

FLUTTER SYLLABUS

Module 1: Introduction to Flutter

- What is Flutter and why use it
- Features of Flutter
- Difference between Flutter and React Native
- Installing Flutter SDK
- Setting up Android Studio / VS Code
- Understanding project structure
- Running first Flutter app

Module 2: Dart Programming Basics

- Introduction to Dart
- Variables and data types
- Operators and expressions
- Control statements (if, loops)
- Functions
- Object-oriented programming in Dart

Module 3: Widgets & UI Basics

- What are Widgets
- Stateless vs Stateful Widgets
- Basic widgets (Text, Image, Icon)
- Layout widgets (Row, Column, Container)
- Padding, Margin, Alignment

Module 4: Layout & Design

- Flexbox concept in Flutter
- Expanded & Flexible

- Stack & Positioned
- Responsive design
- MediaQuery

Module 5: Navigation & Routing

- Navigating between screens
- Passing data between screens
- Named routes
- Navigation stack

Module 6: User Input & Forms

- TextField and controllers
- Form widget
- Input validation
- Handling user input

Module 7: Lists & Grids

- ListView
- GridView
- Builder patterns
- Custom list items

Module 8: State Management

- setState
- Provider
- Riverpod / Bloc (intro)
- Managing app state

Module 9: API Integration

- HTTP requests
- Fetching data from APIs
- JSON parsing
- Error handling

Module 10: Local Storage

- SharedPreferences
- SQLite database
- Storing and retrieving data

Module 11: Firebase Integration

- Introduction to Firebase
- Authentication (Login/Register)
- Firestore database
- Push notifications

Module 12: UI Enhancement

- Material Design
- Cupertino widgets (iOS style)
- Animations and transitions
- Themes and styling

Module 13: Device Features

- Camera integration
- Image picker
- GPS / Location services
- Permissions handling

Module 14: Advanced Concepts

- Custom widgets
- Code reusability
- Performance optimization
- Error handling

Module 15: Testing & Debugging

- Debugging tools
- Flutter DevTools
- Unit testing basics

Module 16: Build & Deployment

- Generating APK & IPA
- Publishing to Google Play Store
- Publishing to Apple App Store
- App signing

Module 17: Real-World Projects

- Todo App
- Notes App
- API-based App (Weather/News)
- E-commerce Mobile App