

**Skill Development Course
(UI design-Flutter)**

Course Code: KG23ASD304

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B.Tech. III Year I Sem.

Course Objectives: The objectives of this course for the student are to:

1. Introduce the Flutter framework and Dart programming language for building cross-platform mobile applications.
2. Develop interactive UIs using Flutter widgets and layouts, including responsive design for different screen sizes.
3. Implement navigation and state management techniques using Navigator, setState, and Provider.
4. Apply advanced UI features such as custom widgets, animations, and form validation to enhance user experience.
5. Integrate backend services and perform testing and debugging for creating functional and robust Flutter applications

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

CO1: Apply dart language fundamentals and Flutter environment setup. **(K3)**

CO2: Evaluate responsive UIs using core Flutter widgets and layout structures. **(K5)**

CO3: Compare navigation and manage state using built-in and external packages like Provider. **(K4)**

CO4: Design interactive forms with validation and integrate REST APIs for dynamic data handling. **(K6)**

CO5: Apply animations, custom styling, and perform testing/debugging of Flutter applications. **(K3)**

List of Experiments: Students need to implement the following experiments

1.
 - a) Install Flutter and Dart SDK.
 - b) Write a simple Dart program to understand the language basics.
2.
 - a) Explore various Flutter widgets (Text, Image, Container, etc.).
 - b) Implement different layout structures using Row, Column, and Stack widgets.

3. a) Design a responsive UI that adapts to different screen sizes.
b) Implement media queries and breakpoints for responsiveness.
4. a) Set up navigation between different screens using Navigator.
b) Implement navigation with named routes.
5. a) Learn about stateful and stateless widgets.
b) Implement state management using set State and Provider.
6. a) Create custom widgets for specific UI elements.
b) Apply styling using themes and custom styles.
7. a) Design a form with various input fields.
b) Implement form validation and error handling.
8. a) Add animations to UI elements using Flutter's animation framework.
b) Experiment with different types of animations (fade, slide, etc.).
9. a) Fetch data from a REST API.
b) Display the fetched data in a meaningful way in the UI.
10. a) Write unit tests for UI components.
b) Use Flutter's debugging tools to identify and fix issues.

TEXT BOOK:

1. Marco L. Napoli, Beginning Flutter: A Hands-on Guide to App Development.

CO-PO Mapping

COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO1	3	2	3	2				2	2	3	3			2	3
CO2	3	3	3	3				3	3	3	3			2	2
CO3	3	2	3	2				2	2	2	3			2	3
CO4	3	3	3	2				2	2	2	3			2	2
CO5	3	2	3	2				2	2	1	1			2	3

HIGH=3,**MEDIUM=2,****LOW=1**