

# DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

## Syllabus

Semester: IV

Year: 2025-2026

<b>Course Title</b>	<b>OBJECT ORIENTED PROGRAMMING USING JAVA</b>		
Total Teaching Hours	30	Teaching + Tutorial Hours/Week	3
Internal Assessment Marks	05		

**Course Learning Objectives:** This course will enable students to

1. Understand the fundamentals of Java programming including data types, operators, control statements, and arrays
2. Apply object-oriented programming concepts such as classes, objects, inheritance, polymorphism, abstraction, and encapsulation in Java.
3. Implement advanced OOP features including interfaces, packages, exception handling, and multithreading.
4. Develop Java programs using file handling, wrapper classes, enumerations, and collections

### Course Content (Syllabus)

<p style="text-align: center;"><b>MODULE-1</b></p> <p>An Overview of Java: Object-Oriented Programming A first simple program, A second short program, Two control statements, The Primitive Types (Integers, Floating-Point Types, Characters, Booleans), Variables, Type Conversion and Casting, Automatic Type Promotion in Expressions, Arrays, Introducing Type Inference with Local Variables. Operators</p>	10 Hrs
<p style="text-align: center;"><b>MODULE-2</b></p> <p><b>Introducing Classes:</b> Class Fundamentals, Declaring Objects, Assigning Object Reference Variables, The this Keyword, Garbage Collection.</p> <p><b>Methods and Classes:</b> Overloading Methods, Objects as Parameters, Argument Passing, Returning Objects, Recursion, Access Control, understanding static, introducing final, Introducing Nested and Inner Classes. Inheritance Basics, Using super, Creating a Multilevel Hierarchy, When Constructors Are Executed, Method Overriding, Dynamic Method Dispatch Interfaces, Default Interface Methods, Use static Methods in an Interface, Private Interface Methods.</p>	10Hrs
<p style="text-align: center;"><b>MODULE-3 :</b></p> <p>Packages: Packages, Packages and Member Access Exceptions: Exception-Handling Fundamentals, Exception Types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally</p> <p>Multithreaded Programming: The Java Thread Model, The Main Thread, Creating a Thread, Using isAlive() and join(), Thread Priorities, Synchronization, Interthread, Communication, Suspending, Resuming, and Stopping Threads, Obtaining a Thread's State, Enumerations</p>	10Hrs

**Prerequisites:**

This subject requires the student to know about basics of problem-solving using programming languages like C or C++

**Course Outcomes:**

1. Demonstrate proficiency in writing simple programs involving branching and looping structures.
2. Design a class involving data members and methods for the given scenario.
3. Apply the concepts of inheritance and interfaces in solving real world problems.
4. Use the concept of packages and exception handling in solving complex problem

**TEXT BOOKS:**

1. Programming with Java, 6th Edition, by E Balagurusamy, Mar-2019, McGraw Hill Education, ISBN: 9789353162337.
2. Thinking in Java, Fourth Edition, by Bruce Eckel, Prentice Hall, 2006

**REFERENCE BOOKS:**

1. Java: The Complete Reference, Twelfth Edition, by Herbert Schildt, November 2021, McGraw-Hill, ISBN: 9781260463422