

**Scala Programming for Java Developers**

**Course Number:** SCA-100  
**Duration:** 4 days

**Overview**

Accelebrate’s Scala training teaches Java developers how to build applications using Scala. Scala is a programming language built on top of the JVM that integrates functional programming with Java’s object-oriented programming model, with a goal of enabling developers to build applications more rapidly and efficiently.

**Prerequisites**

Attendees should be strong Java developers planning to develop Scala applications.

**Materials**

All students receive comprehensive courseware and a related textbook.

**Software Needed on Each Student PC**

* JDK 8 or later
* A recent version of Scala installed
* Scala-compatible IDE of your choice

**Objectives**

* Program in Scala
* Understand Scala's approach to object-orientation
* Master the use of functional programming techniques in Scala
* Understand how to perform TDD (test-driven development) using Scala
* Manipulate XML in Scala
* Write concurrent applications that are thread-safe

**Outline**

* Introduction to Scala
  + A brief history of the Java platform to date
  + Distinguishing between the Java language and platform
  + Pain points when using Java for software development
  + Possible criteria for an improved version of Java
  + How and why the Scala language was created
* Key Features of the Scala Language
  + Everything is an object
  + Class declarations
  + Data typing
  + Operators and methods
  + Pattern matching
  + Functions
  + Anonymous and nested functions
  + Traits
* Basic Programming in Scala
  + Built in types, literals and operators
  + Testing for equality of state and reference
  + Conditionals, simple matching and external iteration
  + Working with lists, arrays, sets and maps
  + Throwing and catching exceptions
  + Adding annotations to your code
  + Using standard Java libraries
* OO Development in Scala
  + A minimal class declaration
  + Understanding primary constructors
  + Specifying alternative constructors
  + Declaring and overriding methods
  + Creating base classes and class hierarchies
  + Creating traits and mixing them into classes
  + How a Scala inheritance tree is linearized
* Functional Programming in Scala
  + Advanced uses of for expressions
  + Understanding function values and closures
  + Using closures to create internal iterators
  + Creating and using higher order functions
  + Practical examples of higher order functions
  + Currying and partially applied functions
  + Creating your own Domain Specific Languages(DSL's)
* Pattern Matching in Depth
  + Using the match keyword to return a value
  + Using case classes for pattern matching
  + Adding pattern guards to match conditions
  + Partially specifying matches with wildcards
  + Deep matching using case constructors
  + Matching against collections of items
  + Using extractors instead of case classes
* Test Driven Development in Scala
  + Writing standard JUnit tests in Scala
  + Conventional TDD using the ScalaTest tool
  + Behavior Driven Development using ScalaTest
  + Using functional concepts in TDD
* XML Manipulating in Scala
  + Working with XML literals in code
  + Embedding XPath like expressions
  + Using Pattern Matching to process XML data
  + Serializing and deserializing to and from XML
* Writing Concurrent Apps
  + Issues with conventional approaches to multi-threading
  + How an actor-based approach helps you write thread-safe code
  + The Scala architecture for creating actor-based systems
  + Different coding styles supported by the actor model
* Conclusion