

# Google- Android Kotlin Fundamentals

**Course Duration: 40 Hours**

**Course code: Mobile Application Development**

## 1. Course Overview

This course introduces learners to Android app development using Kotlin, the official language for Android. It covers the fundamentals of Android Studio, Kotlin syntax, UI development, navigation, data management, and background processing. By the end, participants will be able to create fully functional Android apps from scratch using modern Android practices.

## 2. What you'll learn?

- Basics of Kotlin programming for Android development.
- Android Studio and project structure.
- Building user interfaces with XML and Jetpack Compose (intro).
- Activities, fragments, and navigation components.
- Managing data with Room database and ViewModel.
- Working with REST APIs, coroutines, and background tasks.
- Handling user input, forms, and data persistence.
- Debugging, testing, and publishing Android apps.

## 3. Target Audience

- Beginners starting Android app development.
- Developers transitioning from Java to Kotlin.
- Students or professionals preparing for Google Associate Android Developer certification.
- Anyone interested in learning modern Android development with Kotlin.

## 4. Pre-Requisites

- Basic programming knowledge (any language).

- Familiarity with object-oriented concepts.
- No prior Android experience required.

## 5. Course content

### Unit 1 – Get Started with Kotlin

#### Lesson 1. Getting Started & Kotlin Basics

- Getting Started & Kotlin Basics
- Getting Started
- Kotlin Basics

#### Lesson 2. Functions

- Functions

#### Lesson 3. Classes and Objects

- Object-oriented Programming
- Extensions

### Unit 2 – Introduction to Android

#### Lesson 4. Build Your First App

- Install Android Studio
- Get Started
- Basic App Anatomy
- Image Resources and Compatibility

#### Lesson 5. Layouts

- LinearLayout using the Layout Editor
- Add User Interactivity
- ConstraintLayout using the Layout Editor
- Data Binding Basics

## **Lesson 6. App Navigation**

- Create a Fragment
- Define Navigation Paths
- Start an External Activity

## **Unit 3 – Android Application Architecture**

### **Lesson 7. Activity and Fragment Lifecycles**

- Lifecycles and Logging
- Complex Lifecycle Situations

### **Lesson 8. App Architecture (UI Layer)**

- ViewModel and ViewModelFactory
- LiveData and LiveData Observers
- Data Binding with ViewModel and LiveData
- LiveData Transformations

### **Lesson 9. App Architecture (Persistence)**

- Create a Room Database
- Coroutines and Room
- Use LiveData to Control Button States

### **Lesson 10. Displaying Lists with RecyclerView**

- RecyclerView Fundamentals
- DiffUtil and Data Binding with RecyclerView
- GridLayout with RecyclerView
- Interacting with RecyclerView Items
- Headers in RecyclerView

### **Lesson 11. Connect to the Internet**

- Getting Data from the Internet

- Loading and Displaying Images from the Internet
- Filtering and Detail Views with Internet Data

## **Lesson 12. WorkManager for Background Processing**

- Repository
- WorkManager

## **Unit 4 – App Design**

### **Lesson 13. Designing for Everyone**

- Styles and Themes
- Material Design, Dimens, and Colors
- Design for Everyone

