

## 2/4 B.Tech - SECOND SEMESTER

**IT4T3****JAVA****Credits: 3****Lecture: 3 Periods/week****Internal assessment: 30 marks****Practice/Interaction: 1Period/week****Semester end examination: 70 marks****Objectives:**

- To introduce basic concepts of java programming.
- To discuss the concepts of objects, classes, interfaces exceptions and Multi threading.
- To demonstrate OOPS concepts through problem analysis.
- To discuss the concepts of java API through Programming

**Outcomes:**

Students will be able to

- Identify classes, objects, members of a class and the relationships among them.
- Design programs using the concepts of inheritance, packages and interfaces.
- Understand the concept of exception handling, thread synchronization and java applets.
- Understand the event-based GUI handling principles using AWT concepts.
- Analyze the concept of client/server programming using GUI Interface.

**Prerequisites:**

- C Programming
- OOPS through C++.

**Syllabus:****UNIT -I**

GENESIS OF JAVA: History of Java, Importance of java to Internet, Byte code, Java Features, Data types, variables, scope and life time of variables, arrays, operators, control statements, type conversion and casting, simple java program.

CLASSES AND OBJECTS: classes, objects, constructors, methods, access control, this keyword, garbage collection, overloading methods and constructors, parameter passing, recursion, Exploring the String class, String Buffer Class, String Tokenizer, Exploring NIO

**UNIT -II**

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

PACKAGES AND INTERFACES: Defining, Creating and Accessing a Package, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces.

**UNIT -III**

EXCEPTION HANDLING AND MULTITHREADING: Exception handling Fundamentals, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating own exceptions. Differences between multi threading and multitasking, thread life cycle, creating threads, Concurrency utilities.

APPLETS: Concepts of Applets, differences between applets and applications, life cycle of an applet, types of applets, creating applets.

**UNIT -IV**

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: labels, button, scrollbars, text components, check box, check box groups, choices, list boxes. Layout manager types: border, grid, flow, card and grid bag.

**UNIT-V**

SWINGS: Introduction, limitations of AWT, components, containers EXPLORING SWINGS- JApplet, JFrame and JComponent, text components, buttons – The JButton class, Check boxes, Radio buttons, Combo boxes. JTabbedPane.

NETWORKING: Basics of network programming, simple client server program, java.net package

**Text Book:**

1. Java: The complete reference, 8<sup>th</sup> edition, Herbert Schildt, TMH.

**Reference Books:**

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

**e-Learning Resources:**

1. <http://www.nptelvideos.com/java/>
2. <http://ocw.mit.edu/courses/>