

## Course Title: Java Spring Boot Development

### Course Description:

This course provides an in-depth introduction to building web applications using the Spring Boot framework. Students will learn how to develop robust, scalable, and maintainable applications using Spring Boot's features and best practices.

### Prerequisites:

- \* Proficiency in Java programming language
- \* Understanding of web development concepts (HTML, CSS, JavaScript)
- \* Familiarity with relational databases and SQL

Course Duration: 12 weeks (3 hours per week)

### Syllabus:

#### Week 1\*2: Introduction to Spring Boot

- \* Overview of Spring Framework
- \* Introduction to Spring Boot
- \* Setting up development environment
- \* Creating a simple Spring Boot application

#### Week 3\*4: Spring Boot Basics

- \* Spring Boot configuration
- \* Dependency Injection and IoC (Inversion of Control)
- \* Spring Boot annotations
- \* Building RESTful APIs with Spring Boot

#### Week 5\*6: Data Access with Spring Boot

- \* Introduction to Spring Data
- \* Working with JPA (Java Persistence API)
- \* Using Spring Data JPA with Spring Boot
- \* CRUD operations with repositories

#### Week 7\*8: Authentication and Authorization

- \* Introduction to Spring Security
- \* Securing web applications with Spring Security
- \* Implementing authentication and authorization
- \* Role-based access control

#### Week 9\*10: Advanced Topics

- \* Error handling and exception management
- \* Testing Spring Boot applications
- \* Using Spring Boot Actuator for monitoring and management
- \* Deploying Spring Boot applications

#### Week 11\*12: Building Real-world Applications

- \* Designing and developing a complete Spring Boot application
- \* Integrating frontend technologies (React, Angular, or Thymeleaf)
- \* Implementing advanced features (file uploads, email integration, caching)
- Best practices and tips for Spring Boot development

Assessment:

- \* Weekly assignments and quizzes
- \* Mid\*term project: Develop a RESTful API using Spring Boot
- \* Final project: Build a full\*stack web application using Spring Boot, incorporating authentication, database operations, and frontend integration.