# Kotlin for Data Science

## Course Outline

PART 1: From Data Science to Production, with Kotlin: The Basics

1. Why Kotlin?

* What is Kotlin?
* Why Kotlin for Data Science?
* Comparison of Kotlin vs Scala and Python

1. Setup

* JDK
* Intellij IDEA
* Maven Setup

1. Kotlin Basics

* Your first Kotlin application
* Variables
* Types and Operators (+ - \* / == !=)
* Functions
* Nullable Types
* Project organization, navigation, and refactoring

1. Flow Control and Classes

* if
* when
* Classes
* Data classes
* Singletons
* Enums

1. Collections

* Ranges and loops
* Arrays
* Lists
* Sets
* Maps
* Collection Operators
* Factory patterns

PART 2: Practical Data Modeling for Production, with Kotlin

1. Working with Data Sources

* Reading text Files
* SQL queries
* Web requests and Lazy Properties

1. Functional Programming with Kotlin

* Higher Order Functions and lambdas
* Lambda Syntax
* Generics
* Sequences
* let() and apply()

1. Adapting Kotlin to Your Domain

* Extension Functions and Properties
* Extension Operators
* Leveraging DSL’s

1. Practical applications of Kotlin for data science

* Ranking mutual friends in a social network
* Using Kotlin with Apache Spark
* Using Kotlin-Statistics
* Doing matrix math with ND4J (Java's NumPy)
* Interactive UI's with TornadoFX
* Deploying your Kotlin project

1. Going Forward

* Furthering your knowledge of Kotlin and the JVM