PROGRAMMING WITH JAVA

Course Code	20IT3404	Year	II	Semester	II
Course Category	PC	Branch	IT	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Programming for Problem Solving and OOP Through C++
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes		
Upon successful completion of the course, the student will be able to		
CO1	Illustrate the need, principles and fundamental concepts in JAVA.	L2
CO2	Apply the knowledge of Object Oriented Programming principles to develop applications.	L3
CO3	Analyze the concepts of Packages, Multithreading and Exception handling to develop efficient and error free applications.	L4
CO4	Develop GUI based applications using JAVA constructs.	L3

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3												3	3
CO2	3		3										3	3
CO3		3											3	3
CO4			3		3								3	3

	Syllabus	
Unit No	Contents	Mapped CO
I	**Java Evolution & Environment:** History and Evaluation of Java, Overview of Java language, Java's magic code: Byte code, Java Buzzwords, Three OOP principles, simple program. **Java programming environment**: Data types, variables and Arrays, Operators, control statements. **Classes, Objects and Methods:** Introduction, defining a class, declaring objects, assigning object reference variables, introducing methods, accessing class members, returning a value, constructors, parameterized constructors, this keyword, garbage collection, overloading constructors and methods, recursion, understanding static, introducing final, Using command line arguments.	CO1, CO2
II	**Strings**: String, String Buffer and String Tokenizer classes. **Basic I/O:** Data Input Stream, Data Output Stream, Buffered Reader, InputStream Reader, Scanner classes. **Inheritance:** Basics, Using super, creating multilevel hierarchy, order of constructor execution, method overriding, dynamic method dispatch, applying method overridden, Abstract classes, Using final with inheritance, The Object class. **Interfaces:** Introduction, defining an interface, implementing interfaces. Accessing interfaces through interface references, nested interfaces, variables in interfaces, interfaces can be extended.	CO1,CO2
III	**Package:** Defining a package, CLASSPATH, Packages and member access, importing packages. **Exception Handling:** Fundamentals, types, uncaught exceptions, using try and catch, multiple catch clauses, nested try statement, throw, throws, finally, built- in exceptions, creating your own exception subclasses. **Multi Threaded programming:** Thread model, Creating a Thread: implementing runnable, extending Thread, creating multiple threads, using isAlive() and join(), Thread Priorities, synchronization.	CO1, CO2, CO3
IV	**Event handling:** Event handling mechanisms, delegation event model, Event classes, sources of events, event listener interfaces, Handling mouse and keyboard events, adapter classes, inner class. **Graphics Programming with AWT**: Introduction, abstract window toolkit classes, Window fundamentals. **AWT controls:** AWT Control fundamentals - labels, buttons, check boxes, choice lists, lists, scroll bars, text field, text area, layout managers	CO1, CO2,CO4
V	**Swing:** Origins, key features, MVC connection, Components and Containers **Exploring Swing**- JLabel, JTextField, JButton, JCheckBox, JRadioButton,JList, JComboBox. **Applets:** Two types of Applets, The Applet Class, Applet Architecture, AnApplet Skelton, Swing Applets.	CO1, CO2,CO4

Learning Resources
Text Books
1. The Java Complete Reference, Herbert Scheldt, 10/e, TMH Publications, 2018.
References

1. E. Balagurusamy, Programming with JAVA, 2/e, TMH Publications, 2014.
    2. Core Java: An Integrated Approach, New: Includes All Versions up-to Java 8, by R. Nageswara Rao, Dream-Tech Publishers.
    3. Kathy Sierra, Head First Java, 2/e, Shroff Publishers, 2012.

E-Recourses and other Digital Material
1. https://www.w3schools.com/java/java_intro.asp   2. https://www.tutorialspoint.com/java/index.htm