

COURSE TITLE : **OBJECT ORIENTED PROGRAMMING THROUGH C++**
 COURSE CODE : 3134
 COURSE CATEGORY : B
 PERIODS/WEEK : 5
 PERIODS/SEMESTER : 75
 CREDITS : 5

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Basic Programming Concepts in C++	21
2	Concepts of Object Oriented Programming	18
3	Overloading of Operators and Inheritance	18
4	Advanced uses of C++	18

Course General Outcomes:

Sl.	G.O	On completion of this course the student will be able :
1	1	To comprehend the basic programming concepts in C++
2	1	To understand the Concepts of Object Oriented Programming
3	1	To understand Overloading and Inheritance.
4	1	Advanced concepts of C++

Specific Outcomes:

MODULE I Basic Programming Concepts in C++

- 1.1 To comprehend the basic programming concepts in C++
 - 1.1.1 Explain the features of C++
 - 1.1.2 Explain data types and expressions in c++
 - 1.1.3 Explain different control structures in c++
 - 1.1.4 Explain Arrays as Homogeneous Aggregates
 - 1.1.5 Explain Structures as Heterogeneous Aggregates
 - 1.1.6 Describe the concepts Memory Management
 - 1.1.7 Explain input and output with disk files.

MODULE II Concepts of Object Oriented Programming

- 2.1 To understand the Concepts of Object Oriented Programming
 - 2.1.1 State the basic concepts of Object Oriented Programming
 - 2.1.2 Describe parameter passing in C++ functions.
 - 2.1.3 Explain the functions as modularization tool.
 - 2.1.4 Describe Object-Oriented Programming with Functions
 - 2.1.5 Describe Data Encapsulation and Information Hiding.
 - 2.1.6 Explain classes, objects and methods
 - 2.1.7 Illustrate constructors with examples
 - 2.1.8 Describe the concepts of overloading

MODULE III Overloading of Operators and Inheritance

- 3.1 To understand Overloading and Inheritance.
 - 3.1.1 Explain Overloading of Operators
 - 3.1.2 Describe overloading for nonnumeric classes.
 - 3.1.3 Describe different types of Inheritances.
 - 3.1.4 Explain Visibility controls
 - 3.1.5 Describe class objects as data members.
 - 3.1.6 Explain base and derived class.
 - 3.1.7 Explain Constructors and Destructors for Derived Classes
 - 3.1.8 Discuss inheritance vs composition.

MODULE IVI Advanced concepts of C++

- 4.1 To understand Virtual functions and Templates
 - 4.1.1 Explain Virtual functions
 - 4.1.2 Explain conversion between nonrelated classes.
 - 4.1.3 Explain the usage of several base classes.
 - 4.1.4 Discuss subscript and function call operators.
 - 4.1.5 Discuss input output operators.
 - 4.1.6 Explain syntax of template class
 - 4.1.7 Discuss Exception handling mechanism in C++
 - 4.1.8 Describe type cast operators

CONTENT DETAILS

Module I: A Brief Overview of C++

The Basic Program Structure-Preprocessor Directives-Comments-Declarations and Definitions-Statements and Expressions-Functions and Function Calls-Classes-Data and Expressions-Values and Their Types-Integral Types-Floating Point Types-Control Flow-Statements and Expressions-Conditional Statements-Iteration-C++ Jump Statements-Defined Data Types-Arrays as Homogeneous Aggregates-Structures as Heterogeneous Aggregates-Unions, Enumerations, and Bit Fields-Memory Management: Storage Classes-Using Heap- Input and Output with Disk Files.

Module II: Object-oriented programming with C++

Programming With C++ Functions-C++ Functions as Modularization Tools-Argument Promotions and Conversions-Parameter Passing in C++-Inline Functions-Parameters with Default Values-Function Name Overloading-Object-Oriented Programming with Functions-Cohesion-Coupling-Data Encapsulation-Information Hiding.

C++ Class-Basic Class Syntax-Binding Together Data and Operations-Elimination of Name Conflicts-Implementing Member Functions Outside of Class-Defining Class Objects of Different Storage Classes-Controlling Access to Class Members-Initialization of Object Instances-Constructors as Member Functions-Default Constructors-Copy Constructors-Conversion Constructors-Destructors-Timing of Constructor and Destructor Invocations-Class Scope and the Overriding of Names in Nested Scopes-Memory Management with Operators and Function Calls-Using Returned Objects in Client Code-Static Class Members.

Module III Overloading of Operators and Inheritance.

Operator Functions: Overloading of Operators-Limitations on Operator Overloading-Overloaded Operators as Class Members-Friend Functions-Operator Overloading for Nonnumeric Classes-Overloading the Assignment Operator.

Aggregation and Inheritance:Using Class Objects as Data Members-Initialization of Composite Objects Data Members with Special Properties-Container Classes-Similar Classes: Inheritance-Accessing Base and Derived Class Services-Accessing Base Components of a Derived Class Object-Scope Rules and Name Resolution Under Inheritance-Constructors and Destructors for Derived Classes-Inheritance and Composition.

Module IV:Advanced uses of C++

Virtual Functions -Conversions Between Nonrelated Classes-Conversions Between Classes Related Through Inheritance-Multiple Inheritance: Several Base Classes-Unary Operators-Subscript and Function Call Operators-Input/Output Operators.

Templates: Syntax of Template Class Definition-Template Classes with Several Parameters-Relations Between Instantiations of Template Classes-Template Specializations-Template Functions-Programming with Exceptions--Syntax of C++ Exceptions-Exceptions with Class Objects-Type Cast Operators

Text Book(s)

1. Core C++ A Software Engineering Approach-Victor Shtern-Publisher: Prentice Hall PTR-First Edition July 24, 2000
2. The Complete Reference C++, Herbert Schildt, Tata McGraw Hill Publication, Fourth Edition,

References

1. E.Balaguruswamy, *Object Oriented Programming in C++*, Mc Graw Hill,Sixth Edition
2. Venugopal, Rajkumar, Ravishankar, *Mastering C++*, Mc Graw Hill,1999
3. Stroustrup, Bjarne, *The C++ Programming Language* , Addison Wesley, Fourth Edition
4. Robert Lafore, *Object Oriented Programming in C++*, Galgotia 1991