1. **CA2CRT05- Object Oriented Programming using C++ (Core)**

Theory:3 hrs. per week

Credits:4

**Unit 1:** (10 hrs.)

**Principles of Object Oriented Programming, Beginning with C++**

Procedure Oriented Programming-Object Oriented Programming-Basic concepts of object-oriented programming- Benefits of OOP- Applications of OOP-A simple C++program-Structure of C++ program-

C++ data types- Symbolic constants- Reference by variables-Operators in C++- Operator precedenceControl structures- Function in C++ - The main function, Function prototyping- Call by reference- Return by reference- Inline function- Default arguments- Function overloading.

**Unit 2:** (10 hrs. )

**Classes and Objects :**Specifying a class- Defining member functions- Nesting of member functions -

Private member functions - Arrays within a class - Memory allocation for objects-Static data members Static member functions -Arrays of objects - objects as function arguments -Friendly functions- Returning Objects.

**Unit 3**: (12 hrs. )

**Constructers and Destructors, Overloading**

Constructors- Default constructor-Parameterized constructor-Copy constructor- Multiple constructors- Constructors with default arguments- Dynamic constructor-Destructors- Operator overloading- Unary and Binary operator overloading- Overloading using friends- Rules for overloading- Type conversion.

**Unit 4:** (10 hrs.)

**Inheritance:** Inheritance - Defining derived classes-Visibility modes-Single, Multilevel, Multiple, Hierarchical and Hybrid inheritance- Virtual base classes- Abstract classes- Constructors in derived classes- Nesting of classes.

**Unit 5:** (12 hrs.)

**Pointers, Virtual Functions and Polymorphism, Working with Files :**Pointers- Pointers to objects- this pointer-Pointers to derived classes- Virtual functions- Pure virtual functions- File Stream classes, Opening and closing a file- File opening modes- File pointers and their manipulations- Sequential input and output operations.

***Book of Study:***

**1.** E. Balagurusamy - Object Oriented Programming with C++, Fifth edition, Tata McGraw Education Hill , 2011. ***Reference****:*

1. Ashok N. Kamthane, Object oriented Programming with ANSI & Turbo C++, First Edition, Pearson India
2. Robert Lafore, Object Oriented Programming in Turbo C++, First Edition, Galgotia Publications.
3. D Ravichandran, Programming with C++, Second edition, Tata McGraw- Hill.