

# **Complete Java Syllabus - Beginner to Advanced**

## **BEGINNER LEVEL (Java Core / Fundamentals)**

1. Java Basics: History and Features of Java, Java Editions (SE, EE, ME), JDK, JRE, JVM, Installation & Setup
2. Syntax and Data Types: Variables, Data Types, Type Casting, Operators, Input/Output (Scanner, BufferedReader)
3. Control Flow: if, else, switch, for, while, do-while loops, Break and Continue
4. Methods: Method Declaration, Overloading, Recursion, Pass by value/reference
5. Arrays and Strings: 1D and 2D Arrays, Array Methods, String, StringBuffer, StringBuilder
6. Object-Oriented Programming (OOP): Classes, Constructors, this, Inheritance, Overriding, Polymorphism, Encapsulation, Abstraction, super, final
7. Basic Exception Handling: try, catch, finally, throw and throws, Built-in and Custom Exceptions
8. Basic File Handling (I/O): File, FileReader, BufferedReader, BufferedWriter

## **INTERMEDIATE LEVEL (Java OOP + Collections + Threads)**

1. Collections Framework: List, Set, Map, Queue, Iterator, Generics
2. Wrapper Classes & Autoboxing: Integer, Double, Autoboxing & Unboxing
3. Inner Classes: Member, Static, Local, Anonymous Inner Classes
4. Enum & Varargs: Enumerations and Variable Arguments
5. Java 8 Features: Lambda, Functional Interfaces, Method Reference, Stream API (Basics), Optional Class

# **Complete Java Syllabus - Beginner to Advanced**

6. Multithreading & Concurrency: Thread Class, Runnable, synchronized, wait/notify, ExecutorService

7. GUI Programming (Optional): AWT, Swing (JFrame, JPanel, JButton, etc.)

## **ADVANCED LEVEL (Enterprise Java + Real-World Concepts)**

1. JDBC: Connections, Statement types, Transactions, Connection Pooling

2. Servlets: Lifecycle, doGet/doPost, Session Management, Filters, Listeners

3. JSP: Lifecycle, Scriptlets, JSTL, MVC with JSP + Servlet

4. JavaMail API: Sending emails with attachments

5. JSON/XML Handling: Jackson / Gson, DOM, SAX

6. RESTful Web Services: JAX-RS (Jersey), Annotations, Consuming APIs

7. Java 8+ Deep Dive: Advanced Streams, Functional Programming, CompletableFuture, Date & Time API

8. Annotations & Reflection: Built-in and Custom Annotations, Reflection API

9. Java Security: Encryption, Digital Signatures, SSL

10. Build Tools & Deployment: Maven, Gradle, WAR/JAR, Tomcat

11. Design Patterns: Singleton, Factory, Builder, Strategy, Observer, etc.

12. JVM Internals: Class Loaders, Memory Areas, GC, JIT Compiler