**JAVA + SPRING BOOT COURSE: (120 HOURS)**

**Week 1-4: Core Java (40 Hours)**

**Week 1: Java Basics**

1. Introduction to Java
   * History, Features & Applications
   * JDK, JRE, JVM
2. Installation & Setup
   * Installing JDK & IntelliJ IDEA
3. Writing First Java Program
   * Program structure
   * Compilation & Execution
4. Variables & Data Types
   * Primitive & Non-Primitive Datatypes
   * Type Casting
5. Operators in Java
   * Arithmetic, Relational, Logical, Incre/Decre , Ternary
6. Control Statements
   * if, if else,if else if, switch case
7. Looping Statements
   * For, While
8. Methods in Java
9. static keyword uses

**Week 2: Object-Oriented Programming (OOPs)**

1. Arrays
2. Constructors
   * Parameterized & Non-Parameterized
3. OOPS concept
   * Encapsulation
   * Inheritance
   * Polymorphism
   * Abstraction
4. Strings

**Week 3: Advanced Java Concepts**

1. Exception Handling
   * try, catch, finally
   * Checked vs Unchecked Exceptions
2. File Handling in Java
   * Reading/Writing Files
3. Multi-threading
4. Java Collections Framework
   * List, ArrayList, Set, HashSet

**Week 4: JDBC & Database (MySQL)**

1. Introduction to Databases
   * SQL Basics (CRUD Operations)
   * MySQL installation
2. JDBC (Java Database Connectivity)
   * Connecting Java with MySQL
   * Executing Queries via Java
3. Project: Simple Java Console App with Database

**Week 5-8: Spring Framework & Spring Boot (40 Hours)**

**Week 5: Introduction to Spring Framework**

1. What is Spring?
   * Advantages & Features
   * Spring vs Spring Boot
2. Spring Core Concepts
   * Dependency Injection (DI)
   * Inversion of Control (IoC)
3. Spring Configuration
   * XML vs Java-based Configuration
4. Introduction to Spring Boot
   * Features & Auto-configuration
   * Spring Initializr
5. Spring Boot Starters & Dependencies

**Week 6: Spring Boot Basics**

1. Spring Boot Project Structure
   * Three-Layered Architecture
2. Creating First Spring Boot Application
   * @SpringBootApplication
3. Spring Boot Annotations
   * @Component, @Service, @Repository
   * @RestController, @Autowired
4. application.properties Configuration
5. Running and Debugging Spring Boot Apps

**Week 7: RESTful APIs & Spring Boot**

1. Understanding REST APIs
   * Introduction to REST API’s
   * HTTP Methods (GET, POST, PUT, DELETE)
2. Building REST APIs in Spring Boot
   * @RequestMapping, @GetMapping, @PostMapping
   * @PutMapping, @DeleteMapping
3. Handling Requests & Responses
   * Path Variables & Query Parameters
4. Exception Handling in Spring Boot
   * @ExceptionHandler
5. Using Postman for API Testing

**Week 8: Spring Boot + MySQL Integration**

1. Spring Boot with MySQL (Spring Data JPA)
   * Setting Up MySQL with Spring Boot
   * Connecting with application.properties
2. Spring Data JPA Repository
3. CRUD Operations with MySQL
   * Creating, Reading Records
   * Updating, Deleting Records

**Week 9-12: Advanced Spring Boot + Project Development (40 Hours)**

**Week 9: Spring Boot Security & Microservices**

1. Introduction to Spring Boot Security
   * JWT (JSON Web Token) Authentication
   * Role-Based Access Control
2. Microservices Architecture
   * What are Microservices?

**Week 10: Frontend Integration & Testing**

1. Integrating Front End with Spring Boot
   * Calling REST API from Frontend
   * Retrieving records from Backend
   * Adding records to the Backend
2. Introduction to Thymeleaf

**Week 11-12: Project Development**

1. Building a Full Stack Spring Boot Project
   * User Management System
   * Sign up and Login
   * CRUD Operations