CAP202:OBJECT ORIENTED PROGRAMMING

L:3 T:0 P:0 Credits:3

Course Outcomes: Through this course students should be able to

- differentiate between the Procedure-oriented and Object-oriented programming languages.
- describe the basic concepts of Object-oriented programming.
- examine the functionality of each concept of Object-oriented programming.
- apply the various OOP concepts to solve situation specific problems.

Unit I

Principles of OOP's and C++ Basics : Introduction, Procedural Vs Object Oriented Programming, Basic Concepts of Object Oriented Programming, Object Oriented Languages, Benefits of OOP's, A Brief History of C & C++, C Vs C++, A Simple C++ Program, Compiling & Linking, Tokens, Keywords, Identifiers & Constants, Data Types, Reference Variables, Decision Making & Control Structures, Operators in C++, Scope Resolution Operator, Member De-referencing Operators

Unit II

Classes and Objects : C structures revisited, Specifying Class, Defining member functions, Making outside function inline, Nesting of member functions, Private member functions, Arrays within class, Memory Allocation of objects, Objects as function arguments, Friend functions, A Sample C++ Program with class, Access specifiers, The Main Function, Function Prototyping, Call by Value & Call by Reference, Inline Functions, Arrays within a Class, Static Data Members & Functions

Unit III

Constructors and Destructors : Constructors, Parameterized constructors, Destructors in C++, Copy Constructor and Dynamic Constructor, Constructors with default arguments concept, Concept of Multiple Constructors, Multiple Constructor in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Destructor

Unit IV

Operator Overloading and Type Conversions : Overloading unary and binary operators, Overloading binary operators using Friend Function, Rules for operator overloading, Type conversions, Basic to Class Type, Class to Basic Type, One Class to Another Class Type

Unit V

Inheritance and Polymorphism : Defining Derived Classes, Single Inheritance, Making a Private Member Inheritable, Multilevel Inheritance, Hierarchical Inheritance, Multiple Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Pointer to Object, This Pointer, Pointer to Derived Class, Virtual Function, Pure Virtual Function, Early Vs Late Binding

Unit VI

Working with Files and Streams : C++ Streams, C++ Stream Classes, Classes for File Stream Operation, Opening & Closing Files, Detection of End of File, More about Open( ): File modes, File pointer & manipulator, Sequential Input & output Operation, Updating a File : Random Access, Command Line Arguments

Text Books:

1. OBJECT ORIENTED PROGRAMMING WITH C++ by E BALAGURUSAMY, MCGRAW HILL EDUCATION

2. LET US C++ by YASHWANT KANETKAR, BPB PUBLICATIONS

References:

1. OBJECT ORIENTED PROGRAMMING IN C++ by WAITE GROUP LAFORE R, ADDISON-WESLEY

2. C++ PROGRAMMING LANGUAGE by BJARNE STROUSTRUP, PEARSON