

Object Oriented Methodologies

1.1 Course Number: CS224

1.2 Contact Hours 3-1-2 Credits: 13

1.3 Semester-offered: 3

1.4 Prerequisite: C Programming

1.5 Syllabus Committee Member:

2. **Objective:** To study the concept of object-oriented programming and practices of C++ programs that leverage the object-oriented methodology features.

3. **Course Content:**

Unit-wise distribution of content and number of lectures

Unit	Topics	Sub-topic	Lectures
1	Fundamental concepts of object oriented programming:	Review of Structured Programming, Structured versus Object Oriented Programming (OOP), Features of OOP, Basics of C++, Tokens, I/O, Statements, Structure of Program, Operators, and Expressions, Flow of Control, Abstract Data Types (ADT), Variable, Scope Resolution Operator.	7
2	Classes & Objects	Objects, Classes, Specification of Class, Visibility Modes: Private, Public, Protected, Defining Member Functions, Creating of Objects, Characteristics of Object, Static Data Member, Static Member Function, Methods, Constructors, Types of Constructors, Rules of Constructor Definition and Usage, Destructor.	9
3	Inheritance & Polymorphism:	Types of inheritance, constructors in derived and base class, abstract classes, Compile and run time polymorphism, Role of Constructors in inheritance, Concept of Polymorphism, Overriding Super Class Methods. Use of “super” keyword. Implementing interfaces. Dynamic method dispatching by down-casting and up-casting.	9
4	Standard Template Library (STL) of C++	Inline and non-inline member functions of C++ classes, C++ Standard Library, Template classes, high-level view of modules, Study of Various Files and Streams, Creating file	7

5	Packages & Exception Handling	Organizing Classes and Interfaces in Packages. Sub-Package CLASSPATH Setting for Packages. Exceptions, Errors, Checked and Unchecked Exceptions, Control Flow in Exceptions, try and catch block, Multiple catch block, Nested try, finally block, throw keyword.	8
Total			40

4. Readings

4.1 Textbook:

1. *Object Oriented Programming With C++* by E. Balagurusam, McGraw-Hill Education (India) Pvt
2. *Object-oriented programming in C++* by Lafore, R. Waite Group
3. *Suggested by the Instructor*

4.2 Reference books:

1. *Functional and Object-Oriented Analysis and Design* by Peretz Shoval, IGI Publishing
2. *Structured and Object-Oriented Analysis and Design Methodology* by Pankaj Ghemawat, Pearson Education

5. **Outcome of the Course:** The following are the official course goals agreed upon by the faculty for this course:

- Concepts of classes & objects and their significance use in the real world.
- Benefits of object oriented design and methodology
- Build C++ classes using appropriate encapsulation and design principles.
- Analyse the utilization of inheritance and polymorphism in the solution of problems.
- Choose appropriate object orient programming concepts for solving real-world problems.