

Certificate Course in Mobile App Development (Android Studio)

Duration: 3 Months

Course Overview

This course provides students with the knowledge and practical skills to develop mobile applications using **Android Studio**, the official Integrated Development Environment (IDE) for Android. The curriculum covers **Java and Kotlin programming**, Android app fundamentals, UI/UX design, advanced features (media, JSON, maps, geolocation), data storage, and deployment. Students will gain hands-on experience in building, testing, and publishing applications on the **Google Play Store**.

Course Objectives

1. Introduce students to **Android Studio** as the primary environment for mobile app development.
 2. Provide a strong foundation in **Java and Kotlin** for Android applications.
 3. Teach the fundamentals of **Android app structure, activity lifecycle, and UI development**.
 4. Enable students to integrate **databases (SQLite, Shared Preferences, Internal Storage)** in mobile apps.
 5. Explore **advanced Android features** including media handling, JSON APIs, maps, and Wear OS.
 6. Develop skills for **debugging, testing, and performance optimization** in Android Studio.
 7. Guide learners through the **process of publishing apps on the Google Play Store**.
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Course Outcomes

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

- Use **Android Studio** effectively for app design, coding, debugging, and testing.
- Build **Android apps** using both **Java and Kotlin**.
- Implement **UI elements, layouts, and user interactions**.
- Store and manage data using **Shared Preferences, Internal Storage, and SQLite**.

- Integrate **maps, media, APIs, and advanced Android features**.
 - Create **custom UI designs** and multi-screen applications.
 - Publish a complete mobile app to the **Google Play Store**.
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Course Syllabus (Module-Wise)

Module 1: Getting Started with Android Studio & Java (Week 1–2)

- Installing Android Studio & Emulator Setup
 - Android Project Structure (Manifest, Gradle, Resources, Java/Kotlin Files)
 - Fundamentals of Android Apps
 - Introduction to Java for Android Development
 - Java Basics – Variables, Data Types, Operators
 - Control Statements & Program Flow
 - Object-Oriented Programming in Java – Classes & Objects
 - Inheritance, Polymorphism, and Exceptions
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Module 2: Android App Fundamentals (Week 3–4)

- Activities, Intents & Fragments
 - Android Lifecycle Management
 - Debugging in Android Studio (Logcat, Breakpoints)
 - Working with UI Elements – TextView, Buttons, EditText, ImageView, RecyclerView
 - Layouts – Linear, Relative, Constraint, Frame
 - Event Handling & User Interaction
 - Shared Preferences & Internal Storage
 - Simple Apps (Calculator, Notes App, Add Number Shape)
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Module 3: Advanced Features & Storage (Week 5–6)

- SQLite Database – CRUD Operations
- JSON Processing & REST API Integration

- Notifications & Background Services
 - Media Handling – Audio, Video, Camera
 - Maps & GeoLocation (Google Maps API)
 - WebView Integration for In-App Browsing
 - Introduction to Wear OS Development
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Module 4: Kotlin & UI Customization (Week 7–8)

- Basics of Kotlin Programming
 - Differences Between Java & Kotlin
 - Exploring Kotlin Syntax & Features
 - Creating Custom UI Elements
 - Weather App Development in Kotlin
 - Advanced Android Examples – Multi-Screen Apps, Mini Projects
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Module 5: Deployment & Final Project (Week 9–12)

- Testing & Debugging Android Apps in Studio
- Performance Optimization & Best Practices
- App Packaging (APK/AAB) in Android Studio
- Case Studies – Popular App Architectures
- Submitting Apps on Google Play Store
- Final Project Development & Presentation