OBJECT ORIENTED PROGRAMMING WITH C++

Course code: 18IS4DCOOP **Credits:03**
L: P: T: S:3:0:0:0 **CIE Marks:50**
ExamHours:03 **SEE Marks:50**
Total Hours: 40

Course objectives:

1. Understand the basic concepts of object oriented programming languages and the techniques of software development in C++.
2. Learn the role of inheritance, polymorphism, dynamic binding and generic structures in building reusablecode.
3. Understand object oriented or non-object oriented techniques to solve bigger computing problems.
4. Build C++ classes using appropriate encapsulation and design principles.

Course Outcomes: At the end of the course, student will be able to:

CO1	Identify and utilize the basics of OOPs concepts
CO2	Apply the knowledge of pointers, constructors and destructors
CO3	Design classes and implement the given real world application using OOPs concepts.
CO4	Apply the knowledge of exception handling and operator overloading during implementation of the programs
CO5	Use concept of virtual functions and its implementation.
CO6	Apply inheritance concepts in real world applications

Mapping of Course outcomes to Program outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	-	-	-	-	-	-	-	-	-	1	1	-	-
CO2	3	2	1	-	-	-	-	-	-	-	-	1	2	2	-
CO3	3	3	2	-	-	-	-	-	-	-	-	1	3	2	-
CO4	3	1	1	-	-	-	-	-	-	-	-	1	1	2	-
CO5	3	3	2	-	-	-	-	-	-	-	-	1	3	2	-
CO6	3	3	1	-	-	-	-	-	-	-	-	1	3	2	-

Unit	Contents of the Unit	Hours	COs
1.	**An Overview of C++:** The origins of C++,What is Object Oriented Programming?, Some C++ Fundamentals, A Sample C++ Program **Classes and objects**: Classes, Structures and classes are related, Unions and Classes are Related, Friend Functions, Friend Classes, Inline Functions, Parameterized Constructors, Static Class Members, When Constructors and Destructors are Executed, The Scope Resolution Operator.	8	CO1 & CO2
2.	**Arrays ,Pointers, References, and the Dynamic memory allocation operators:** Arrays of Objects, Pointers to Objects, Type Checking C++ Pointers, The This Pointer, References **Function overloading copy constructors, and default arguments:** Function Overloading, Overloading constructors, Copy constructors, Finding the Address of an Overloaded Function, The Overload Anachronism, and Default Function Arguments.	8	CO3& CO4
3.	**Operator overloading:** Creating a Member Operator Function, Operator Overloading Using a Friend Function, Overloading new and delete, Overloading some Special Operators.	8	CO3 & CO4
4.	**Inheritance:** Base-Class Access Control, Inheritance and protected Members, Inheriting Multiple Base Classes, Constructors, Destructors and Inheritance, Granting Access, Virtual Base Classes.	8	CO4& CO6
5.	**Virtual functions and polymorphism:** Virtual Functions, The Virtual attribute Is Inherited, Virtual Functions Are Hierarchical, Pure virtual Functions, Using Virtual Functions, Early vs. late binding **Templates:** Generic Functions, Applying Generic Functions, Generic Classes	8	CO5 & CO6

Self-study component:

Note: 1.Questions for CIE and SEE not to be set from self-studycomponent.
2. Assignment Questions should be from self-study componentonly.

UNIT 1: Nested classes, Local classes, Passing ObjectstoFunctions, Returning Objects, Object Assignment.

UNIT 2: Function Overloading Ambiguity.

UNIT 3: Overloading the Comma Operator.

UNIT 4: Exception Handling.

UNIT 5: The power of Templates.

TEXT BOOK:

1. **The Complete Reference C++** by Herbert Schildt, Third Edition, TataMcGraw-Hill Edition

REFERENCE BOOKS:

1. **Object oriented Programming with C++** by SouravSahay, Fourth Edition, Oxford Education publications
2. **Object oriented Programming with C++** by E Balaguruswamy, Second edition, McGraw-HillCompanies.
3. **C++ and Object-Oriented Programming Paradigm** by Debasish Jana, 3rd Edition, **PHI Learning Pvt. Ltd**

Assessment Pattern:

CIE –Continuous Internal Evaluation Theory (50 Marks)

Bloom's Category	Tests	Assignments	AAT1	AAT2
Marks (Out of 50)	30	10	05	05
Remember	10			01
Understand	10	05	01	01
Apply	10	05	02	01
Analyze			02	
Evaluate				
Create				02

*AAT 1– Alternate Assessment Tool 1: Quiz
AAT 2 - Alternate Assessment Tool 2: Surprise Test

Bloom's Category	Marks Theory(50)
Remember	05
Understand	10
Apply	10
Analyze	10
Evaluate	10
Create	05