

**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