

**PRASAD V. POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY**

(Autonomous)  
Kanuru, Vijayawada-520007

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI & ML)**

**III B Tech – I Semester**

**USER INTERFACE DESIGN USING FLUTTER LAB**

Course Code	23ES1553	Year	III	Semester	I
Course Category	ES	Branch	CSE (AI & ML)	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		
<b>Upon Successful completion of course, the student will be able to</b>		
<b>CO1</b>	Demonstrate the ability to design and implement user interfaces using basic Flutter widgets, layouts, and stateful interactions.	<b>L2</b>
<b>CO2</b>	Apply responsive design principles and navigation techniques to build adaptive mobile applications that cater to diverse devices and screen sizes	<b>L3</b>
<b>CO3</b>	Analyze the structure of UI components by creating custom widgets, applying themes, and maintaining consistent visual styling across an application.	<b>L4</b>
<b>CO4</b>	Evaluate form inputs, asynchronous data interactions, animations, and testing strategies to enhance UI performance, usability, and reliability.	<b>L5</b>

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlation (3:High,2:Moderate,1:Low)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>CO1</b>	2								2					
<b>CO2</b>	3				3						2			
<b>CO3</b>		3									2			
<b>CO4</b>				3							2			

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

<b>Learning Resources</b>	
<b>Text Books</b>	
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	

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (AI & ML)****III B Tech – I Semester****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](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>