

1. Introduction

Objective: To master the skills of programming in Core Java. The course emphasis on implementation of object oriented principles using Java language along with getting exposure to Java language features and packages.

Credits: 2

2. Course Outline

UNIT - I: To understand the basic features of Java programming language. (2 Lab Sessions)

Topics:

- Java Development Environment
- Java Fundamentals
 - Class with main function
 - Primitive Variable Types, Operators (Arithmetic, Logical, Relational)
 - Control Structures, Loops
 - Arrays

UNIT - II: Writing Classes and working with objects. (2 Lab Sessions)

Topics:

- Class, Methods, Access Modifiers, Object Creation
- Constructor, Constructor Overloading, Copy Constructor
- finalize method and Garbage Collector
- Working with frequently used Java Classes like java.lang.String, java.lang.Math

UNIT - III: Using Inheritance and Polymorphism in Java (4 Lab Sessions)

Topics:

- Writing a Sub class
 - Super key word, Constructors in Sub Class
 - Method Overriding
 - Overriding Object class methods
- Understanding Class Hierarchy: Packages
- Polymorphism
- Abstract Classes and Inheritance
- Interfaces and Inheritance
- Case Study depicting OO application design using polymorphism and inheritance
 - (for example) Developing a Solitaire Application (Chapter 8 of “Introduction to Object Oriented Programming by Timothy Budd”)

UNIT - IV: Exception Handling (2 Lab Session)

Topics:

- Exception Class Hierarchy
- Exception Handling Mechanism
 - Catching an Exception, Multiple Catch Blocks, finally block
 - Throwing an exception
- Writing own exception class

UNIT - V: Exploring Java IO Package (2 to 3 Lab Sessions)

Topics:

- IO Package Class Overview
- Input/Output Stream Classes
- Readers and Writers
- File I/O
- Serialization
 - Object Input and Output Streams
- Utility of Scanner class

Unit VI: Programming Applets (2 Lab Sessions)

Topics:

- Life Cycle of Applet
- Passing Parameters to Applet
- Event Handling in Applet

Unit VII: Miscellaneous Topics

Topics:

- Generics
- Exploring java.util package
- Collections Framework

3. Reading Material

Text Books

1. Java: A Beginner's Guide, by Herbert Schildt, McGraw Hill Education (India) Private Limited.
2. Thinking in Java by Bruce Eckle, Prentice Hall.

Reference Books:

1. Java: The Complete Reference by Herbert Schildt, McGraw Hill Education.
2. Effective Java by Joshua Bloch, Createspace Independent Pub. Head First Java by Kathy Siera, O'Reilly Media