.com/cpp/
3. https://www.learncpp.com
4. https://onlinecourses.nptel.ac.in/noc21_cs02/preview
5. https://www.educative.io/courses/learn-object-oriented-programming-in-cpp
6. https://www.youtube.com/watch?v=wN0x9eZLix4 (Learn Object Oriented Programming in C++, Beau Carnes, February 2021)