



Mastering Spring 5.x

Hands-On Core Spring: Explore Spring Essentials, Spring Boot, Spring AOP, Spring Data, Spring REST & More

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Course Snapshot

- **Course: Mastering Spring 5.x (TT3335)**
- **Duration:** 4 days
- **Audience & Skill-Level:** This is an introduction to Spring course for intermediate-skill level Java 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

Mastering Spring 5.x is a hands-on Spring training course geared for experienced Java developers who need to understand what the Spring Framework 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. It includes complete coverage of all new features in Spring 5.x. 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 5.x**. Spring supports the use of lambda expressions and method references in many of its APIs. Spring simplifies common tasks and encourages good design based on programming to interfaces. Spring makes your application easier to configure and reduces the need for many JEE design patterns. Spring puts the OO design back into your JEE application, and it integrates nicely with many view technologies and the new features of HTML5.

Learning Objectives

This course provides a solid understanding of what Spring brings to the table and how to use Spring in the context of other technologies and frameworks. Students are taken on an in-depth tour of the basic Spring framework, initially examining concepts such as Inversion of Control and Dependency Injection, and then working with the container and basic components. Students are introduced to Spring Boot and use Spring Boot throughout the remainder of the course. The latter part of the class looks at implementing REST with Spring and takes a deep dive into Spring Boot to prepare students for more extended Spring Boot usage following class.

Working in an engaging hands-on programming environment, students will learn to:

- Explain the issues associated with complex frameworks such as JEE and how Spring addresses those issues
- Write applications that take advantage of the Spring container and the declarative nature of assembling simple components into applications.
- Understand how to configure the framework Spring Boot and various options within Spring Boot for detailed configuration.
- Understand and work on integrating Spring Data into a Spring application.
- Develop REST applications using Spring 5
- Work with Spring Boot to facilitate Spring setup and configuration

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, programming, Microservices / 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 intermediate-level 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: Students should have development skills at least equivalent to or should have attended these as a pre-requisite:

- TT2100 Introduction to Java for OO Experienced Developers

Follow On Courses / Take After: Our Next-Level Java and Spring developer courses provide students with a solid foundation for continued learning based on role, goals, or their areas of specialty. Our learning paths offer a wide variety of follow-on courses such as:

- Continued Spring: Core, Boot, REST, Data, Web, Cloud, Security, Reactive Spring & More
- Continued Java & JEE Programming: Advanced Java, Microservices / Web Services / REST, RXJava, Tuning, Patterns, Test Driven Development / Unit Testing & More
- Secure Java Coding / Java & JEE Security and secure web application development training
- 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 will 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 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](#)

Session: Implementing REST with Spring

Lesson: REST principles

- Introduce the six architectural constraints of REST
- Introduce Resources and Resource representations
- Best practices for defining Resource URIs

Lesson: Introduction to RESTful Services in Spring

- Discuss the request-response cycle of REST requests
- Defining a REST Controller in Spring
- Explain the @ResponseBody annotation
- Define request mappings
- Use path variables
- [Lab: Working with Spring REST](#)

Lesson: Introduction to REST Clients in Spring

- Introduce RestTemplate class
- Making GET, POST, PUT, HEAD, OPTIONS and DELETE requests
- Introduce the UriTemplate class
- Using HttpEntity and RequestEntity
- Use the exchange method to define 'complex' requests
- Process requests and responses using callback
- Configure the RestTemplate
- [Lab: Implementing the Spring REST Client](#)

Lesson: Bootstrapping the REST application

- Describe steps needed to bootstrap Spring REST application
- Configure Content Representation libraries
- Configure Spring MVC and map the Dispatcher Servlet

- Explain the advantages of using Spring Boot to setup the REST project
- Setup a Spring REST application using Spring Boot
- [Lab: Spring Hotel Reservation](#)
- [Lab: Spring Hotel Reservation Client](#)

Lesson: Content Representation

- Returning different media types from service
- Introduce negotiated resource representation
- Configure Message Converters
- [Lab: Spring REST Content Negotiation](#)

Lesson: Implementing the REST Service

- Process for Spring REST Implementation
- The Domain object
- Using Project Lombok to define the domain object
- (Not) Using Data Transfer Objects
- ResponseEntity builder interfaces
- Setting Location header using UriComponentsBuilder
- [Lab: Spring REST Services](#)

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](#)

Additional Topics: Time Permitting

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

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

Need dedicated training? All courses can be presented **onsite** or **online**, or in a **combined / flex / blended learning format**, tailored to target your specific audience, needs and learning goals. We also offer focused, flexible **short courses, self-paced learning options, recorded sessions** and more. We train beginner to advanced skills in all areas we cover, and offer **New Hire / Cohort Training, Boot Camps, Skills Immersion Programs, Reskilling Programs, Skills Migration & Transition Programs**, and more. We collaborate with you to ensure all courses are truly targeted to meet your specific needs and learning skills, maximizing your valuable training time, as well as your important budget.

Please also visit our extensive **Public Training Schedule** for training for smaller groups or individuals. Please contact us for course details, **Corporate Rates** and **Special Discount Offers**.

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.

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