

**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