CSE202:OBJECT ORIENTED PROGRAMMING

L:0 T:0 P:5 Credits:3

Course Outcomes: Through this course students should be able to

- Identify basic programming constructs and use the newly acquired skills to solve extensive programming problems
- Design accurate, reliable and efficient software applications
- Apply the knowledge acquired to develop software applications

Unit I

Concepts and Basics of C++ Programming : Differences between procedural and object oriented programming paradigms, Reading and writing data using cin and cout, Creating classes, Class objects, Accessing class members, Differences between Structures, Unions, Enumerations and Classes, Inline and Non-inline member functions, Static data members and static member functions

Functions and Input/output Streams : Functions with Default parameters/arguments, Inline Functions, Features of Input/output Streams, Manipulators Functions, Function overloading and Scope rules, Friend of a class (friend function and friend class), Reference variables, Differences between Call by value, Call by address and call by reference, Recursion

Unit II

Pointers, Reference Variables, Arrays and String Concepts : Differences between pointer and reference variables, Void pointer, Pointer arithmetic, Pointer to pointer, Possible problems with the use of pointers - Dangling pointer, Wild pointer, Null pointer assignment, Classes containing pointers, Pointer to objects, this pointer, Pointer to a member, Array declaration and processing of multidimensional arrays, Array of objects, The Standard C++ string class-defining and assigning string objects, Member functions, Modifiers of string class

Unit III

Constructors, Destructors and File Handling : Manager functions (constructors and destructor), Default constructor, Parameterized constructor, Copy constructor, Dynamic constructors , Initializer lists, Constructor with default arguments, Destructors

Data File operations : Opening and closing of files, Modes of file, File stream functions, Reading/Writing of files, Sequential access and random access file processing, Binary file operations, Classes and file operations, Structures and file operation

Unit IV

Operator Overloading and Type Conversion : Operator Overloading (unary operator, binary operator overloading), Type conversions - basic type to class type, class type to basic type

Inheritance : Inheritance Basics – derived class and base class, Types (simple, multi-level, multiple and hierarchical), Modes (private, protected, public inheritance), Overriding member functions, Order of execution of constructors and destructors, Resolving ambiguities in inheritance, Virtual base class

Unit V

Dynamic Memory Management and Polymorphism : Dynamic memory allocation using new and delete operators, Memory leak and allocation failures, Self-referential classes, Virtual destructors, Compile and run time polymorphism, Virtual functions, Pure virtual functions, Abstract classes, Early binding and late binding

Unit VI

Exception Handling, Templates and Standard Template Library (STL) : Basics of exception handling, Exception handling mechanism, Throwing mechanism, Catching mechanism, Rethrowing an exception, Function template and class template, Class template with inheritance, Introduction to STL- Containers, Algorithms and iterators, Container - Vector and List

Text Books:

1. OBJECT ORIENTED PROGRAMMING IN C++ by ROBERT LAFORE, PEARSON

References:

1. PROGRAMMING WITH C++ by D RAVICHANDRAN, MCGRAW HILL EDUCATION

2. OBJECT ORIENTED PROGRAMMING IN C++ by E BALAGURUSAMY, MCGRAW HILL EDUCATION