

CURRICULUM OUTLINE FOR THE ULTIMATE FLUTTER & DART BOOTCAMP FOR MOBILE APP DEVELOPMENT

Module 1: Introduction to Flutter & Dart

- **Introduction to the Course**
 - What is Flutter?
 - Why use Flutter for app development?
 - Understanding the Dart programming language
- **Setting Up Your Development Environment**
 - Installing Flutter & Dart SDK
 - Setting up IDE (Android Studio/VS Code)
 - Running your first Flutter app (Hello World!)

Module 2: Dart Programming Fundamentals

- **Dart Syntax & Basics**
 - Variables and Data Types
 - Functions and Methods
 - Control Flow: If/Else, Switch
 - Loops: For, While, and Do-While
- **Object-Oriented Programming with Dart**
 - Classes and Objects
 - Inheritance
 - Constructors

- Exception Handling
- Asynchronous Programming (Futures, Async/Await)

Module 3: Introduction to Flutter Widgets

- **Flutter's Core Concepts**
 - Understanding Widgets (Stateless & Stateful)
 - Widget Tree and Composition
 - Layout Basics: Column, Row, Stack
 - Containers, Text, and Images
- **Building Responsive UIs**
 - Responsive Layout Techniques
 - Working with MediaQuery and LayoutBuilder

Module 4: State Management Fundamentals

- **Stateful Widgets**
 - How State Works in Flutter
 - Building Interactive UI with Stateful Widgets
- **Introduction to State Management Tools**
 - Using the setState() method
 - Overview of Provider, Riverpod, and Bloc for state management
 - Implementing simple state management using Provider

Module 5: Navigation & Routing

- **Single Screen Apps**
 - Designing your first screen

- Navigating between screens using Navigator
- **Advanced Navigation Techniques**
 - Named Routes
 - Passing Data Between Screens
 - Deep Links and Navigation via URL (for web apps)

Module 6: Handling User Input

- **Form Handling**
 - Text Input Fields
 - Buttons, Sliders, Switches
 - Form Validation
 - Custom User Inputs
- **Gesture Detection**
 - Detecting gestures like taps, drags, and swipes
 - Customizing gestures for better user interaction

Module 7: Working with APIs & Backend Services

- **HTTP Requests & REST APIs**
 - Introduction to APIs
 - Sending HTTP Requests with http package
 - Parsing JSON Responses
- **Handling Real-Time Data**
 - Fetching Data from External APIs
 - Displaying Real-Time Data in the App
- **Firestore Integration (Optional)**

- Introduction to Firebase
- Authentication and Database services

Module 8: Local Storage & Database

- **Storing Data Locally**
 - Using SharedPreferences to store key-value pairs
 - Saving data locally using SQLite
- **Working with Hive (NoSQL)**
 - Introduction to Hive for fast local storage
 - Storing and retrieving structured data

Module 9: Adding Animations & Enhancing User Experience

- **Basic Animations in Flutter**
 - Implicit Animations: AnimatedContainer, AnimatedOpacity
 - Using the AnimatedBuilder widget
- **Advanced Animations**
 - Animation Controllers
 - Hero Animations (for transitions between screens)
 - Custom Animations

Module 10: Publishing Your Flutter App

- **Testing & Debugging**
 - Debugging with Flutter's DevTools
 - Writing Unit and Widget Tests
- **App Deployment**

- Building APKs and App Bundles for Android
- Publishing on the Google Play Store
- Building for iOS and submitting to the App Store
- Web Deployment: Hosting your Flutter web apps

Module 11: Advanced Topics & Best Practices

- **Advanced State Management**
 - Diving deeper into Bloc, Riverpod, and Provider
 - Best Practices in managing app states for large apps
- **Building Complex UIs**
 - CustomPaint, CustomClipper
 - Dynamic and Adaptive Layouts
- **Security in Flutter Apps**
 - Securing your APIs and data
 - Authentication and Authorization

Module 12: Capstone Project

- **Final App Build**
 - Design and Build a Complete Flutter App
 - Implementing all learned concepts (UI, APIs, State Management, Animations)
 - Deploy and showcase the app
- **Portfolio Development**
 - How to present your Flutter projects for job opportunities
 - Creating a developer portfolio