Object Oriented Programming Using C++

Semester IV	Subject Code: BC41601	Lectures: 60

Objectives:

The syllabus aims in equipping students with,

- Understanding the basic object-oriented concepts
- Implementing object-oriented concepts like Inheritance, Polymorphism
- Learning how to work with files

Unit 1: Basic Programming in C++	06
• Basic concepts of OOP, benefits, applications of OOP • Structure of C++ program : Creating a source file, compiling and Linking • Tokens, keywords, Identifiers and constants • Data types - Basic, User defined and Derived • Symbolic constant • Variables - Declaration and Dynamic initialization , Reference variable • Operators in C++ : Scope resolution operator, Member Referencing operators, Type cast operators, Memory management operators • Expression and their types , Special Assignment Expression • Operator precedence • Control structures – if-else, do-while, for , switch	

Unit 2: OOP's concepts in C++ and Functions	12
• Function prototyping, Call by reference , Return by reference • Inline function – Making an outside function Inline • Friend functions • Arguments - default, constant • Math library functions • Creating a class and objects • Defining member functions inside and outside class definition , Nesting of member functions , Private member functions • Arrays within a class • Memory allocation of objects	

• Static data members and static member functions • Array of objects • Objects as function arguments • Returning objects • Constructors , Types of constructor (Default, Copy, Parameterized, Dynamic) • Destructors	

Unit 3: Manipulating Strings	**04**
• Introduction • Creating objects(string) • Manipulating string object • Relational operations • String Characteristics • Accessing characters in string • Comparing and Swapping	

Unit 4: Inheritance and Polymorphism	**16**
• Base class and derived class examples • Types of Inheritance • Virtual base class • Abstract class • Constructors in derived class • Compile Time Polymorphism : Function overloading , Operator overloading • Operator Overloading ➢ Overloading unary and binary operator ➢ Overloading using friend function ➢ Overloading insertion and extraction operators ➢ String manipulation using operator overloading • Runtime Polymorphism ➢ this Pointer, pointers to objects, pointer to derived classes ➢ Virtual functions and pure virtual functions	

Unit 5: Managing console I/O operations and Working with Files	**10**
• C++ streams and C++ stream classes • Unformatted I/O operations	

- Formatted console I/O operations
- Managing output with manipulators
- Classes for File Stream operations
- File operations - Opening, Closing and updating
- Error handling during File operations
- Command Line arguments

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Contact hours – 12 hours

Recommended Text Book:

1. *Object Oriented Programming Using C++*, Prof Manisha Bharambe, Nirali Prakashan Publication 2014
2. *Object Oriented Programming Using C++*, Prof Alok Pawar, Tech-Max Publication 2014

Reference Books:

1. E Balaguruswamy *Object Oriented Programming with C++*, 5th edition; 2006
2. Schildt , *The Complete Reference C++*, 5th edition; 2006