



Introduction to Spring Boot and Spring Data

Explore Spring Essentials: Core Spring, Spring Boot, Spring AOP, Spring Data, Queries & More

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Course Snapshot

- **Course: Introduction to Spring Boot and Spring Data (TT3321)**
- **Duration:** 3 days
- **Skill Level:** Introduction to Spring development skills for intermediate-skilled Java developers
- **Audience:** This is a developer-focused course geared for experienced Java programmers who have current, hands-on Java coding experience to about an intermediate level. This course is not for non-developers.
- **Hands-on Learning:** This course is approximately **50% hands-on**, combining expert lecture, real-world demonstrations and group discussions with machine-based practical labs and exercises. Student machines are required.
- **Delivery Options:** This course is available for **onsite private classroom presentation, live online virtual presentation**, or can be presented in a **flexible blended learning format** for combined onsite and remote attendees. Please also ask about our **Self-Paced / Video / QuickSkills or Mini-Camp Flex Hours / Short Course** options.
- **Public Schedule:** This course has active dates on our live-online open enrollment **Public Schedule**.
- **Customizable:** This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools and learning goals. Please inquire for details.

Overview

Introduction to Spring Boot and Spring Data is a hands-on Spring training course geared for experienced Java developers who need to understand what the Spring Boot is in terms of today's systems and architectures, and how to use Spring in conjunction with other technologies and frameworks. This leading-edge course provides added coverage of Spring's Aspect-Oriented Programming and the use of Spring Boot. Students will gain hands-on experience working with Spring, using Maven for project and dependency management, and, optionally, a test-driven approach (using JUnit) to the labs in the course.

The Spring framework is an application framework that provides a lightweight container that supports the creation of simple-to-complex components in a non-invasive fashion. Spring's flexibility and transparency is congruent and supportive of incremental development and testing. The framework's structure supports the layering of functionality such as persistence, transactions, view-oriented frameworks, and enterprise systems and capabilities. This course targets **Spring Boot 2**, which includes full support for Java SE 11 and Java EE 8. Spring supports the use of lambda expressions and method references in many of its APIs.

Learning Objectives

Working in a hands-on learning environment, students will review configuration basics of the Spring framework. The course then moves into Spring Boot, providing in-depth content and experience working with Spring Boot to accomplish a variety of tasks. In addition to working through the Spring Actuator, students work extensively at testing and debugging Spring Boot applications.

Working in a hands-on learning environment, led by our expert practitioner, students will:

- Explain the issues associated with complex frameworks such as JEE and how Spring addresses those issues
- Understand the relationships between Spring and JEE, AOP, IOC and JDBC.
- Write applications that take advantage of the Spring container and the declarative nature of assembling simple components into applications.
- Understand how to configure the Spring Boot framework
- Understand and work on integrating persistence into a Spring application
- Explain Spring's support for transactions and caching
- Work with Spring Boot to facilitate Spring setup and configuration
- Apply Aspect Oriented Programming (AOP) to Spring applications
- Become familiar with the conditionally loading of bean definitions and Application Contexts
- Understand how to leverage the power of Spring Boot
- Use Spring Boot to create and work with JPA repositories

- Define the persistence layer of an application using Spring Data
- Query for data using Spring Data JPA Queries

Need different skills or topics? If your team requires different topics or tools, additional skills or custom approach, this course may be further adjusted to accommodate. We offer additional Spring, Java / JEE / Java for Web programming, Services, REST, TDD / testing, design, application security and other related topics that may be blended with this course for a track that best suits your needs. Our team will collaborate with you to understand your needs and will target the course to focus on your specific learning objectives and goals.

Audience & Pre-Requisites

This introduction to Spring development course requires that incoming students possess solid Java programming skills and practical hands-on Java experience. This class is geared for experienced Java developers who are new to Spring, who wish to understand how and when to use Spring in Java and JEE applications.

Take Before: Incoming students should have skills equivalent to the topics in, or should have recently attended, one of these courses as a pre-requisite:

- TT2100 Core Java Programming for Object Oriented Experienced Developers
- TT2120 Java Programming and OO Essentials for Developers New to OO

Take After: Our core Spring developer portfolio provides students with a solid foundation for continued learning based on role, goals, or their areas of specialty. As a follow on to this course, students might continue training in these core areas:

- Next Level Spring courses: Spring MVC; Spring Cloud; Spring REST and Microservices; Spring Data, Reactive Spring
- Agile, Java TDD / Test Driven Development and JUnit training
- Application Security & Secure Coding
- Please contact us for recommended next steps tailored to your longer-term education, project, role or development objectives.

Enhanced Learning Services: Please also ask about our **Pre-Training Class OnRamp & Prep / Primer** offerings, **Skills Gap Assessment Services, Case Studies, Knowledge Check Quizzes, Skills Immersion Programs & Camps, Collaborative Mentoring Services and Extended Learning Support & Post Training** services.

Course Topics / Agenda

Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We'll work with you to tune this course and level of coverage to target the skills you need most. Topics, agenda and labs are subject to change, and may adjust during live delivery based on audience interests, skill-level and participation.

Session: Introduction to Spring

Lesson: The Spring Framework

- Understand the value of Spring
- Explore Dependency Injection (DI) and Inversion of Control (IoC)
- Introduce different ways of configuring collaborators
- Spring as an Object Factory
- Initializing the Spring IoC Container

Lesson: Configuring Spring Managed Beans

- Introduce Java-based configuration
- The @Configuration and @Bean annotations

- Define bean dependencies
- Bootstrapping Java Config
- Context Injection in Configuration classes
- Using context Profiles
- Conditionally loading beans and configurations
- Bean Life-Cycle Methods
- [Lab: Spring Java Config](#)

Lesson: Defining Bean dependencies

- Introduce Spring annotations for defining dependencies
- Explore the @Autowired annotation
- Stereotype Annotations
- Qualifying injection points
- Lifecycle annotations

- Using properties in Java based configuration
- The @Value annotation
- Using the Candidate Components Index
- [Lab: Configuring Bean Dependencies using Annotations](#)
- [Lab: Creating the Candidate Component Index](#)

Lesson: Introduction to Spring Boot

- Introduce the basics of Spring Boot
- Explain auto-configuration
- Introduce the Spring Initializr application
- Bootstrapping a Spring Boot application

- [Lab: Introduction to Spring using Spring Boot](#)

Lesson: Working with Spring Boot

- Provide an overview of Spring Boot
- Introduce starter dependencies
- Introduce auto-configuration
- @Enable... annotations
- Conditional configuration
- Spring Boot Externalized Configuration
- Bootstrapping Spring Boot
- [Lab: Create REST Repository using Spring Boot](#)

Session: Spring AOP**Lesson: Introduction to Aspect Oriented Programming**

- Aspect Oriented Programming
- Cross Cutting Concerns

Lesson: Spring AOP

- Spring AOP in a Nutshell
- @AspectJ support
- Spring AOP advice types
- AspectJ pointcut designators
- [Lab: Spring AOP: Adding Interceptors](#)

Session: Spring Boot 2**Lesson: Spring Boot Actuator**

- Understand Spring Boot Actuators
- Work with predefined Actuator endpoints
- Enabling Actuator endpoints
- Securing the Actuator
- [Lab: The Spring Actuator](#)
- [Lab: Securing the Spring Actuator](#)

Lesson: Developing in Spring Boot

- Introduce Spring Boot Devtools
- Enable the ConditionEvaluationReport
- Debugging Spring Boot applications
- [Lab: Discover the Spring DevTools](#)

Lesson: Thymeleaf

- Provide a quick overview of Thymeleaf
- Introduce Thymeleaf templates
- Create and run a Spring Thymeleaf MVC application
- [Lab: Add front-end to REST Repository](#)

Session: Spring Data (Introduction)**Lesson: Spring Data Overview**

- Spring Data Capabilities and Features
- Spring Data repositories
- The Repository interfaces

- Defining the JPA entity
- Persisting entities using Spring Data JPA
- Bootstrapping the Spring Data application
- [Lab: Spring Data JPA Using Spring Boot](#)
- [Lab: Spring Data JPA Using Spring Boot \(Part 2\)](#)
- [Lab: Spring Data JPA \(Without Spring Boot\)](#)

Lesson: Spring Data Query Methods

- Querying data using Query methods
- Query builder mechanism
- Handling an Absence of Value
- Pagination and Ordering
- Asynchronous query methods
- Count and Delete Derived Query methods
- [Lab: Spring Data Query Methods](#)

Lesson: Spring Data JPA Queries

- JPA named queries
- @Query and @NamedQuery annotations
- Defining Query parameters
- Executing native queries
- SpEL expressions in queries
- Managing the Persistence Context after updates
- [Lab: Spring Data JPA Queries](#)

Course Materials: Each student will receive a **Student Guide** with course notes, code samples, software tutorials, step-by-step written lab instructions, diagrams and related reference materials and links (as applicable). Students will also receive the project files (or code, if applicable) and solutions required for the hands-on work.

Hands-on Setup Made Simple! Our dedicated tech team will work with you to **ensure your student machines and learning environment is setup, tested and ready to go** well in advance of the course delivery date, ensuring a smooth start to class and seamless hands-on experience for your students. We offer several flexible student machine setup options including **guided manual set up** for simple installation directly on student machines, or **cloud based / remote hosted lab solutions** where students can log in to a complete separate lab environment minus any installations, or we can supply **complete turn-key, pre-loaded equipment** to bring ready-to-go student machines to your students or in-person facility. Please inquire for details.

For More Information

For more information about our dedicated training services, collaborative mentoring services, courseware licensing options, courseware development services, public course schedule, training management services, partner and reseller programs, or to see our complete list of course offerings and special offers please visit us at www.triveratech.com, email Info@triveratech.com or call us toll free at **844-475-4559**. Our pricing and services are always satisfaction guaranteed.