Object Oriented Programming

Course Code : **IS315** **Credits** : **4:0:0**

Prerequisites: **CS101/CS201** **Contact Hours : 56**

Course coordinator(s): T.Tamilarasi

Course Objectives

- Explain the need of using Object Oriented Programming in the real world applications.
- Describe the OOPs, terminology and Structure.
- Differentiate OOPs systems with procedural systems.
- Design programs using classes and objects for C++.
- Specifying mechanism of deriving a new class from older classes through inheritance.
- Construct applications to provide flexible options for the creation of new definitions for some of the operators.
- Implement methods to select appropriate member function during run time.
- Design a program using Templates and standard template libraries, Exception Handling

Course Contents

Unit-I

Introduction : A Review of structures, Procedure- oriented programming systems, object oriented programming systems, reference variables, Function overloading , Default values for formal argument, Classes and objects: Introduction to classes and objects, Member function and member data, Objects and Functions, Objects and Arrays, Namespaces.

Unit-II

Dynamic memory management : Dynamic memory allocation, Dynamic memory deallocation, Constructors and destructors , Inheritance : Introduction, base class and derived class pointers, function overriding, base class initialization, Protected access specifiers , Different kind of inheritance .

Unit-III

Operator overloading , overloading various operators: overloading increment and decrement , overloading unary minus and unary plus operator, overloading Arithmetic operators, relational and Assignment operators , type conversion.

UML notation- for classes, objects, Generalization, Associations and polymorphism and relationships

Unit-IV

Virtual Functions and dynamic polymorphism: Need, Virtual Functions, Mechanism, Pure Virtual Functions, Virtual Destructors. Streams, class hierarchy and file handling: streams, class hierarchy for handling functions, Binary output/Input files, Opening and closing files, File pointers and manipulators

Unit-V

Templates: Introduction, function templates, class templates and standard template libraries, Exception Handling: Introduction, C-Style Handling of Error-generating Code, C++ style solution, Limitation of exception handling.

Text books

1. Sourav Sahay, Object Oriented Programming Using C++ ,Sourav Sahay, 2nd edition 2013
2. Mark priestley, Practical object oriented design with UML, Tata McGraw-Hill, 2nd edition 2005

References

1. Herbert Schildt, The Complete Reference C++, 4th Edition, Tata McGraw-Hill, 2005.

Course Outcomes

Student will be able to

CO1: Understand the need of using Object Oriented Programming in the real world applications using classes and objects. **(PO-a,b,l)**

CO2: Understanding the mechanism of deriving a new class from older classes through inheritance. **(PO-a,c,e)**

CO3: Constructing applications to provide flexible options for the creation of new definitions for some of the operators. **(PO-a,b,c,e)**

CO4: Building of programs for automatic initialization of objects and destroy objects that are no longer required. **(PO-a,b,c,e)**

CO5. Designing a program using Templates & Exception Handling. **(PO-a,b,e,l)**