

**Android App Development with Kotlin and Android Studio**

**Course Number:** MBL-236  
**Duration:** 5 days

**Overview**

This Android App Development with Kotlin and Android Studio training course teaches attendees the basics of building Android apps with the Kotlin programming language and the Android Studio IDE.

**Prerequisites**

Attendees must have proficiency in an object-oriented programming language such as Java, C#, Swift, or C++.

**Materials**

All attendees receive comprehensive courseware.

**Software Needed on Each Student PC**

* Windows or Mac minimum 8 GB RAM
* Android Studio installed
* Provided lab files from Accelebrate

**Objectives**

* Learn the basics of the Kotlin programming language
* Set up an Android development environment
* Use the Android Studio IDE to develop Android applications.
* Leverage the Android SDK including AndroidX JetPack
* Use Gradle to build Android applications
* Understand the Android Architecture Components including ViewModel and LiveData
* Run and debug Android applications on an emulator or physical device
* Build various Android apps using the latest libraries, techniques, and architectures

**Outline**

* Introduction
* Kotlin Basics
  + Operators
  + Data Types
  + Variables
  + Conditionals
  + Lists and Arrays
  + Null Safety
* Functions
  + Programs in Kotlin
  + Compact Functions
  + Lambdas and Higher-Order Functions
  + List Filters
* Classes and Objects
  + Classes
  + Inheritance
  + Extension Functions
  + Special Classes
  + Organizing Your Code
* Build Your First Android App
  + Anatomy of an Android App
  + Layouts and Resources
  + Activities
  + Making an App Interactive
  + Accessibility
* Layouts
  + Common Layouts (Linear Layout, Relative Layout)
  + Constraint Layouts
  + View Binding and Data Binding
  + Displaying Lists with RecyclerView
* User Interface Design
  + Styles and Themes
  + Typography
  + Material Design
  + Material Components
  + Localization
* App Navigation
  + Multiple Activities and Intents
  + AppBar
  + Navigation Drawer
  + Menus
  + Fragment Navigation
  + Navigation Controller
* Activity and Fragment Lifecycle
  + Activity Lifecycle
  + Fragment Lifecycle
  + Lifecycle Aware Components
  + Tasks and Back Stack
  + Logging
  + Android Studio Debugger
* App Architecture (UI Layer)
  + Suggested Android App Architecture
  + JetPack and AndroidX
  + ViewModel
  + Data Binding
  + LiveData
  + Transforming LiveData
* App Architecture (Data Persistence Layout)
  + Storing Data
  + Room Database
  + Asynchronous Programming
  + Kotlin Coroutines
  + Testing Databases
  + Unit Testing
  + Repository Pattern
* Networking
  + Android Permissions
  + Using the Network
  + Connecting to Web Services with Retrofit
  + Displaying Images with Glide
* Libraries
  + Discovering New Libraries
  + Creating Your Own Library
  + Using the Flipper Library for Network Monitoring
* Work Manager (Background Tasks)
  + Using WorkManager to Create Background Tasks
  + Passing Data to Background Tasks
  + Receiving Data from Background Tasks
  + Work Request Constraints and Chaining
* Conclusion