Marwadi University
Faculty of Technology
Department of Information and Communication Technology

Subject Code: 01CT1517

Subject Name: Cross Platform Mobile Application Development

B. Tech. Year – III (Semester V)

Objectives: This course facilitates classroom and laboratory learning, letting students learn dart programming language and develop competence and confidence in cross platform mobile application development using flutter. Students will understand the Flutter app development environment and apply advanced features, so the students can independently create and deploy cross platform mobile application.

Credits Earned: 04 Credits

Course Outcomes: After completion of this course, student will be able to:

1. Demonstrate the basic primitives in Flutter and Dart framework (Apply).
2. Model native platform code using Flutter and Dart (Apply).
3. Examine the use of widgets and user interactions in application development (Analyze).
4. Evaluate application development using the concepts of animation and interactive widgets (Analyze).
5. Construct flutter and dart applications using customized layouts and service interactions (Create)

Pre-requisite of course: Basics of programming language, Concepts of OOP

Teaching and Examination Scheme:

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial / Practical Marks		Total Marks
				E	I		V	T	
Theory	Tutorial	Practical		ESE	IA	CSE	Viva	Term Work	
3	0	2	4	50	30	20	25	25	150

Content:

Unit	Topics	Hours
1	**Introduction to Flutter:** Flutter Framework, Working of Flutter and Dart, installation of Flutter SDK, Using Hot Reload and themes, External packages import, project templates, organizing files and folders. **Introduction to Dart:** Declaring and referencing variables, using operators, flow control statements, using functions and classes, implementing asynchronous Programming.	08
2	**Widget :** state full and state less widgets **Using common widgets:** Scaffold, AppBar, SafeArea, Container, Text, Buttons, column, row, using images and icons, decorators, form widgets, Various Buttons, **User Inputs:** Radio,Checkbox,Slider, Textediting Controller. **State management:** Handling state and Set state, calculator app	10
3	**App's Navigation:** Using Navigator, named navigator route, Hero widget, Bottom Navigation Bar Bottom Map Bar, Tab Bar, Tab Bar View, Drawer **Saving data with local persistence**: Reading and Writing files, working with key- value pairs, Supporting multiple locales,	10
4	**Building layouts: Scrolling Lists:** Card widget, Using ListView and ListTitle, GridView, Stack widget, Customizing CustomScrollView using Slivers. **Http API Call:** Working with Future object, working with streams, building, widgets based on stream and futures, handling various types of data: JSON, Sending HTTP request, JSON Encode Decode. **Firebase :** Introduction to Firebase and cloud Firestore.	14
	Total Hours	**42**

Suggested Text books / Reference books:

1. Marco L. Napoli, Beginning Flutter: A Hands-on Guide to App Development, John Wiley Sons, 1st Edition, 2020
2. D. Kopec, Dart for Absolute Beginners, Apress, 1st Edition, 2014.
3. Fu Cheng, Flutter Recipes, Apress, 1st Edition, 2019.

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process.

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
10%	20%	25%	20%	10%	15%

Suggested List of Experiments:

1. To install and configure Flutter Environment.
2. To Study basics of Dart language and design basic Flutter App.
3. To design Flutter UI by including common widgets.
4. To create an interactive Form using form widget.
5. To design a layout of Flutter App using layout widgets.
6. To include icons, images, charts in Flutter app.
7. To apply navigation, routing and gestures in Flutter App.
8. To analyze sensor data in Flutter App.
9. To Connect Flutter UI with fireBase database.
10. To test and deploy production ready Flutter App on Android platform.
11. Open Ended Practical [Mini Project]
12. Open Ended Practical [Mini Project]
13. Open Ended Practical [Mini Project]
14. Open Ended Practical [Mini Project]

Supplementary Resources:

1. https://flutter.dev/
2. https://developers.google.com/learn/topics/flutter