# java programming – Syllabus

Generated on: 2025-07-21 14:12:05

1. \*\*📚 Introduction to Java & Programming Fundamentals\*\*  
 \* 🔍 What is Java?, Setting up the environment (JDK, IDE), Basic Syntax, Data Types, Operators, Control Flow (if-else, switch), Input/Output.  
 \* 🎯 Lab: "Hello, World!" program and basic calculations.  
  
2. \*\*📚 Object-Oriented Programming (OOP) Concepts\*\*  
 \* 🔍 Classes and Objects, Encapsulation, Inheritance, Polymorphism, Abstraction.  
 \* 🎯 Quiz: Basic Java syntax and OOP concepts.  
  
3. \*\*📚 More on OOP: Inheritance and Polymorphism in depth\*\*  
 \* 🔍 Method overriding, Method overloading, Abstract classes, Interfaces.  
 \* 🎯 Lab: Implementing inheritance and polymorphism in a simple program (e.g., shapes).  
  
4. \*\*📚 Arrays and Collections\*\*  
 \* 🔍 Arrays, ArrayList, LinkedList, HashMap, HashSet. Iteration techniques.  
 \* 🎯 Lab: Manipulating data using arrays and collections.  
  
5. \*\*📚 Exception Handling\*\*  
 \* 🔍 Try-catch blocks, finally block, types of exceptions, custom exceptions.  
 \* 🎯 Quiz: Exception handling scenarios and code implementation.  
  
6. \*\*📚 Strings and String Manipulation\*\*  
 \* 🔍 String class methods, string manipulation techniques, regular expressions (basic).  
 \* 🎯 Lab: String processing and pattern matching.  
  
7. \*\*📚 File I/O\*\*  
 \* 🔍 Reading and writing files, different file handling techniques.  
 \* 🎯 Lab: File input/output operations.  
  
8. \*\*📚 Introduction to GUI Programming with Swing (or JavaFX)\*\*  
 \* 🔍 Basic GUI components (buttons, labels, text fields), event handling.  
 \* 🎯 Lab: Creating a simple GUI application.  
  
9. \*\*📚 Swing (or JavaFX) Continued: Layouts and Advanced Components\*\*  
 \* 🔍 Different layout managers, more advanced components (e.g., panels, menus).  
 \* 🎯 Lab: Building a more complex GUI application.  
  
10. \*\*📚 Introduction to Generics\*\*  
 \* 🔍 Generic classes, methods, and interfaces. Benefits of generics.  
 \* 🎯 Quiz: Concepts of Generics and their application.  
  
11. \*\*📚 Lambda Expressions and Streams\*\*  
 \* 🔍 Functional interfaces, lambda expressions, streams API for data processing.  
 \* 🎯 Lab: Using lambda expressions and streams for efficient data manipulation.  
  
12. \*\*📚 Multithreading\*\*  
 \* 🔍 Threads, synchronization, thread pools, concurrent collections.  
 \* 🎯 Lab: Creating and managing multiple threads.  
  
13. \*\*📚 Networking (Introduction)\*\*  
 \* 🔍 Sockets, client-server architecture, basic networking concepts.  
 \* 🎯 Lab: Simple client-server application.  
  
14. \*\*📚 Databases and JDBC (Introduction)\*\*  
 \* 🔍 Connecting to a database, executing SQL queries using JDBC.  
 \* 🎯 Lab: Database interaction using JDBC.  
  
15. \*\*📚 Review and Project Presentation\*\*  
 \* 🔍 Review of key concepts, student project presentations.  
 \* 🎯 Final Project Presentations & Q&A Session.

---  
Watermark: TeachMate AI | Version 1.0