| Branch: BCA | Semester-II |
|---|---|
| Subject Code: 2201 | Lecture: 02<br>Credit: 02 |
| Course Opted | Core Course -4 Practical |
| Subject Title | PROGRAMMING METHODOLOGY AND C++ LAB |

**Course Objectives:**

Will enable students to

- Identify and practice the object-oriented programming concepts and techniques
- Practice the use of C++ classes and class libraries, arrays, vectors, inheritance and file I/O stream concepts.

**Course Outcomes**:

Students will be able to:

- Create simple programs using classes and objects in C++.
- Implement Object Oriented Programming Concepts in C++.
- Develop applications using stream I/O and file I/O.
- Implement simple graphical user interfaces.
- Implement Object Oriented Programs using templates and exceptional handling

| Module | Sr. No. | Topic and Details | No. of Lectures Assigned | Marks Weightage |
|---|---|---|---|---|
| UNIT- I | 1. | **Evolution of OOP**:<br>Simple Programs on fundamental Data Types and I/O operators, Derived data types, Symbolic constants, variables and Reference variables<br>**Operators and decision control structures**: Programs to implement if statements, Switch statements, Loop statements, Functions in C++: Main function, function proto type, Call by reference, return by reference, Inline functions,<br>Default arguments, Const Arguments, Function overloading, | 3 | 6 |
| | 2. | **Advanced Language Constructs:**<br>Programs on Arrays, Multi dimensional arrays, pointers and structures. | 2 | 4 |
| UNIT- II | 3. | **Objects and Classes:**<br>Classes and Object, Programs for memory allocation for objects, Arrays of objects, Returning objects, Const Member functions, Pointers to members.<br>**Functions and Variables:**<br>Programs to implement Defining a function, declaration and calling a function, function arguments, Default values for parameters, friend function, Dynamic creation and derived data and use of arrays and strings with functions. | 2 | 6 |

| | | | | |
|---|---|---|---|---|
| | 4. | **Inheritance :**<br>Programs for Inheritance Single, Multiple, Multilevel, Hierarchical inheritance, Hybrid inheritance, Virtual base class, Abstract class, Constructors in derived classes, Nesting of classes.<br>**Constructors and Destructors :**<br>Implementations of Constructors(Parameterized Constructors, Multiple constructors in a class, Constructors with default arguments, Copy constructors, Dynamic constructors)Destructors | 4 | 8 |
| **UNIT - III** | 5. | **Polymorphism:**<br>Programs for Operator Overloading (Unary, Binary, Using friend functions etc.) | 2 | 5 |
| | 6. | **Memory Management :**<br>Programs on memory management using new and delete and pointers to objects | 2 | 5 |
| **UNIT-IV** | 7. | **Files and Streams :**<br>Programs for Managing Console I/O Operations and Working with files: C++ Stream and Classes, Unformatted I/O operations, Put(),get(), getline(),write(), Formatted console I/O operations, Ios class functions and flags, Manipulators, User defined output functions.<br>**File input and output**:<br>Implementation of Opening and closing files, Detecting End of file, File modes, File pointers and their manipulations,<br>Sequential input and output operations, Reading and writing class object, Command line arguments. | 5 | 8 |
| | 8. | **Templates:**<br>Implementations of Class template, Class template with multiple parameters, Function template.<br>**Exception Handling:**<br>Implementations of try, catch and throw statement for handling the exceptions. | 5 | 8 |
| | | **TOTAL** | **25** | **50** |

**Text Books:**


1. E. Balguruswamy, 'Object Oriented Programming with C++', Tata McGraw – Hill Education,2008
2. K.R Venugopal 'Mastering C++', Tata McGraw-Hill Education, 1997


**Reference Books:**


1. B.Stroustroup 'C++ Programming Language' (3rd Edition). Addison Wesley, 1997
2. B.chandraNarosa 'A Treatise On Object Oriented programming using C++'- Publications, 1998
3. Herbert Schildt, "The Complete Reference CN", Tata McGraw-Hili, 2001