Professional Flutter App Development Course Outline

Module 1: Introduction to Flutter & Dart

- What is Flutter? Features & Benefits
- Flutter vs. React Native vs. Native Development
- Understanding the Flutter Architecture
- Introduction to Dart Programming (Syntax, Variables, Data Types)
- Setting Up Flutter Development Environment (Android Studio, VS Code)

Module 2: Dart Fundamentals for Flutter

- Functions, Control Flow, & Loops in Dart
- Object-Oriented Programming (OOP) in Dart
- Handling Asynchronous Programming with Futures & Streams
- Exception Handling & Error Management

Module 3: Understanding Flutter Widgets & UI Components

- Introduction to Widgets (Stateless & Stateful Widgets)
- Using Material Design & Cupertino Widgets
- Layouts in Flutter (Column, Row, Stack, GridView, ListView)
- Styling & Theming Flutter Applications
- Handling User Input with TextField & Buttons

Module 4: Navigation & Routing in Flutter

- Navigating Between Screens (Navigator & Routes)
- Passing Data Between Screens
- Bottom Navigation & Drawer Navigation

- Implementing Deep Linking in Flutter

Module 5: State Management in Flutter

- Understanding State Management Approaches
- Managing State with Provider
- Using Riverpod & GetX for Scalable State Management
- Advanced State Management with BLoC Pattern

Module 6: Working with Forms & User Input

- Handling Forms with Form Widget & TextControllers
- Input Validation & Error Messages
- Multi-Step Forms & Auto-Save Features

Module 7: API Integration & Database Management

- Fetching Data from REST APIs with HTTP & Dio
- Handling JSON Data & Serialization
- Using Firebase Firestore & Realtime Database
- Local Database Storage with SQLite & Hive

Module 8: Authentication & Security in Flutter

- User Authentication with Firebase Auth
- OAuth Authentication (Google, Facebook, Apple Login)
- Implementing Biometric Authentication (Face ID, Fingerprint)
- Secure API Calls & Data Encryption

Module 9: Working with Native Features & Plugins

- Accessing Device Camera & Gallery
- Using GPS & Maps (Google Maps & Location Services)
- Push Notifications with Firebase Cloud Messaging (FCM)
- Background Services & App Permissions

Module 10: Performance Optimization & Debugging

- Debugging with Flutter DevTools
- Optimizing Flutter App Performance
- Reducing App Size & Memory Usage
- Implementing Lazy Loading & Code Splitting

Module 11: Testing & Quality Assurance

- Unit & Integration Testing with Flutter Test
- UI Testing with Flutter Driver
- Debugging & Logging in Flutter Applications

Module 12: Deployment & Publishing Apps

- Preparing Apps for Play Store & App Store
- Generating & Managing App Signing Keys
- Automating Builds with CI/CD (Codemagic, GitHub Actions)
- Handling Version Control & App Updates

Module 13: Final Project & Certification Preparation

- Building a Real-World Flutter App (E-commerce, Social Media, or FinTech)
- Best Practices for Maintainable & Scalable Code
- Preparing for Flutter Certification
- Career Paths in Flutter Development