

## Core Spring (CORE)

ID CORE Preis 2.590,- € (exkl. MwSt.) Dauer 4 Tage

### Kursüberblick

This course offers hands-on experience with Spring and its major features, including configuration, data access, web and REST applications, Spring Boot, Spring Security and using Spring Cloud to build a small microservices application. On completion, participants will have a foundation for creating enterprise-ready applications. This course prepares students for the Spring Professional certification exam. Certification exams are sold separately.

### Zielgruppe

Application developers who want to increase their understanding of Spring and Spring Boot with hands-on experience and a focus on fundamentals.

### Voraussetzungen

Good understanding of web-application development using Java, an IDE (Eclipse, STS or IntelliJ) and a Servlet engine such as Tomcat or Jetty, specific Java concepts (annotations and lambdas) and dependency management using Maven or Gradle.

### Kursziele

Upon completion of this course, participants will understand how to implement the following:

- Spring configuration using Java Configuration and Annotations
- Aspect oriented programming with Spring
- Testing Spring applications using JUnit 5
- Spring Data Access - JDBC, JPA and Spring Data
- Spring Transaction Management
- Simplifying applications with Spring Boot

- Spring Boot auto-configuration, starters and properties
- Build a simple MVC application using Spring Boot, embedded Web Server and fat JARs or classic WARs
- Implementing REST with Spring MVC and RestTemplate
- Spring Security
- Enable and extend metrics and monitoring capabilities using Spring Boot actuator
- Utilize Spring Boot enhancements to testing

### Kursinhalt

- Introduction to Spring
- Spring Java Configuration: A Deeper Look
- Annotation-Based Dependency Injection
- Factory Pattern in Spring
- Advanced Spring: How Does Spring Work Internally?
- Aspect-Oriented Programming
- Testing A Spring-Based Application
- Data Access And JDBC With Spring
- Database Transactions With Spring
- Spring Boot Introduction
- Spring Boot Dependencies, Auto-Configuration And Runtime
- Jpa With Spring And Spring Data
- Spring MVC Architecture And Overview
- Rest With Spring MVC
- Spring Security
- Actuators, Metrics And Health Indicators
- Spring Boot Testing Enhancements

### Detaillierter Kursinhalt

#### Introduction to Spring

- Java configuration and the Spring application context
- @Configuration and @Bean annotations
- @Import: working with multiple configuration files
- Defining bean scopes
- Launching a Spring Application and

obtaining Beans

### Spring Java Configuration: A Deeper Look

- External properties & Property sources
- Environment abstraction
- Using bean profiles
- Spring Expression Language (SpEL)
- How it Works: Inheritance based proxies

### Annotation-Based Dependency Injection

- Autowiring and component scanning
- Java configuration versus annotations, mixing.
- Lifecycle annotations: @PostConstruct and @PreDestroy
- Stereotypes and meta-annotations

### Factory Pattern in Spring

- Using Spring FactoryBeans

### Advanced Spring: How Does Spring Work Internally?

- The Spring Bean Lifecycle
- The BeanFactoryPostProcessor interception point
- The BeanPostProcessor interception point
- Spring Bean Proxies
- @Bean method return types

### Aspect-Oriented Programming

- What problems does AOP solve?
- Differences between Spring AOP and AspectJ
- Defining pointcut expressions
- Implementing an advice: @Around, @Before, @After

### Testing A Spring-Based Application

- Spring and Test Driven Development
- Spring 5 integration testing with JUnit 5
- Application context caching and the @DirtiesContext annotation
- Profile selection with @ActiveProfiles
- Easy test data setup with @Sql

### Data Access And JDBC With Spring

- How Spring integrates with existing data

access technologies

- DataAccessException hierarchy
- Implementing caching using @Cacheable
- Embedded databases for testing
- Spring's JdbcTemplate

### Database Transactions With Spring

- Transactions overview
- Transaction management with Spring
- Isolation levels, transaction propagation and rollback rules
- Transactions and integration testing

### Spring Boot Introduction

- Introduction to Spring Boot
- Value Proposition of Spring Boot
- Creating a simple Boot application using Spring Initializr website

### Spring Boot Dependencies, Auto-Configuration And Runtime

- Dependency management using Spring Boot starters
- How auto-configuration works
- Configuration properties
- Overriding auto-configuration
- Using CommandLineRunner

### JPA With Spring And Spring Data

- Quick introduction to ORM with JPA
- Benefits of using Spring with JPA
- JPA configuration in Spring
- Configuring Spring JPA using Spring Boot
- Spring Data JPA dynamic repositories

### Spring MVC Architecture And Overview

- Introduction to Spring MVC and request processing
- Controller method signatures
- Using @Controller, @RestController and @GetMapping annotations
- Configuring Spring MVC with Spring Boot
- Spring Boot packaging options, JAR or WAR

### Rest With Spring MVC

- An introduction to the REST architectural style

- Controlling HTTP response codes with `@ResponseStatus`
- Implementing REST with Spring MVC, `@RequestMapping`, `@RequestBody` and `@ResponseBody`
- Spring MVC's `HttpMessageConverters` and automatic content negotiation

### **Spring Security**

- What problems does Spring Security solve?
- Configuring authentication
- Implementing authorization by intercepting URLs
- Authorization at the Java method level
- Understanding the Spring Security filter chain

### **Actuators, Metrics And Health Indicators**

- Enabling Spring Boot Actuator
- Custom Metrics
- Health Indicators
- Creating custom Health Indicators
- External monitoring systems

### **Spring Boot Testing Enhancements**

- Spring Boot testing overview
- Integration testing and slices
- Slices to test different layers of the application

# Über Fast Lane



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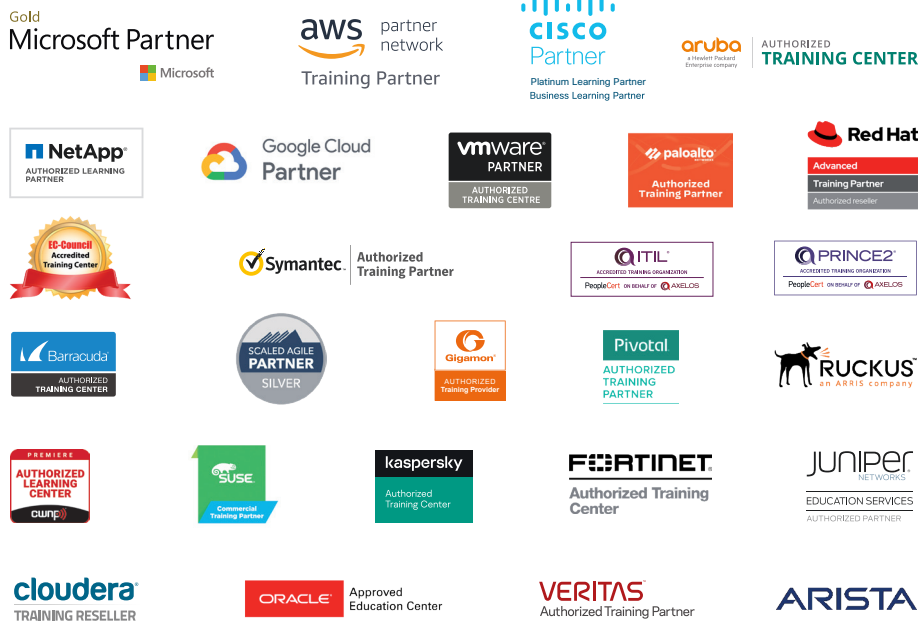
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## Trainingsmethoden

- ✓ Klassenraumtraining
- ✓ Instructor-Led Online Training
- ✓ FLEX Classroom – Klassenraum und ILO kombiniert
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- ✓ E-Learning
- ✓ Blended & Hybrid Learning
- ✓ Mobiles Lernen

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- ✓ Digitale Transformation
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- ✓ Cloud
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