

# Mobile Application Development for SMEs

<b>Code:</b> EC303	<b>Credit Hours:</b> 2-1
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## Course Description

This course offers students a comprehensive introduction to mobile application development using Flutter, a powerful open-source UI software development toolkit by Google. Participants will engage in a hands-on learning experience, gaining proficiency in Flutter's paradigms, app architecture, and user interface design. The curriculum covers fundamental aspects, such as app architecture, UI development with Flutter widgets, state management, navigation, API integration, and data persistence. Emphasis is placed on practical skills, with a focus on writing clean and scalable code. The course culminates in a final project where students apply their acquired knowledge to create a fully-fledged mobile app of their own. By the course's conclusion, students are expected to have developed the skills necessary for mobile app development and possess a portfolio-worthy final project. This approach equips them with both theoretical understanding and practical expertise in Flutter, positioning them well for future endeavors in the field.

## Text Book:

1. Flutter Cookbook - Over 100 proven techniques and solutions for app, by S. Alessandria
2. B. Kayfitz, Packt Publishing, 2021
3. Development with Flutter 2.2 and Dart
4. Beginning App Development with Flutter by Rap Payne
5. Beginning Flutter: A Hands-On Guide to App Development by Marco L. Napoli

## Reference Book:

1. Learn Google Flutter Fast by Mark Clow
2. Flutter documentation <https://flutter.dev/docs>

## Prerequisites

CS110 (Fundamentals of Computer Programming)

## ASSESSMENT SYSTEM FOR THEORY

Theory: 75%	
Quizzes	15%
Assignments	10%
Mid Terms	35%
ESE	40%

## ASSESSMENT SYSTEM FOR LAB

Labs: 25%
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<b>Labs</b>	70%
<b>Project</b>	30%

### Teaching Plan

Week No	Topics	Learning Outcomes
1 - 4	Introduction and Basics of Flutter and Dart	Introduction to Mobile Application Development Basics of Flutter and Getting Started Learning Dart Basics Asynchronous programming, Nullability
5-8	Basic Flutter Project and Introduction to Widgets	Creating a Starter Project Template Understanding the widget tree Common Layout Widgets Creating Scrolling Lists and Effects
9	<b>MID TERM IN WEEK 9</b>	
10-15	State management, Navigation, Animation	Creating an App's navigation State management Asynchronous Programming with Flutter Data Persistence and Communication with the Internet Advanced State Management with Streams Adding animations to an app
16	Firebase	Adding Firebase & Firestore Backend Adding State Management using Firebase
17	<b>Project Presentations</b>	
18	<b>END SEMESTER EXAM</b>	

## Labs:

Experiment No	Description
1	Setting up a development environment for flutter and dart for a hello world example
2	Building a simple dart program to learn the basics
3	Write Dart programs with asynchronous functionality and nullability
4	Building first Flutter application and understanding stateless and stateful widgets
5	Building application to use Common Widgets
6	Building widget trees and creating complex Mobile applications
7	Building applications with animations and transitions
8	Building Layouts for rich application interfaces
9	Building Navigation in applications
10	Building Applications with State Management.
11	Building Flutter applications that require asynchronous functionality
12	Building applications that require CRUD tasks and communication with the Internet
13	Managing application streams
14	Adding support for remote storage and databases using firebase
15	Project Evaluation
16	Project Evaluation