

Course Outline: Mobile Application Development with Flutter

Introduction to Flutter

1. Overview of Flutter Framework
2. Setting up the Development Environment
3. Introduction to Dart Programming Language

Dart Fundamentals

1. Variables, Data Types, and Operators
2. Control Flow and Functions
3. Object-Oriented Programming with Dart

Flutter Basics

1. Widgets and the Widget Tree
2. Building User Interfaces with Stateless and Stateful Widgets
3. Flutter Layouts and Container Widget

State Management

1. Understanding State in Flutter
2. Managing State with Provider, Riverpod, or Bloc
3. Practical Examples of State Management

User Interface Design

1. Styling and Theming in Flutter
2. Using Material Design and Cupertino Widgets
3. Animations and Transitions

Navigation and Routing

1. Navigator 1.0 and Navigator 2.0
2. Passing Data Between Screens
3. Deep Linking in Flutter Applications

Working with APIs and Backend

1. Consuming REST APIs
2. JSON Parsing and Serialization
3. HTTP Requests with Dio and http Package

Data Persistence

1. Local Storage with Shared Preferences
2. Using SQLite and Hive Databases
3. Integration with Firebase Firestore

Advanced Flutter Topics

1. Asynchronous Programming in Flutter
2. Integrating Third-party Libraries and Plugins
3. Using Platform Channels for Native Code

Testing and Debugging

1. Unit Testing, Widget Testing, and Integration Testing
2. Debugging with Flutter DevTools
3. Handling Errors and Exceptions

Deployment

1. Preparing the App for Release
2. Publishing to Google Play Store and Apple App Store
3. Continuous Integration and Deployment with GitHub Actions

Capstone Project

1. Developing a Complete Flutter Application
2. Code Review and Feedback
3. Presentation and Final Submission