Yashwantrao Chavan Maharashtra Open University

Programming using C++ (CMP503)

Course Name : Programming using C++
Course Code : CMP503

Course Details:

Unit 1. Introduction :

Introduction :

Software Evolution, Procedure-Oriented Programming, Object-Oriented Programming, Basic Concepts of OOP, Benefits & Applications of OOP, Introduction to C++, C++ Statements, Structure of C++, Creating Source File, Compiling & Linking.

Tokens, Expression & Control Structure:

Tokens, Keywords, Identifiers & Constants, Data types, Storage Classes, Declaration, Operators, Operator Precedence, Implicit Conversions, Type Cast Operator, Scope Resolution Operator, Control Structure

Unit 2. Classes Objects and functions in c++ :

Functions in C++:

Introduction, Main Function, Function Prototyping, Call by Value, Call by Reference, Return by Reference, Inline Function, Default Arguments, Recursion, Function Overloading, Math Library Function.

Classes & Objects:

Introduction, Structure of Class, Defining Members of Class, Arrays within a Class, Private & Public Members, Memory Allocation for Object, Static Data Member, Arrays of Objects, Objects as Function Arguments, Friendly Functions, Returning Objects, Pointers to Members, Local Classes.

Unit 3. Constructors, Destructors and Operator Overloading :

Constructors & Destructors:

Introduction, Constructors, Parameterized Constructor, Constructor with Default Arguments, Multiple Constructors in Class, Dynamic Initialization of Object, Copy Constructor, Dynamic Constructor, Two-Dimensional Arrays, const Objects, Destructors.

Operator Overloading & Type Conversion:
Introduction, Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Manipulation of Strings Using Operators, Rules for Overloading Operators, Type Conversion.

Unit 4. Inheritance :
Inheritance-Extending Classes:
Introduction, Derived Classes, Single Inheritance, Making Private Member Inheritable, Multilevel Inheritance, Multiple Inheritance, Hierarchical Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructors in Derived Classes, Nesting of Classes.

Unit 5. Polymorphism :
Pointers, Virtual Functions & Polymorphism:
Introduction, Pointers, Pointers to Objects, this Pointer, Pointer to Derived Classes, Virtual Functions, Pure Virtual Functions, Virtual Constructors & Destructors.

Unit 6. Working with files , Console I/O Operations :
Managing Console I/O Operations:
Introduction, C++ Streams, Stream Classes, Unformatted I/O Operations, Formatted Console I/O Operations, Manipulators.

Working with Files: Introduction, Classes for File Stream Operation, Opening & Closing of File, End-ofFile, File Modes, File Pointers, Random Access, Command Line Arguments

Unit 7. Exception Handling :
Exception Handling:
Introduction, Basics, Exception Handling Mechanism, Throwing Mechanism, Catching Mechanism, Rethrowing an Exception, Exceptions in Constructors & Destructors, Exception in Operator Overloaded Functions.

Unit 8. Templates and Standard Template Library :
Templates: Introduction, Class Templates, Class Templates with Multiple Parameters, Function Templates, Function Templates with Multiple Parameters, Overloading of Template Functions, Member Function Templates.

Standard Template Library: Introduction, Components of STL, Containers, Algorithms, Iterators, Application of Container Classes, Function Objects.