KOENIG SOLUTIONS · COURSE OUTLINE

A Week with Flutter Application Development

Learn to build Flutter applications with Dart, covering UI, state management, APIs, storage, media handling and app publishing.

7 Days	13	65	3
56 HOURS	MODULES	TOPICS	HANDS-ON ACTIVITIES

COURSE OVERVIEW

This course begins with Dart fundamentals and object-oriented programming, then introduces Flutter architecture, widgets and navigation for building user interfaces. It covers state management with Provider, form handling and validation, followed by HTTP networking, custom authentication and local storage. Later modules address file handling, PDF display, push notifications, background task processing and advanced layouts, concluding with app store preparation and a final project covering authentication, notifications and PDF handling.

WHO THIS COURSE IS FOR

- **Mobile App Developers**
- **Flutter Developers**
- **Software Engineers**
- **UI Developers**
- **Application Developers**

PREREQUISITES

- Knowledge of any OOPS programming language

LEARNING OBJECTIVES

- Apply Dart syntax, OOP concepts and null safety
- Implement asynchronous programming with Future, async/await and Stream
- Build Flutter UIs using Stateless and Stateful widgets
- Configure navigation, routing and layout widgets
- Implement state management using Provider
- Develop forms with validation using Flutter input widgets
- Integrate HTTP networking, JSON parsing and token-based authentication
- Implement local storage, file handling and push notifications

COURSE SYLLABUS

13 Modules, 65 Topics

DAY 1 Dart Deep Dive & Flutter Fundamentals

Total: 8 hours

01 Theory

4 hours

INTRODUCTION TO DART

Variables, Types, Type inference · Functions and Arrow Syntax · Control Flow, Exception Handling

OOP IN DART

Classes, Constructors · Inheritance, Mixins · Abstract classes and Interfaces · Collections (List, Set, Map)

Null Safety

ASYNCHRONOUS PROGRAMMING

Future, async/await, Stream

02 Lab

4 hours

TOPICS

- **Dart Playground:** Console Apps
- Build a Class-based model (e.g., Task Manager)
- Use Futures and Streams for task simulation
- Small Quiz App using OOP and async methods

DAY 2 Flutter Basics & UI Building

Total: 8 hours

03 Theory

3 hours

TOPICS

Flutter Architecture · **Widgets:** Stateless vs Stateful · Widget Tree, MaterialApp, Scaffold · Hot Reload and DevTools · **Layout Widgets:** Column, Row, Stack, Container · Navigation and Routing

04 Lab

5 hours

TOPICS

Create a personal portfolio app · Use multiple screens and routing · Explore styling using ThemeData · Add custom fonts and colors

DAY 3 State Management & Forms

Total: 8 hours

05

3.5 hours

Theory

STATE MANAGEMENT CONCEPTS

- Local state vs global state
- Provider (intro & setup)
- Forms & Validation
- **Input Widgets:** TextFormField, Dropdown, Checkbox
- Form Controllers and Validation

06

4.5 hours

Lab

TOPICS

Build a Registration & Login form · Form fields, validation · Use Provider for form state · Add custom reusable InputField widget

DAY 4 APIs, Authentication & Storage

Total: 8 hours

07

4 hours

Theory

HTTP & NETWORKING

Using http package · JSON parsing

CUSTOM AUTHENTICATION FLOW

Token handling · Secure storage (flutter_secure_storage)

Local storage: SharedPreferences · Requesting Permissions (Android & iOS)

08

4 hours

Lab

TOPICS

Build a Login App using dummy API · Token-based login · Store token in secure storage · Display user dashboard on login · Request permission for storage access

DAY 5 Media, File Handling, and PDF

Total: 8 hours

09 Theory

3 hours

ACCESSING DEVICE STORAGE

File Picker · Downloading Files

Displaying PDFs in Flutter (flutter_pdfview)

PUSH NOTIFICATIONS

Firebase Cloud Messaging (FCM) setup · Background and Foreground notifications

10 Lab

5 hours

TOPICS

Build a Document Viewer · Upload PDF from local/device storage · Show PDF in a scrollable screen · Enable push notification for new documents

DAY 6 Advanced UI and Background Tasks

Total: 8 hours

11 Theory

4 hours

CUSTOM STYLING

- Themes, Custom Fonts, Styles
- Reusable Components & Templates

BACKGROUND TASK PROCESSING

- Using workmanager or android_alarm_manager
- Complex Layouts (GridView, ListView.builder, Slivers)

12 Lab

4 hours

TOPICS

Build a News Aggregator App · Scheduled background fetch for news · Use reusable card widgets for news tiles · Add light/dark themes with toggle

DAY 7 App Publishing, Final Project & Review

Total: 8 hours

13

3.5 hours

Theory

PREPARING FOR APP STORE/PLAY STORE

Build flavors & configurations · Versioning & Build number · Icons & Splash Screens

Platform-specific notes (Permissions, Assets) · Review of Dart & Flutter concepts

Lab

4.5 hours | 2 Activities | Lab

HANDS-ON ACTIVITIES

Practise What You Learn

MODULE	FINAL PROJECT (CHOOSE 1)	LAB
Lab	■ Task Manager App with Authentication, Notifications, PDF Upload ■ Event Booking App with PDF Tickets, Background Sync	Build & Deploy APK (Android) / TestFlight (iOS walkthrough)

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

ABOUT KOENIG

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

FLEXIBLE DELIVERY

Learn the Way That Suits You

Classroom Training | Live Online Classes (ILO) | Fly-Me-A-Trainer (FMAT) | Flexi (Self-Paced) | 1-on-1 Training

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