Department of computer science

College of science

University of Cihan / Sulaimaniyah

Subject: Mobile App Course Book – Year 4

Lecturer's name: Ardalan Hussein Awlla

Academic Year: 2024 - 2025

Course Book

1. Course name	Mobile App
2. Lecturer in charge	Mr. Ardalan Hussein Awlla
3. Department/ College	Computer science department /college of science
4. Time (in hours) per week	Theory: 2 hrs. Practical: 2 hrs.
5. Office hours	Monday and Tuesday
6. Course code	
7.Teachers academic profile	• B.Sc. in Computer Science, University of Sulaimani, • M.Sc. in Computer Science, NUIST. ✓ Areas of Specialization: Computer Science, Database management System, Information ✓ Security and Programming language. • PhD student at Sulaimani Polytechnic University.
8. Keywords	Introduction To Mobile Apps , Android Apps, IOS Apps, Flutter Activity Lifecycle , Dart Programming, widgets

9. Course overview:

This course is designed to learn how to use Flutter to develop high-quality, interactive mobile applications both for iOS and Android devices. In this class, you will learn how to code using Dart and build beautiful, fast, native-quality iOS and Android apps. Even if you have ZERO programming experience. Whether you are newbie in mobile app development, or experienced with other mobile app frameworks, you'll enjoy the high-velocity development and quality apps that Flutter enables.

This course aims to provide a background in mobile device development. Topics include available tools, mobile development paradigms, device limitations, mobile app feasibility and economics, and future trends.

10. Course objective:

The objective of the course is to provide a thorough introduction to:

- The **Flutter** environment
- Describe **dart programming language and flutter libraries to create mobile apps.**
- Tools for creating Android applications (**Flutter, visual code, android studio,**

goggle firebase)

- Basic user interfaces **to create attractive UI/UX user interfaces.**
- Understand the fundamentals of the Flutter framework
- **Learning Firebase data storage as Backend-as-a-Service(BaaS)**

11. Student's obligation:

Student should be able to contribute significantly to finish his assignments alone and within a group work. Attending lectures will be compulsory to pass this subject.

12. Forms of teaching:

Contact hours: 2 theoretical weekly hours + 2 Lab.

13. Assessment scheme:

Midterm theory exam as (25%)
Midterm laboratory exam as (15%)
Quizzes and assignments as (10%)
Final exam theory exam as (35%)
Final laboratory exam as (15 %)

14. Student learning outcome:

By the end of the module, students should be able to:
Incorporate widgets and state into your app

- Use Flutter's tools to enhance your development process
- Customize your app with Material Design, themes, assets, and more
- Make your app interactive with text input, gestures, and more
- Retrieve local and real-time data from the web.

15. Course Reading List and References:

The main reference in this course would be the android developer forum, which presents enough information to go along with the course.

1. (https://pub.dev/) the official package repository for Dart and Flutter.

Books:

1. Beginning Flutter a Hands On Guide to App Development

2. Flutter by tutorials point (https://www.tutorialspoint.com/flutter/flutter_tutorial.pdf)

3. Practical Flutter: Improve your Mobile Development with Google's Latest Open-Source SDK(http://www.sufuq.com/books/dart/Practical%20Flutter.pdf)

ISBN-13 (electronic): 978-1-4842-4972-7

16. The Topics	Lecturer's name: Ardalan Hussein Awlla
Week *1*	**Theory: Introduction to Flutter and Dart Programming Language** • Introduction • Importance of Flutter Introduction to Dart Writing Dart code
	Practical: • using dart pad to write few dart codes as a startup. • Creating a Dart Project Using dart • Using visual code to write flutter code. • Run emulator and create first flutter app.
Week *2*	**Theory: Flutter Framework** • Introduction to Flutter Widgets • Creating a Flutter App Using Widgets • What is a MaterialApp widget?
	Practical: • Creating a Simple Flutter App
Week *3*	**Theory: Flutter Widgets Fundamentals** • Scaffold Widget • Image Widget • Container Widget • Column and Row Widgets • Icon Widget • Layouts in Flutter • Card Widget • App Icons for iOS and Android Apps o Hot Reload and Hot Restart • Stateful and Stateless Widgets • Use a Custom Font
	Practical: • Creating a Menu app
Week 4	• Theory: Navigation and Routing • Button Widget • FloatingActionButton • RaisedButton, FlatButton, and IconButton • DropdownButton • OutlineButton • ButtonBar • PopupMenuButton

	• App Structure and Navigation • Navigate to a New Screen and Back • Navigate with Named Routes • Send and Return Data Among Screens • Animate a Widget Across Screens • WebView Widget in Flutter
	Practical: practical's in Navigation and Routing
Week 5	**Theory: Material Design Guidelines part 1** • Introduction • BottomNavigatorBar Widget • DefaultTabController, TabBar, and TabBarView Widgets • ListTile Widget • ListView Widget • Drawer Widget • DataTable Widget • SelectableText Widget • Stack Widget
	Practical: • Lab A: Creating a Flutter App using BottomNavigatorBar Navigation Technique • Lab B: Using DataTable Sorting Built-in function
Week 6	**Theory: Material Design Guidelines - Part 2** • Input and Selections • Text Field Widget. • Checkbox Group and RadioButtonGroup Widgets • Date Picker. • Time Picker • Slider Widget. • Switch Widget • Dialogs, Alerts, and Panels • Alert Dialog Widget • Cupertino Alert Dialog Widget.
	Practical: visual, Behavioral, and Motion-Rich Widgets implementing
Week 7, 8	*Theory:* *Mid-term examination.*

	Practical: *Mid-term examination.*
Week 9, 10	**Theory: Firebase** • Introduction • What is the JSON? • How does Firebase Database work? • Firebase authentication (Signup and Login to Flutter App) • Configure Your App to use Firebase Services • Adding Firebase to your Android App • Adding Firebase to your iOS App • Configuring Firebase Authentication • Login to an App Using Firebase User Accounts • Logout Configuration • Firebase Database • Which database is right for your project? • Real Time Database • Cloud Firestore
	Practical: Implement firebase framework
Week 11	**Theory: Location-Aware Apps: Using GPS and Google Maps** • Introduction • What is GPS and how does it work? • The Camera Position • Adding Google Maps to a Flutter app • Getting a Google API key • Adding Google Maps Flutter plug-in as a dependency • Adding your API key for your Android app • Adding your API key for your iOS app • Adding a Google Map on Your Flutter App Screen • Adding a Google Map Marker
	Practical: Implementing Location Aware Apps
Week 12	**Theory: Creating an App Interface** • Configuring your App to Use Your API Key • Adding a Google Map on your Flutter App Screen • Adding a Google Map Marker • Flutter TM Application Development • Capturing Users' Location • Configuring User App's Permission
	Practical: Implement App Interface

Week13	**Theory: App Testing & Publishing** • Testing and Feedback for Your App • Setting up a Test Environment • Usability Testing by Participants • Starting your Test Session • Analyzing your Test
	Practical: Testing
Week 14	**Theory: Publishing Flutter Apps** • Publishing Android App on Google Play Store • Publishing iOS app on Apple Store.
	Practical: Publishing App
Week15	**Theory: Review**

17. Peer review

Mr. Ardalan Hussein Awlla