# CS-404A JAVA PROGRAMMING L T P C (OPEN ELECTIVE) 4 - - 3

#### **COURSE OBJECTIVES:**

- 1. To understand the basic concepts and fundamentals of platform independent object oriented language.
- 2. To demonstrate skills in writing programs using exception handling techniques and multithreading.
- 3. To understand streams and efficient user interface design techniques.
- 4. To know about various Telecommunication Systems.

#### **COURSE OUTCOMES:**

## After successful completion of the course, the students are able to

- 1. use the syntax and semantics of java programming language and basic concepts of OOP.
- 2. develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
- 3. apply the concepts of Multithreading and Exception handling to develop efficient and error free codes.
- demonstrate how the java program communicates with the console and disk files using the concept of streams.
- 5. design event driven GUI and web related applications which mimic the real word scenarios.

Introduction: The History and Evolution of Java, an Overview of Java.

**Data Types, Variables, and Arrays :** The primitive types, variables, type conversion and casting, Automatic Type Promotion in Expressions, Arrays, Operators, Control statements.

**Introducing Classes**: Class fundamentals, Declaring the objects, Assigning Object Reference Variables, Introducing Methods, Constructors, The this keyword, Garbage Collection, the finalize() Method.

A Closer Look at Methods and Classes: Overloading Methods, Using objects as Parameters, Returning Objects, Introducing Access control, Understanding static and final keywords, Nested and Inner Classes.

**Inheritance :** Inheritance Basics, Using super, Creating multilevel Hierarchy, When Constructors are executed, Method Overriding, Dynamic Method Dispatch, Using Abstract Classes, using final with Inheritance.

**Packages and Interfaces**: Packages, Access Protection, Importing Packages, Interfaces, Default Interface Methods, Use static Methods in an Interface.

**String Handling :** String class, StringBuffer class.

**Exception Handling:** Fundamentals, Exception types, Uncaught Exceptions, Using try and catch, Multiple catch Clauses, Nested try Statements, throw, throws, finally, Java's Built-in Exceptions, Creating Your Own Exception Subclasses.

**Multithreaded Programming:** The Java Threaded Model, The Main Thread, Creating a Thread, Creating Multiple Threads, Using isAlive() and join(), Thread Priorities, Synchronization, Inter Thread Communication.

UNIT IV (12)

**I/O Basics**: Streams, Byte streams, Character streams, Reading Console Input, Writing Console Output, Reading and Writing Files.

**The Applet Class**: Applet Basics, Applet Architecture, An Applet Skeleton, Simple Applet Display Methods, Requesting Repainting, The HTML APPLET Tag, Passing Parameters to Applets.

UNIT V (12)

**Event Handling :** Two Event Handling Mechanisms, The Delegation Event Model, Event Classes, The KeyEvent Class, Sources of Events, Event Listener Interfaces, Using The Delegation Event Model, Adapter Classes.

**Introducing the AWT:** Working with Windows, Graphics and Text, Using AWT Controls, Layout Managers and Menus.

# **LEARNING RESOURCES:**

## TEXT BOOK(s):

Java The Complete Reference 9th Edition, Herbert Schildt, Mc Graw Hill Education (India) Private Limited, New Delhi.

## **REFERENCE BOOK(s):**

- 1. Java How to Program, Sixth Edition, H.M.Dietel and P.J.Dietel, Pearson Education/PHI.
- 2. Introduction to Java programming, By Y.Daniel Liang, Pearson Publication.