**Apache Scala Training**

# Course Content Duration: 12 hours

**Course Outline:**

### Introduction to Scala

* Why Scala?
* What is Scala?, Introducing Scala, Installing Scala, Journey - Java to Scala
* First Dive - Interactive Scala, Writing Scala Scripts - Compiling Scala Programs
* Scala Basics
* Scala Basic Types
* Defining Functions
* IDE for Scala, Scala Community.

### Scala Essentials

* Topics - Immutability in Scala - Semicolons,
* Method Declaration, Literals, Lists, Tuples, Options, Maps, Reserved Words, Operators,
* Precedence Rules, If statements, Scala For Comprehensions, While Loops, Do-While
* Loops, Conditional Operators, Pattern Matching, Enumerations.

### Traits and OOPs in Scala

* Traits Intro - Traits as Mixins, Stackable Traits, Creating Traits Basic OOPS - Class and
* Object Basics, Scala Constructors, Nested Classes, Visibility Rules.

### Functional Programming in Scala

* Topics - What is Functional Programming?, Functional Literals and Closures,
* Recursion, Tail Calls,
* Functional Data Structures,
* Implicit Function Parameters - Implicit values, Implicit Conversions and Implicit classes.
* Call by Name, Call by Value.

### Variable Arguments

* Discussion on the \_\* type.
* Collections
* Lists, Collection Manipulation, Methods with functions, Tuples.

### Variants

* Covariant
* Contravariant
* Invariant Generic Types

### Currying Functions

Detailed study and usage of currying and partial functions.

### 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

### Leftovers

* Bounded Types
* Usage of annotations - concise code

### Project: A live project of how each of the API’s are used in the industry.

Hands-on/Lecture Ratio:

The course is 60 % hands-on, 40 % discussion, with the longest discussion segments lasting 20 minutes.