3/4 B.Tech - SECOND SEMESTER

IT6T5FE5   OBJECT ORIENTED PROGRAMMING THROUGH JAVA   Credits: 3
Lecture: 3 Periods/week   Internal assessment: 30 marks
Practice/Interaction: 1Period/week   Semester end examination: 70 marks

Objectives:
- To Describe the principles of object oriented programming paradigm and terminology
- To introduce basic concepts of java programming.
- To discuss objects, classes , interfaces, exceptions, and Multi threading in java
- To demonstrate oops principles through problem analysis.
- To discuss the concepts of java API through programming.

Outcomes:
Students will be able to
- Understand the concepts of Object Oriented Programming and basics of java programming language.
- Identify classes, objects, members of a class and the concept of inheritance
- Design and develop programs using packages and interfaces.
- Understand the mechanism of exceptional handling and thread synchronization
- Understand the concept of event handling and GUI interface using Java swings.

Pre-requisite:
C Programming.

Syllabus:

UNIT- I
OOPS BASICS: OO Programming principles & Paradigms, Classes and Objects, Design Strategies in OOP (Coupling and Cohesion), defining state and behavior of a class.
JAVA BASICS: History, Features of java , Data types, variables, scope and life time of variables, operators, arrays, expressions, control statements, type conversions rules (type casting), methods and recursion, sample program.

UNIT -II
JAVA ANATOMY: Java Objects and References, Constructors, this keyword, garbage collection, String Buffer , String Tokenizer.
INHERITANCE: Introduction, Derived Classes, Advantages of Inheritance, Types of Inheritance, Member Accessibility. keyword Super, Abstract classes and Methods, the Final Classes and Final Methods, Dynamic Binding.

UNIT- III
PACKAGES: Defining, Creating and Accessing a Package, Understanding CLASSPATH, Importing Packages, Access Controls (Public, Protected, Default, and Private).
INTERFACES: Differences between Classes and Interfaces, Defining An Interface, Implementing Interface, Applying Interfaces, Variables In Interface and Extending Interfaces.

UNIT- IV

EXCEPTION HANDLING AND MULTITHREADING: Concepts of Exception Handling, Benefits Of Exception Handling, Exception Hierarchy, Usage Of Try, Catch, Throw, Throws And Finally, Built In Exceptions, Creating Own Exception Sub Classes. Differences between Multi Threading and Multitasking, Thread Life Cycle, Creating Threads

UNIT -V

EVENT HANDLING: Events, Event sources, Event classes, Event Listeners, Delegation event model, Adapter classes, Inner classes, handling mouse and keyboard events.

SWINGS: Introduction, limitations of AWT, MVC architecture, components, containers, exploring swing components Layout manager– border, grid, flow, card and grid bag.

Text Book:
1. Java: The complete reference, 7th Edition, Herbert Scheldt, TMH.

Reference Books:
1. Thinking in Java 4E : Bruce Eckel , Pearson.
2. Core Java(TM) Volume 1: Fundamentals,8th Edition Horstmann.
3. The JavaTM Programming Language Ken Arnold, James Gosling, Pearson.
4. Programming with Java, A Primer, 4th Edition, E. Balaguruswamy.

e-Learning Resources:
1. http://www.nptelvideos.com/java/
2. http://ocw.mit.edu/courses/