

PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY

(Autonomous)

Kanuru, Vijayawada-520007

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (Data Science)

III B Tech – I Semester

USER INTERFACE DESIGN USING FLUTTER

Course Code	23ES1553	Year	III	Semester	I
Course Category	ES	Branch	CSE (Data Science)	Course Type	Practical
Credits	1	L-T-P	0-0-2	Prerequisites	HTML,CSS
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course Outcomes		
Upon Successful completion of course, the student will be able to		
CO1	Demonstrate the ability to design and implement user interfaces using basic Flutter widgets, layouts, and stateful interactions.	L2
CO2	Apply responsive design principles and navigation techniques to build adaptive mobile applications that cater to diverse devices and screen sizes by using tools.	L3
CO3	Analyze the structure of UI components by creating custom widgets, applying themes, and maintaining consistent visual styling across an application.	L4
CO4	Evaluate form inputs, asynchronous data interactions, animations, and testing strategies to enhance UI performance, usability, and reliability.	L5

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Syllabus		
Exp. No.	Contents	Mapped CO
1	a) Install Flutter and Dart SDK. b) Write a simple Dart program to understand the language basics.	CO1 to CO4
2	a) Explore various Flutter widgets (Text, Image, Container, etc.). b) Implement different layout structures using Row, Column, and Stack widgets.	CO1 to CO4
3	a) Design a responsive UI that adapts to different screen sizes. b) Implement media queries and breakpoints for responsiveness.	CO1 to CO4
4	a) Set up navigation between different screens using Navigator. b) Implement navigation with named routes.	CO1 to CO4
5	a) Learn about stateful and stateless widgets. b) Implement state management using set State and Provider.	CO1 to CO4
6	a) Create custom widgets for specific UI elements. b) Apply styling using themes and custom styles.	CO1 to CO4
7	a) Design a form with various input fields. b) Implement form validation and error handling.	CO1 to CO4
8	a) Add animations to UI elements using Flutter's animation framework. b) Experiment with different types of animations (fade, slide, etc.).	CO1 to CO4
9	a) Fetch data from a REST API. b) Display the fetched data in a meaningful way in the UI.	CO1 to CO4
10	a) Write unit tests for UI components. b) Use Flutter's debugging tools to identify and fix issues.	CO1 to CO4

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11	a) Database installation and creation of database and sample tables b) Setup up a Flutter project, add database dependencies, configure, initialize a database connection and test the connectivity.	CO1 to CO4
12	a) Develop UI screens and backend logic to implement Create (Insert), Read, Update and Delete functionalities using the configured database. b) Test all features to ensure data is correctly created, read, updated, and deleted.	CO1 to CO4
13	Mini-Project: Build a mobile application that allows users to manage structured data with a database. The application must have an intuitive user interface designed with Flutter's core widgets (Form, TextFormField, DropdownButton, ListView, etc) and should demonstrate how to read, display, update, and remove data using database operations.	CO1 to CO4

Learning Resources**Text Books**

1. Flutter: A Hands-on Guide to App Development, Marco L. Napoli, 1st edition, 2019, Wrox
2. Beginning App Development with Flutter: Create Cross-Platform Mobile Apps, Rap Payne, 1st edition, 2019, Apress

References

1. Practical Flutter: Improve Your Mobile Development With Google's Latest Open-Source SDK, Frank Zammetti, 1st edition, 2019, Apress

E-Resources and other Digital Material

1. https://swayam-plus.swayam2.ac.in/courses/course-details?id=P_SMARTBRIDGE_06
2. <https://www.coursera.org/learn/flutter-and-dart-developing-ios-android-mobile-apps>