COURSE TITLE	**APP DEVELOPMENT USING FLUTTER**
COURSE CODE	**01CE0610**
COURSE CREDITS	**3**

Objective:

1 This course focuses on learning and applying the fundamentals of Flutter Development to build mobile applications by learning the concepts of Dart, Widgets and Gestures, UI and List View, and Data Storage which will be compatible with cross platforms

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

1 Understand and gain the knowledge of Flutter
2 Use and apply the Dart concepts
3 Use widgets and gestures in Flutter apps
4 Create UI using List and Layouts
5 Understand the use of database with Local Persistence, Retrofit and REST API

Pre-requisite of course:NA

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
2	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Introduction to Flutter** Introduction to flutter framework, advantages of flutter, importance of DART in flutter, introduction to Flutter Widget, Element and RenderObject, Types of Flutter Widgets,, Stateless and Stateful Widget lifecycle, Working of Widget tree and Element tree, introduction to flutter app	6
2	**Starter Project Template, Widget, Common Widgets, Gestures Widget** Built-in Flutter widgets, value widgets, layout widgets, navigation widgets, other widgets, stateless and stateful widget, ommon Widgets: Container, Text, RichText, Column, Row, Buttons, Using Images and Icons, Using Decorators, Using the Form Widget to Validate Text Fields, Gestures: Buttons: FlatButton, IconButton, FloatingActionButton, Custom Gestures	8
3	**Scrolling List and Layouts** Scrolling List: Using the Card, Using ListView and ListTile, Using the GridView, Layouts: A High-Level View of the Layout, Creating the Layout	6

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Contents : Unit	Topics	Contact Hours
4	**DART Basics** Introduction to DART, comments, top level main() function, use of different types of variables, flow statements, use of functions to group reusable logic, use of 'import' statement, classes	4
5	**Database Connectivity with SQLite & Accessing REST API** Database Connectivity with SQLite, CRUD operations with SQLite , Accessing REST API:, Introduction to JSON, Connecting to REST API,, Parsing JSON data from REST API	6
Total Hours		**30**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Practical 1** Android Studio setup for Flutter development with along with Dart SDK.	2
2	**Practical 2** Create a “Hello Flutter” application.	2
3	**Practical 3** Create and application using Flutter Key Widgets.	2
4	**Practical 4** Create and application using Flutter Key Widgets.	2
5	**Practical 5** Create and application with Flutter UI Components.	2
6	**Practical 6** Create and application with Flutter UI Components.	2
7	**Practical 7** Create and application with Navigation in Flutter.	2
8	**Practical 8** Create and application with list view in Flutter.	2
9	**Practical 9** Create and application with grid view in Flutter.	2
10	**Practical 10** Create and application Crud Operation with SQLite in Flutter.	2
11	**Practical 11** Create and application Connecting to REST API in Flutter	2
12	**Practical 12** Create and application Parsing JSON data from REST API in Flutter.	2
13	**Practical 13** Create and application using Hardware Interaction in Flutter.	2
Total Hours		**26**

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Textbook :

1 Beginning Flutter: A Hands On Guide to App Development, Marco L. Napoli, Wiley, 2019

References:

1 Beginning App Development with Flutter: Create Cross-Platform Mobile Apps, Beginning App Development with Flutter: Create Cross-Platform Mobile Apps, Rap Payne, Springer, 2019

2 Flutter for Beginners, Flutter for Beginners, Thomas Bailey and Alessandro Biessek, Packt Publishing, 2021

3 Google Flutter Mobile Development Quick Start Guide, Google Flutter Mobile Development Quick Start Guide, Prajyot Mainkar and Salvatore Girodano, Packt Publishing, 2019

Suggested Theory Distribution:

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

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
20.00	25.00	55.00	0.00	0.00	0.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

Supplementary Resources:

1 https://dart.dev/guides

2 https://docs.flutter.dev/

3 https://www.youtube.com/@flutterdev

4 https://medium.com/flutter

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