



S Y L L A B U S

Android App Development

Duration: 5 Days (Total: 20 Hours)

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1.0 Course Overview

This training module provides an introduction to **Android app development using Kotlin**. Through live coding, Android Studio usage, and hands-on projects, learners will explore the Android ecosystem, create UI components, manage data, and publish functioning mobile apps on Android devices or emulators.

2.0 Learning Outcomes

By the end of this course, participants will be able to:

- Set up Android Studio and build Android apps
- Understand Kotlin basics and use it for app logic
- Design user interfaces using XML and Jetpack Compose
- Use activities, intents, and UI navigation effectively
- Store and retrieve data in Android apps
- Test and publish an app to the Play Store

3.0 Training Methodology

- Guided Live Coding
- Android Emulator Practice
- Interactive App Challenges
- Hands-On Labs in Android Studio
- Code Debugging Exercises
- Real-World Case Discussions

4.0 Introduction to Android and Development Tools (3 Hours)

Objectives:

- Set up the environment and explore the Android development ecosystem

Topics Covered:

- What is Android? Versions, History, and Devices
- Android App Architecture Overview
- Installing Android Studio
- Emulator Setup and Project Creation
- Folder Structure and Manifest File Overview

Activities:

- Lab: Build your first “Hello Android” app
- Walkthrough: Android Studio user interface
- Group Discussion: App types and real-world uses

5.0 Kotlin Programming Basics (3 Hours)

Objectives:

- Learn the fundamentals of the Kotlin language used in Android apps

Topics Covered:

- Variables, Data Types, and Functions
- Control Flow (if, when, loops)
- Classes and Objects
- Null Safety and Safe Calls
- Lambdas and Higher-Order Functions

Activities:

- Code Lab: Create a simple calculator
- Challenge: Build logic for a dice-rolling app
- Quiz: Kotlin syntax and concepts

6.0 Building User Interfaces in Android Studio (4 Hours)

Objectives:

- Create and customize interfaces using XML and Jetpack Compose

Topics Covered:

- XML Layout Basics: Views, Layouts, and Attributes
- Common UI Elements: Button, TextView, ImageView, EditText
- ConstraintLayout and Nested Layouts
- Intro to Jetpack Compose
- View Binding and Event Handling

Activities:

- Lab: Design a login screen in XML
- Task: Implement button click actions
- Demo: Jetpack Compose UI preview

7.0 Activities, Intents, and Navigation (3 Hours)

Objectives:

- Implement multi-screen navigation and pass data between components

Topics Covered:

- What are Activities and Intents?
- Starting New Activities
- Passing Data with Bundles and Extras
- Navigation Components and Back Stack
- Implicit vs Explicit Intents

Activities:

- Lab: Create a multi-screen user flow
- Exercise: Send user input from one screen to another
- Group Task: Build a “profile viewer” app using intents

8.0 Data Storage and App Logic (3 Hours)

Objectives:

- Handle user input, app logic, and data storage

Topics Covered:

- SharedPreferences for Key-Value Storage
- Simple SQLite Database and Room Intro
- ViewModel and LiveData Concepts
- User Input Validation
- Intro to REST API and JSON

Activities:

- Lab: Create a persistent settings toggle
- Task: Save and retrieve notes from a local database
- Discussion: Backend connection and data syncing

9.0 Testing, Debugging, and Publishing (2 Hours)**Objectives:**

- Test, debug, and prepare apps for production release

Topics Covered:

- Logcat and Debugging Tools in Android Studio
- Emulator vs Physical Device Testing
- Unit Tests and UI Tests
- Preparing App Icons, Splash Screens, and Permissions

- Publishing to Google Play Store Overview

Activities:

- Lab: Add app icon and permission to use camera
- Demo: Generate signed APK
- Quiz: Debugging scenarios

10.0 Conclusion and Wrap-Up (1 Hour)

Key Takeaways:

- Recap of concepts, tools, and workflow
- Portfolio-building advice
- Guidance on next learning paths (e.g., Jetpack, Firebase, MVVM)

Final Activities:

- Showcase: Demo your final app
- Certificate Distribution
- Feedback and Reflection