

# Spring Boot with Docker

**Course Duration: 16 Hours**

**Course Code : SBD-301**

## 1. Course Overview

The **Spring Boot with Docker** course is designed to help developers build, containerize, and deploy modern Java applications using Spring Boot and Docker. This course covers the fundamentals of Spring Boot for microservices development and demonstrates how to package these applications into lightweight containers for deployment across different environments. By the end of this course, learners will have hands-on experience in creating scalable, cloud-ready applications with Dockerized Spring Boot services.

## 2. What You'll Learn?

- Understand the basics of **Spring Boot** for building microservices.
- Configure and develop RESTful APIs with Spring Boot.
- Learn the fundamentals of **Docker** and containerization.
- Package and run Spring Boot applications inside Docker containers.
- Use **Docker Compose** to orchestrate multi-container applications.
- Deploy Dockerized Spring Boot applications to cloud environments.
- Best practices for CI/CD integration with Docker and Spring Boot.

## 3. Target Audience

- Java developers who want to learn containerization with Docker.
- Software engineers building **microservices** using Spring Boot.
- DevOps engineers aiming to integrate Docker into the development workflow.
- IT professionals looking to deploy scalable and portable applications.
- Students or professionals preparing for **cloud-native application development**.

## 4. Pre-Requisites

- Basic understanding of **Java programming** and **Spring framework**.
- Familiarity with **REST APIs** and web application development.
- Knowledge of **basic Linux commands** (helpful but not mandatory).

## 5. Course Content

### Module 1: Introduction to Spring Boot

- Overview of Spring Boot
- Setting up a Spring Boot Project
- REST API development with Spring Boot
- Configuration and properties management

### Module 2: Introduction to Docker

- What is Docker?
- Installing Docker on local system
- Understanding Images, Containers, and Registries
- Docker commands and workflow

### Module 3: Containerizing Spring Boot Applications

- Creating a Dockerfile for Spring Boot applications
- Building Docker images
- Running Spring Boot inside Docker containers
- Managing container lifecycle

#### **Module 4: Docker Compose for Microservices**

- Introduction to Docker Compose
- Defining multi-container applications with docker-compose.yml
- Orchestrating Spring Boot services with Docker Compose
- Networking between containers

#### **Module 5: Data Persistence and Integration**

- Connecting Spring Boot with databases inside Docker containers
- Using Docker volumes for data persistence
- Environment variable configuration for containers
- Integration with external services

#### **Module 6: Deployment and Best Practices**

- Deploying Spring Boot containers on **Docker Hub**
- Running containers on **cloud platforms** (AWS, Azure, GCP)
- Optimizing Docker images for production
- Security best practices in Spring Boot + Docker applications

#### **Module 7: CI/CD with Docker and Spring Boot**

- Introduction to CI/CD pipelines
- Automating builds and deployments with Jenkins/GitHub Actions
- Testing and monitoring containerized Spring Boot applications
- End-to-end microservice deployment

