



App Development

Course Modules & Topics

Module 1: Introduction to App Development

- What is Mobile App Development?
 - Android vs iOS vs Cross-Platform
 - Native vs Hybrid Apps
 - Development Tools & IDEs (Android Studio, VS Code)
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Module 2: UI/UX Design Principles

- Mobile-First Design
 - Wireframing and Prototyping (Figma, Adobe XD)
 - Accessibility and Usability Guidelines
 - Material Design and Cupertino Design Systems
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Module 3: Android Development with Java/Kotlin

- Android Studio Setup
 - Activities, Intents, and Fragments
 - Layouts (XML), Views, and Widgets
 - Event Handling
 - Toasts, Dialogs, Notifications
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Module 4: State Management & Navigation

- ViewModel and LiveData (Android MVVM)
 - SharedPreferences and SQLite
 - Jetpack Navigation Component
 - Bottom Nav, Tabs, and Drawer Layout
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Module 5: Flutter (Cross-Platform)

- Dart Language Basics
 - Widgets: Stateless vs Stateful
 - Layouts: Column, Row, Stack, Grid
 - Routing and Navigation
 - State Management: Provider, Bloc (Intro)
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Module 6: React Native (Optional Track)

- React Native Basics
 - Components, Props, State
 - Navigation (React Navigation)
 - Platform APIs and Permissions
 - Native Modules Integration
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Module 7: API Integration

- What is an API?
- HTTP Requests using Volley/Retrofit (Android)
- HTTP with http package (Flutter) or fetch (React Native)

- RESTful Services & JSON Parsing
 - Handling Errors and Loading States
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Module 8: Authentication & Firebase

- Firebase Auth: Email/Password, Google Sign-In
 - Realtime Database / Firestore
 - Push Notifications (FCM)
 - Firebase Storage for Media Upload
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Module 9: Debugging & Performance Optimization

- Debugging Tools
 - Reducing App Size
 - Offline Support
 - Battery and Memory Management
 - Crash Reporting
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Module 10: Deployment

- APK/AAB Generation
 - Play Store Submission Process
 - App Signing & Versioning
 - CI/CD for App Deployment
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□ Capstone Project

- Build a Complete Mobile App
- Examples: To-Do App, Weather App, Recipe App, Chat App
- Project Presentation and Demo