

2/4 B.Tech. FOURTH SEMESTER

EM4T5 OBJECT ORIENTED PROGRAMMING THROUGH JAVA Credits: 3

Lecture: 3 periods/week
Tutorial: 1 period /week

Internal assessment: 30 marks
Semester end examination: 70 marks

Course Objectives:

- To describe the principles of object oriented programming paradigm and terminology.
- To introduce Core Java concepts and discuss the fundamental features of Java: objects, classes and interfaces, exceptions, Multithreading.
- To discuss java API through programming and teach students how to programme Using applets, event handling,awt,swings.
- To introduce client server communication

Learning Outcomes:

Students will be able to

- Understand the principles of Object Oriented Programming
- Understand the fundamental features of Java: objects, classes and interfaces, exceptions, Multithreading.
- develop, test, and debug object oriented programs .
- Learn the concept of Java standard class library.
- Understand the event-based GUI handling principles and develop a GUI using Java applets,awt , swings and also learn socket programming

UNIT I:

Genesis of Java - Creation of Java,Importance of java to Internet, Byte code, History of Java
Java Features

Overview of Java - Object Oriented programming, First sample program in java

UNIT II:

Java Basics -Datatypes, variables, scope and life time of variables, arrays, operators, expressions, control statements, type conversion and costing, simple java program, **classes and objects** – concepts of classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, string handling.

UNIT III:

Inheritance- Inheritance basics, Using super keyword, method overriding ,Dynamic method dispatch using final with inheritance, abstract classes.

UNIT IV:

Packages and Interfaces – Defining, Creating and Accessing a Package, Understanding CLASSPATH, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces.

Exploring packages – Java.io,Java.util

UNIT V:

Exception handling and multithreading - Exception handling Fundamentals, 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, synchronizing threads, thread priorities ,Inter thread Communicatin.

UNITVI:

Event Handling – Delegation event model, Events, Event sources, Event classes, Event Listeners, , handling mouse and keyboard events, Adapter classes, inner classes.The AWT class hierarchy, user interface components- labels, button, canvas, scrollbars, text components, check box, check box groups, choices, lists panels,scrollpane, dialogs, menubar, graphics, **layout manager** – layout manager types boarder, grid, flow, card and grib bag.

UNIT VII:

Applets – Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

Swing – Introduction, limitations of AWT, components, containers, **exploring swing**- JApplet, JFrame and JComponent, Icons and Labels, text fields, buttons – The JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables.

UNIT VIII:

Networking – Basics of network programming, addresses, socket programming, simple client server program, Java .net package

TEXT BOOK:

1. Java; the complete reference, 5th editon, Herbert schildt, TMH.

REFERENCES:

1. Programming in Java2 –Dr.K.Somasundaram
2. Programming with Java ,A Primer-E.Balaguruswamy
3. Java Programming Fundamentals – JimKeogh DreamTech Publications
4. Core Java 2, Vol 1, Fundamentals, Cay.S.Horstmann and Gary Cornell, 7th Edition, Pearson Education.