

**B.Sc. Part – III Computer Science (Optional) (Semester – V)**

**Course Code: DSE-E21      Computer Science Paper – IX**

**Course Title: Core Java**

**Total Contact Hours: 36 Hrs (45 Lectures of 48 Min.)**

**Teaching Scheme: Theory – 03 Lect. / Week**

**Credits: 02**

**Total Marks: 50**

---

**Course Outcomes:**

After successful completion of this course, students will able to:

- 1) use the syntax and semantics of java programming language and basic concepts of OOP.
- 2) apply the concepts of Multithreading and Exception handling to develop efficient and error free code
- 3) develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.
- 4) design and program stand-alone Java applications and GUI

---

**Unit – 1: Introduction to Java and Object Oriented Programming**

**(18 Hrs.)**

- (A) Introduction to Java:** History of Java and features of Java, Primitive Data Types- Integer (byte, short, int, long), floating point (float, double), char, boolean, Non-Primitive Data Type – String, Java Keywords, variables, constants, Operators- arithmetic, relational, logical, unary, ternary, bitwise, Branching and looping statements, Typecasting- Implicit and Explicit, wrapper classes, Command line arguments, Writing simple java program, compiling and executing Java program (javac, java commands).
- (B) Object Oriented Programming using Java:** Introduction- Class, Object and methods, Access modifiers and accessibility, Static members, constructors, destructor and this keyword, Encapsulation and Abstraction, Inheritance- Definition and its types single, multilevel, hierarchical, Interface – definition and implementation, Abstract Class – definition and use, Polymorphism- Definition and concepts of method overloading and overriding, Final method and Final Class, Java Packages – introduction, defining packages, CLASSPATH, importing packages, System Packages – java, lang, awt, javax, swing, net, io, util.

**Unit – 2: Multithreading, Exception Handling, GUI Programming and Event Handling**

**(18 Hrs.)**

- (A) Multithreading and Exception Handling:** Introduction to Multithreading, Understanding Threads, Thread Life-Cycle, Creating threads using Thread class & Runnable Interface, Thread Priorities, Exception handling - Fundamentals of exception handling, Exception types, Using try and catch, multiple catch clauses, throw, throws and finally, Built- in exceptions, Creating own exception sub classes.
- (B) GUI Programming and Event Handling:** Introduction to GUI, Abstract Window Toolkit

(AWT), Component and Container, Using Containers - Frame and Panel, Layout Managers - FlowLayout, GridLayout, CardLayout, BorderLayout, AWT Components – Label, Button, TextField, CheckBox, ChekBoxGroup, Event Handling- The Delegation event model, Events, Event sources, Event Listeners, Event classes, Handling mouse and keyboard events, Adapter classes, Inner classes, Anonymous Inner classes.

### Reference Books –

1. Programming with Java A Primer, E. Balaguruswamy, Tata McGraw Hill Companies.
2. Java : The Complete Reference, Herbert Schildt, Tata McGraw-Hill
3. Java Programming- Rajendra Salokhe (Aruta Publication)
4. THE Java™ Programming Language, Fourth Edition By Ken Arnold, James Gosling, David Holmes
5. Introduction to Java programming, By Y. Daniel Liang, Pearson Publication.
6. Java How to Program, Sixth Edition, H.M.Deitel and P.J.Deitel, Pearson Education/PHI
7. The Java Tutorials: <http://docs.oracle.com/javase/tutorial/>