



Codevensiva Academy

Master Java & AI Integration: From Beginner to Advanced

A structured syllabus for teaching Core Java from beginner to interview-ready level.

1. Java Fundamentals

- History & Features of Java
- JDK, JRE, JVM
- Java installation & IDE setup
- Structure of Java Program
- Variables, Data Types, Type Casting
- Operators
- Input/Output (Scanner)
- Coding standards

2. Control Statements

- if/else, switch
- loops (for, while, do-while)
- break, continue
- nested loops
- pattern programs

3. OOP Concepts

- Class & Object
- Constructors
- this & super
- Inheritance
- Polymorphism
- Abstraction
- Encapsulation
- Interfaces

4. Arrays & Strings

- 1D/2D arrays
- Array operations
- String, StringBuilder, StringBuffer
- Common string methods

5. Exception Handling

- try-catch-finally
- throw/throws
- custom exceptions
- best practices

6. Collections Framework

- List, Set, Map
- ArrayList, LinkedList
- HashSet, TreeSet
- HashMap, TreeMap
- Iterator
- Comparable vs Comparator

7. Multithreading

- Thread lifecycle
- Runnable
- Synchronization
- Executor framework basics

8. Java 8 Features

- Lambda expressions
- Functional Interfaces
- Streams API
- Optional
- Method references
- Date & Time API

9. File Handling

- File class
- Reading/Writing files
- Serialization & Deserialization

10. JDBC Basics

- DB connection
- CRUD operations
- PreparedStatement
- ResultSet

11. Important APIs

- Wrapper classes
- Enums
- Packages
- Access Modifiers
- Garbage Collection
- Immutable classes

12. AI Integration With Java

- Prompt Engineering Basics
- ChatGPT & Gemini for Developers
- GitHub Copilot
- OpenAI API
- Integration
- AI Chatbot Development using Java

13. Interview & Practice

- Coding exercises
- Common interview questions
- Mini projects
- Debugging & problem solving

Suggested Teaching Plan

Week 1-2: Fundamentals & Control Statements

Week 3-4: OOP Concepts

Week 5: Arrays, Strings, Exception Handling

Week 6: Collections

Week 7: Multithreading & File Handling

Week 8: Java 8 Features & JDBC

Week 9+: Interview prep and mini projects