

## Java Web Developer / Introduction to Java EE for OO Programmers

Learn to design modern web applications that are robust, efficient, secure, and maintainable.

### Course Snapshot

- **Course:** Java Web Developer / Introduction to Java EE for Object Oriented Programmers (TT5140)
- **Duration:** 5 days
- **Skill-Level :** Introduction to basic Java and basic JEE (Servlets, JSPs and JDBC) programming for experienced programmers with practical, current development skills in another OO language such as C++ or C#
- **Hands-on Learning:** This course is approximately 50% hands-on lab to lecture ratio, combining engaging expert lessons, demos and group discussions with real-world, skills-focused machine-based 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 **blended learning format**. Please also ask about our **Self-Paced / Video / QuickSkills** or **Mini-Camp / Short Course** flexible delivery options.
- **Customizable:** This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools and learning goals. Please ask for details.

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### Overview

**New to Java and need to get a handle on the latest Java EE / JEE web developer essentials?** Need to learn Java, without the GUI and Swing? This five-day, comprehensive hands-on training course will teach you essential Java programming skills, in preparation for building server-side applications on the Java EE platform.

Java Enterprise Edition (Java EE) is a powerful platform for building web applications. The Java EE platform offers all the advantages of developing in Java plus a comprehensive suite of server-side technologies. This course tells you what you need to know to design and build your own web applications. You'll learn the details of the key JEE technologies and how to leverage the strengths of each, with special focus on Servlets and JSPs. At the same time, you'll be learning about the big picture of Java EE and how to design web applications that are robust, efficient, secure, and maintainable. If you want to deliver an application on the web, you'll find this course essential.

NOTE: If you are new to OO programming, you should consider the **TT5145 Introduction to Java Web Development / Java EE for Developers New to OO** as an alternative.

### Learning Objectives

Students who attend **Java Web Developer / Introduction to Java EE for OO Programmers** will leave the course armed with the skills they require to develop solid object-oriented applications written in Java, using sound coding techniques and best coding practices, with a specific focus on server-side development.

Our engaging instructors and mentors are highly experienced practitioners who bring years of current "on-the-job" experience into every classroom. Working in a hands-on learning environment, guided by our expert team, attendees will learn to:

- Understand not only the fundamentals of the Java language, but also, its importance, uses, strengths and weaknesses
- Understand the basics of the Java language and how it relates to OO programming and the Object Model
- Learn to use Java exception handling and logging features
- Understand and use classes, inheritance and polymorphism
- Understand and use collections, generics, autoboxing, and enumerations
- Use the JDBC API for database access
- Work with annotations
- Design and build robust and maintainable web applications
- Create dynamic HTML content with Servlets and Java Server Pages
- Make Servlets and JSP work together cleanly

**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 Java / JEE, web development, testing, programming, security and other related topics that may be blended with this course for a track that best suits your needs.

### Audience & Pre-Requisites

This is an introductory level training course, designed for experienced OO developers (such as C++ or SmallTalk) that need to extend their skills in web development and understand the basic architecture of a JEE web application and/or implement a web application, taking advantage of what JEE brings to the table.

**Take After:** Our core Java training courses provide students with a solid foundation for continued learning based on role, goals, or their areas of specialty. Our object oriented, Java developer learning paths offer a wide variety of follow-on courses such as:

- Continued Java & Java EE training: Spring, Microservices, RXJava, REST, Java for Web, Web Services, Tuning, Patterns & more
- TDD / Test Driven Development, JUnit / Unit Testing, Agile development training
- Secure Java Coding / Java Security and secure application web development training
- Mobile developer / Android training
- Please contact us for recommended next steps tailored to your longer-term education, project, role or development objectives.

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

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### 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. Course agenda, topics and labs are subject to adjust during live delivery in response to student skill level, interests and participation.*

#### Part One: Essential Java Programming

##### Session: Java: A First Look

##### Lesson: The Java Platform

- Java Platforms
- Lifecycle of a Java Program
- Responsibilities of JVM
- Documentation and Code Reuse

##### Lesson: Using the JDK

- Setting Up Environment
- Locating Class Files
- Compiling Package Classes
- Source and Class Files
- Java Applications

##### Session: Getting Started with Java

##### Lesson: Writing a Simple Class

- Classes in Java
- Class Modifiers and Types
- Class Instance Variables
- Primitives vs. Object References
- Creating Objects

##### Lesson: Adding Methods to the Class

- Passing Parameters into Methods
- Returning a Value from a Method
- Overloaded Methods
- Constructors
- Optimizing Constructor Usage

##### Lesson: Language Statements

- Operators
- Comparison and Logical Operators
- Looping
- Continue and Break Statements
- The switch Statement
- The for-each() Loop

##### Lesson: Using Strings

- Strings
- String Methods
- String Equality
- StringBuffer
- StringBuilder

##### Lesson: Specializing in a Subclass

- Extending a Class
- Casting
- The Object Class

- Default Constructor
- Implicit Constructor Chaining

##### Session: Essential Java Programming

##### Lesson: Fields and Variables

- Instance vs. Local Variables: Usage Differences
- Data Types
- Default Values
- Block Scoping Rules
- Final and Static Fields
- Static Methods

##### Lesson: Using Arrays

- Arrays
- Accessing the Array
- Multidimensional Arrays
- Copying Arrays
- Variable Arguments

##### Lesson: Java Packages and Visibility

- Class Location of Packages
- The Package Keyword
- Importing Classes
- Executing Programs
- Java Naming Conventions

## Session: Advanced Java Programming

### Lesson: Inheritance and Polymorphism

- Polymorphism: The Subclasses
- Upcasting vs. Downcasting
- Calling Superclass Methods from Subclass
- The final Keyword

### Lesson: Interfaces and Abstract Classes

- Separating Capability from Implementation
- Abstract Classes
- Implementing an Interface
- Abstract Classes vs. Interfaces

### Lesson: Exceptions

- Exception Architecture
- Handling Multiple Exceptions
- Automatic Closure of Resources
- Creating Your Own Exceptions
- Throwing Exceptions
- Checked vs. Unchecked Exceptions

## Session: Java Developer's Toolbox

### Lesson: Utility Classes

- Wrapper Classes
- The Number Class
- Random Numbers
- Autoboxing/Unboxing
- The Date Class

### Lesson: Enumerations and Static Imports

- Enumeration Syntax
- When You Should Use Enumerations
- Using Static Imports
- When You Should Use Static Imports

## Session: Collections and Generics

### Lesson: Introduction to Generics

- Generics and Subtyping
- Bounded Wildcards
- Generic Methods
- Legacy Calls to Generics
- When Generics Should Be Used

## Lesson: Collections

- Characterizing Collections
- Collection Interface Hierarchy
- Iterators
- The Set Interface
- The List Interface
- Queue Interface
- Map Interfaces
- Using the Right Collection
- Collections and Multithreading

## Session: Java Application Development

### Lesson: Introduction to Annotations

- Annotations Overview
- Working with Java Annotations

## Part 2: Introduction to Java EE

## Session: Developing Java EE applications

### Lesson: Enterprise Development

- Enterprise Application Software
- Requirements of Enterprise applications
- Scalability, Load Balancing, Fail Over
- Resource pooling

### Lesson: Java EE Core Components

- Overview of Java EE Core Components
- Web Tier Components
- Application Tier
- Deployable Units
- Deployment Descriptors
- The Java Naming and Directory Interface (JNDI)

## Session: Java EE Dynamic Web Applications

### Lesson: Introduction to Servlets

- The Servlet Interface
- The Web Container
- Creating HTML Output Using Servlets
- The @WebServlet Annotation
- Interaction Between web.xml and Annotations
- The @WebInitParam Annotation

## Lesson: Form processing using Servlets

- Using HTML5 Forms with Servlets
- Processing Request Parameters
- HttpServletRequest Methods
- HttpServletResponse Methods

### Lesson: Java Server Pages

- Java Server Pages (JSPs)
- The Relationship Between JSPs and Servlets
- The JSP lifecycle
- The role of JSPs in Java EE

### Lesson: Implementing MVC in JEE

- Model View Control
- Using the RequestDispatcher
- Handling Requests
- The Request Scope
- Handling Request Attributes
- The Expression Language (JSR 341)
- EL in Template text

### Lesson: Session Management

- Sessions in Web Applications
- The HttpSession object
- Session Management in Java EE
- Handling Cookies
- URL-Rewriting

## Session: Using Resources

### Lesson: Java Data Access JDBC API

- Connecting to the Database
- Statement and PreparedStatement
- ResultSet
- Executing Inserts, Updates, and Deletes
- Controlling Transactions and Concurrency

### Lesson: JEE DataSources

- DataSources in JEE
- Setup a DataSource
- Using CDI to inject a DataSource

### Lesson: Overview of JPA

- Introduce the Java Persistence API (JPA)
- Benefits of Using an ORM framework
- Hibernate and JPA

## Student Materials & Lab Environment

All course software (limited versions, for course use only), digital courseware files or course notes, labs / data sets and solutions (as applicable) are provided for you in our “easy access / no install required” high-speed remote lab environment. Our tech team works with every student to ensure everyone is set up with working access and ready to go prior to every course start date, ensuring a smooth delivery and great hands-on experience. Please ask for details.

## For More Information

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 coaching services, courseware licensing options, public course schedule, training management services, partner programs, or to see our complete list of course offerings and special offers please visit us at [www.triveratech.com](http://www.triveratech.com), email [Info@triveratech.com](mailto:Info@triveratech.com) or call us toll free at **844-475-4559**. Our pricing and services are always satisfaction guaranteed.

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