

## OBJECT ORIENTED PROGRAMMING USING JAVA (3-0-3)

### Course Objectives:

- To learn Java for writing object-oriented programs
- To understand the use of different Java programming constructs
- To learn exception handling in Java and use of threads.

### Unit - I: (10 Hours)

Introduction to Java: Java History, Architecture and Features, Compiling and Executing a Java Program, Variables, Constants, Keywords (super, this, final, abstract, static, extends, implements, interface) , Data Types, Wrapper class, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, Java Methods (Defining, Scope, Passing and Returning Arguments, Type Conversion and Type and Checking, Built-in Java Class Methods). Input through keyboard using Command line Argument, the Scanner class, BufferedReader class.

### Unit - II: (10 Hours)

Object-Oriented Programming Overview: Principles of Object-Oriented Programming, Defining & Using Classes, Class Variables & Methods, Objects, Object reference, Objects as parameters, final classes, Garbage Collection. Constructor- types of constructors, this keyword, super keyword. Method overloading and Constructor overloading, Inheritance: extends vs implements, types of Inheritance, Interface, Auto-Boxing, Enumerations, Polymorphism, Method Overriding and restrictions. Package: Pre-defined packages and Custom packages.

### Unit - III: (10 Hours)

Arrays: Creating & Using Arrays (1D, 2D, 3D and Jagged Array), Array of Object, Referencing Arrays Dynamically. Strings and I/O: Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability& Equality, Passing Strings To & From Methods, StringBuffer Classes and StringBuilder Classes. IO package: Understanding StreamsFile class and its methods, Creating, Reading, Writing using classes: Byte and Character streams, FileOutputStream, FileInputStream, FileWriter, FileReader, InputStreamReader, PrintStream, PrintWriter

### Unit - IV: (04 Hours)

Exception Handling, Threading, Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions;

### Unit - V: (06 Hours)

Multi threading: The Thread class and Runnable interface, creating single and multiple threads, Thread prioritization, synchronization and communication, suspending/resuming threads.

### Course Outcomes:

Upon completion of this course, students will be able to:

- Learn the basics of Java programming
- Create classes/objects and implement different forms of inheritance
- Use arrays and files in Java
- Learn about exception handling

### Text Book:

- E. Balagurusamy, "Programming with Java", TMH, 4/Ed

### Reference Book:

- Herbert Schildt, "The Complete Reference to Java", TMH, 10/Ed.