Course Title: **Java Programming**
Course No. : ICT. Ed 455
Level: B.Ed.
Semester: Fifth

Nature of course: Theoretical + Practical
Credit Hour: 3 hours (2T+1P)
Teaching Hour: 80 hours (32+48)

1. **Introduction:**

This course covers different concepts of computer programming using Java programming language. The course covers ideas of programming including comments, data type, operators, variables, constants, control statements, arrays, classes and objects, inheritance and interfaces, packages, exception handling, input/output, event handling, swing and JDBC.

2. **Course Objectives:**

After the completion of this course, the students should be able to:

- Explain the Java programming environment
- Describe the concepts of programming elements using Java and object-oriented programming concepts
- Apply the exception handling and input/output in Java programming
- Apply the event handling, GUI programming using swing, and Java database connectivity

3. **Course Outlines:**

Specific Objectives	Contents
• Understand the basic concept of java programming	**Unit 1: Introduction to Java (3)** 1.1. Java as a Programming Platform 1.3. The Java "White Paper" Buzzwords 1.4. A Short History of Java 1.5. Writing Simple Java Programs
• Explain the data types and variable. • Use control flow and array	**Unit 2: Fundamental Programming Structures (12)** 2.1. Writing Comments 2.2. Basic Data Types 2.3. Variables and Constants 2.4. Operators 2.5. Type Casting 2.6. Control Flow 2.7. Arrays
• Explain the principles of the object-oriented programming	**Unit 3: Objects and Classes (10)** 3.1. An Introduction to Object-Oriented Programming 3.2. Using Predefined Classes 3.3. Defining Your Own Class 3.4. Static Fields and Methods 3.5. Method Parameters 3.6. Object Construction 3.7. Packages
• Learn abstraction, encapsulation, • inheritance and polymorphism	**Unit 4: Inheritance and Interfaces(6)** 4.1. Classes, Super classes, and Subclasses 4.2. Polymorphism 4.3. Dynamic Binding 4.4. Final Classes and Methods 4.5. Abstract Classes 4.6. Access Specifies 4.7. Interfaces

• Design and develop java error handling software	**Unit 5: Exception Handling and Multithreading (3)** 5.1. Dealing With Errors 5.2. Catching Exceptions 5.3. try, catch, throw, throws, and finally
• Use input and output mode in java	**Unit 6: Input/output (4)** 6.1. Input/output Basics 6.2. Console Input and Output 6.3.Reading and Writing Files
• Handle the events with MVS and Swing Component	**Unit 7: Event Handling and User Interface Components with Swing (6)** 7.1. Basics of Event Handling 7.2. Event Classes 7.3. Event Listeners and Adapter Classes 7.4. Swing and the MVC Design Pattern 7.5. Layout Management 7.6. Basic Swing Components
• Connect the data and java interface using JDBC	**Unit 8: Java Database Connectivity (4)** 8.1. The Design of JDBC 8.2. Executing SQL Statements 8.3. Query Execution

4. Instructional Techniques

The instructional techniques for this course are divided into two groups. First group consists of general instructional techniques applicable to most of the units. The second group consists of specific instructional techniques applicable to particular units.

4.1 General Techniques

Reading materials will be provided to students in each unit. Lecture, Discussion, use of multi-media projector, brain storming are used in all units.

4.2 Specific Instructional Techniques

Demonstration is an essential instructional technique for all units in this course during teaching learning process. Specifically, demonstration with practical works will be specific instructional technique in this course. The details of suggested instructional techniques are presented below:

Laboratory Work: The laboratory work includes writing programs to understand all the programming concepts of Java including data types, operators, control statements, objects and classes, inheritance, interface, exception handling, input/output, event handling, swing and JDBC.

5. Evaluation :

Internal Assessment	External Practical Exam/Viva	Semester Examination	Total Marks
40 Points	20 Points	40 Points	100 Points

***Note**: Students must pass separately in internal assessment, external practical exam and semester examination.*

5.1. Internal Evaluation (40 Points):

Internal evaluation will be conducted by subject teacher based on following criteria:

1) Class Attendance	5 points
2) Learning activities and class performance	5 points
3) First assignment (written assignment)	10 points
4) Second assignment (Case Study/project work with presentation)	10 points
5) Terminal Examination	10 Points
Total	40 Points

5.2 Semester Examination (40 Points)

Examination Division, Dean Office will conduct final examination at the end of semester.

1)	Objective question (Multiple choice 10 questions x 1mark)	10 points
2)	Subjective answer questions (6 questions x 5 marks)	30 points
	Total	40 points

5.3 External Practical Exam/Viva (20 Points):

Examination Division, Dean Office will conduct final practical exam at the end of semester.

6. Recommended books and References materials (including relevant published articles in national and international journals)

Recommended books:

References:

Core java Volume I – Fundamentals, Ninth Edition, Cary S. Horstmann and Gary Cornell

Core java Volume II – Advanced Features, Ninth Edition, Cary S. Horstmann and Gary Cornell

Java: The Complete Reference, Ninth Edition, Herbert Schildt

Effective Java, Third Edition, Joshua Bloch

Head First Java, 2nd Edition, Kathy Sierra and Bert Bates