Uka Tarsadia University

B.Tech.
Semester V

CROSS PLATFORM MOBILE APPLICATION DEVELOPMENT

IT5040

EFFECTIVE FROM June-2023

Syllabus version: 1.00

Subject Code	Subject Title	Teaching Scheme			
		Hours		Credits	
		Theory	Practical	Theory	Practical
IT5040	Cross Platform Mobile Application Development	4	4	4	2

Subject Code	Subject Title	Theory Examination Marks		Practical Examination Marks	Total Marks
		Internal	External	CIE	
IT5040	Cross Platform Mobile Application Development	40	60	100	200

Objectives of the course:

- To develop programming skill using Flutter with Dart programming language.
- Design cross platform mobile application.
- Develop and deploy cross platform mobile applications using persistent data, networking, state, management, streams and libraries.

Course Outcomes:

Upon completion of the course, the student will be able to:

CO1: Comprehend basic concepts of cross-platform application and Flutter.
CO2: Design user interface with widgets.
CO3: Use navigator and router for screen transition.
CO4: Develop mobile application using persistent data and networking.
CO5: Apply state management techniques.
CO6: Build and deploy Android and iOS mobile applications using single code base.

Sr. No.	Topics	Hours
	Unit – I	
1	**Introduction**	8
	Why Cross-Platform App?, Popular Cross-Platform Technologies, What is Flutter?, Flutter's history, The Flutter architecture, Building your first app, Styling your app, Setting a theme, App structure and navigation	
	Unit – II	
2	**Widgets**	8
	What is a widget?, Rendering widgets, Types of widgets, Introducing ListView, Nested ListViews, GridView, Other scrollable widgets,	

	Challenges, Interactive Widgets, Switching tabs, Managing tab state, Adding new packages, Adding gestures, Dismissing items with a swipe	
Unit – III		
3	**Navigating Between Screens** Navigator 1.0 and 2.0, Looking over the UI flow, Managing your app state, Creating and using the router, Showing the Splash screen, Displaying the Login screen, Transitioning from Login to Onboarding screen, Transitioning from Onboarding to Home, Handling tab selection, Deep Links, Creating a navigation state object, Creating a route information parser, Connecting the parser to the app router, Converting a URL to an app state, Converting the app state to a URL, Testing deep links	8
Unit – IV		
4	**Data and Networking** Shared Preferences, Saving data, The shared_preferences plugin, Serialization With JSON, Automating JSON serialization, Creating model classes, Networking in Flutter, Using the HTTP package, Using the Chopper Library, Converting request and response, Encoding and decoding JSON, Using interceptors, Generating the Chopper file, Logging requests & responses, Using the Chopper client	8
Unit – V		
5	**State Management** Widget and Application state, Managing state in your app, Using Provider, UI Models, Convert data into models to display, Creating a repository, Creating a memory repository, Using a mock service, Other state management libraries	8
Unit – VI		
6	**Streams, SQLite, and Deployment** Types of streams, Adding streams, Databases, Adding a database to the project, Adding an SQLite repository, Using Moor, Platform specific app assets, Build & release an Android app, Build & release an iOS app	8

Text book:
1. Michael Katz, Kevin Moore, Vincent Ngo, "Flutter Apprentice: Learn to Build Cross-Platform Apps", Razeware.

Reference books:
1. Thomas Bailey, Alessandro Biessek, "Flutter for Beginners", Packt Publishing
2. Deven Joshi, "Building Cross-Platform Apps with Flutter and Dart", BPB
3. Richard Rose, "Flutter & Dart Cookbook", Oreilly
4. Simone Alessandria, "Flutter Cookbook", Packt Publishing
5. Dr. Deepti Chopra, Roopal Khurana, "Flutter and Dart: Up and Running", BPB

Course objectives and Course outcomes mapping:

- To develop programming skill using Flutter with Dart programming language. - CO1
- Design cross platform mobile application. – CO2, CO3
- Develop and deploy cross platform mobile applications using persistent data, networking, state, management, streams and libraries. – CO4, CO5, CO6

Course units and Course outcome mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	CO2	CO3	CO4	CO5	CO6
1	Introduction	✓					
2	Widgets		✓				
3	Navigating Between Screens			✓			
4	Data and Networking				✓		
5	State Management					✓	
6	Streams, SQLite, and Deployment						✓

Programme Outcomes:

PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.

PO 2: Problem analysis: An ability to identify, formulates, and solves engineering problems.

PO 3: Design/development of solutions: An ability to design a system, component, or process to meet desired needs within realistic constraints.

PO 4: Conduct investigations of complex problems: An ability to use the techniques, skills, and modern engineering tools necessary for solving engineering problems.

PO 5: Modern tool usage: The broad education and understanding of new engineering techniques necessary to solve engineering problems.

PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.

PO 8: Ethics: Identify and demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work.

PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give/receive clear instructions.

PO 11: Project management and finance: An ability to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: A recognition of the need for, and an ability to engage in life-long learning.

Programme Outcomes and Course Outcomes mapping:

Programme Outcomes	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
PO1	✓	✓	✓	✓		
PO2	✓	✓	✓	✓	✓	✓
PO3		✓	✓	✓	✓	✓
PO4				✓	✓	✓
PO5				✓	✓	✓
PO6						
PO7						
PO8						
PO9						
PO10						
PO11						
PO12						