

## Programming in Java- I

Semester V

Subject Code: BS51705

Lectures: 60

### Objectives:

The syllabus aims in equipping students with,

- To understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- To handle abnormal termination of a program using exception handling
- To use the Java SDK environment to create, debug and run simple Java program

### Unit 1: Introduction to Java

06

#### Basics of Programming Language

- History and Features of Java
- JDK,JRE and JVM
- Naming Convention
- Simple java program
- Java IDE –Eclipse/NetBeans (Note: Only for Lab Demonstration)

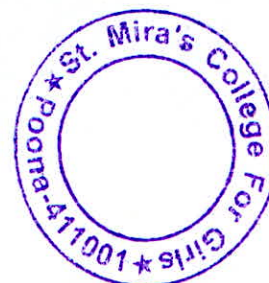
#### Overview of Java

- Data Types
- Variable: final, static
- Types of Comments
- Array: 1D, 2D, Dynamic array using Vector
- Accepting input using Command line argument
- Accepting input from console (Using BufferedReader and Scanner class)

### Unit 2: Objects and Classes

11

- Defining Your Own Classes
- Access Specifiers (public, protected, private, default/friendly)
- Array of Objects
- Constructor, Overloading Constructors and use of 'this' Keyword
- static block, static Fields and methods
- Predefined classes
  - Object class (with methods equals(), toString(), hashCode(), getClass())
  - String class
  - StringBuffer class
  - Wrapper class
- Inner classes, Nested classes, local classes, Anonymous classes(Anonymous object)



- Packages:Creation, Access and use
- Creating jar files
- Garbage Collection (finalize() Method)

**Unit 3: Inheritance and Interface**

13

- Inheritance Basics (extends Keyword)
- Types of Inheritance
- super class, sub class and use of 'super' Keyword
- Method Overriding and runtime polymorphism(Dynamic method dispatch)
- Use of final keyword related to method and class
- Use of abstract class and abstract methods
- Interface: Defining and Implementing Interfaces
- Runtime polymorphism using interface
- Collection interface
  - collection framework
  - collection interfaces and classes(ArrayList,LinkedList,HashSet,TreeSet)
  - Iterator

**Unit 4: Exception Handling and IO**

09

- Exception handling fundamentals
- Exception types
- Exception class
  - Checked exception
  - Unchecked exception
- Creating user defined exception
- Uncaught exceptions
- Assertions
- Introduction to java.io package
- Byte streams
- Character streams
- File IO basics
- Object serialization – Reader and Writer



**Unit 5: AWT, Swing , Event Handling and Applet programming**

09

- MVC(Model View Controller)
- AWT components
- Layout and Layout Manager
- Event handling (Delegation handling model)
- Adapter classes
- AWT verses Swing
- Swing components : JFrame, JPanel, JButton, JcheckBox, JtextField, JRadioButton, JLabel, JList, JDialog, JFileChooser, JColorChooser ,JMenu
- Applet fundamentals, Applet lifecycle, Creating and running applets
- Applets: Advantages and restrictions

**\*Contact hours – 5 hours**

**Reference Books:**

1. Herbert Schildt, *Complete reference Java* (5th edition).
2. Steven Horlzner, *Java 2 Programming Black Book*.
3. E balgurusamy, *Programming with java, a Primer*, 4th edition.
4. Cay S Horstmann,Gary Cornell, *Core Java Volume I- Fundamentals*, 8th edition, , Prentice Hall, Sun MicroSystem Press .
5. Cay S Horstmann,Gary Cornell, *Core Java Volume II- Advance Features*, 8th edition, , Prentice Hall, Sun MicroSystem Press.

