

**DEPARTMENT OF COMPUTER SCIENCE  
ALIGARH MUSLIM UNIVERSITY  
ALIGARH, U.P. - 202002**

**SYLLABUS**

**MASTER OF COMPUTER SCIENCE AND APPLICATION I-YEAR  
AND  
POST. B.Sc. DIPLOMA IN COMPUTER SCIENCE AND APPLICATIONS**

**COURSE CSM-1101: PROBLEM SOLVING USING C++**

**OBJECTIVES OF THE COURSE**

- To understand the need and significance of OOP
- To develop, debug and document programs Using OOP paradigms.
- To start software development in C++

**Note:** Laboratory should be an integral part of the course

**Credit : 04  
Mid Term Marks: 30  
Sessional Marks : 10  
Exam Marks : 60**

**UNIT: I**

Problem Solving Methods, Different Programming Paradigms, Need of Object Oriented Programming, Procedural Languages, Object Oriented Approach, Characteristics of Object Oriented languages, difference between C and C++, C++ Programming Basics: Basic Program Construction, Directives, Console I/O, Data Types, Operators and expressions, Control Statements, Manipulators, Type Conversions, Arrays and Strings, Structures, Functions: Call by Value, Call by reference, Formal parameters and Actual parameters, Inline function, Recursive Function., Storage Class Specifiers.

**UNIT: II**

Concept of Object & Classes: Defining classes and objects, Defining member functions, C++ Objects as physical objects, C++ Objects as Data Types, Arrays of Objects, Constructors, Destructors, Copy Constructors, Multiple Constructors, Parameterized Constructors, , Static Class Data, Static Function. Constructor Overloading, Method Overloading..

**UNIT: III**

Operator Overloading: Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Data Conversions, Manipulation of Strings using operators, Rules for Overloading Operators. Inheritance: Derived Class and Base Class,

Derived Class Constructors, Overriding Member Functions, Public and Private Inheritance, Levels of inheritance, Multiple Inheritance, Ambiguity in Multiple Inheritance..

#### **UNIT : IV**

Pointers: Address and Pointers, Pointer variable, Accessing the variable pointed to, Pointers and Arrays, Pointers and Functions, Memory management: new and delete, Pointers to Objects, *this* Pointer, Pointers to Pointers; Virtual Functions: Friend Classes and Functions, File Handling in C++, File Pointers, Error Handling in File I/O, Command Line Arguments, Exceptions Handlings.

#### **TEXT BOOKS:**

1. Robert Lafore, “Object Oriented Programming in C++”, Pearson
2. Herbert Schildt, “C++ - A complete reference”, 4<sup>th</sup> Edition, McGraw Hill Education.
- 3. E Balagurusamy, “Object Oriented Programming with C++”, 6<sup>th</sup> Edition, McGraw Hill Education.**
3. Bergin Joseph, “Data Abstraction: The Object oriented Approach using C++”, McGraw Hill Education.

**Revised: 31-07-2017**