

**PRASAD V POLTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY::AUTONOMOUS  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**USER INTERFACE DESIGN USING FLUTTER**

<b>Course Code</b>	23ES1553	<b>Year</b>	III	<b>Semester</b>	I
<b>Course Category</b>	ES	<b>Branch</b>	CSE	<b>Course Type</b>	Practical
<b>Credits</b>	2	<b>L – T – P</b>	0 – 0 - 2	<b>Prerequisites</b>	OOP Concepts and Bootstrap
<b>Continuous Evaluation:</b>	30	<b>Semester End Evaluation:</b>	70	<b>Total Marks:</b>	100

<b>Course Outcomes</b>		
Upon successful completion of the course, the student will be able to:		
<b>CO1</b>	Apply the fundamentals of Dart and Flutter frameworks to develop basic user interfaces for mobile applications	L3
<b>CO2</b>	Implement a project as an individual or team member	L3
<b>CO3</b>	Develop an effective report based on project implemented	L3
<b>CO4</b>	Apply technical knowledge for a given problem and express with an effective oral communication	L3
<b>CO5</b>	Analyze outputs of mobile applications.	L4

Students need to implement the following experiments

<b>List of Experiments</b>		
<b>Exp. No.</b>	<b>Experiment</b>	<b>Mapped CO</b>
1.	a) Install Flutter and Dart SDK. b) Write a simple Dart program to understand the language basics.	<b>CO1-CO5</b>
2.	a) Explore various Flutter widgets (Text, Image, Container, etc.). b) Implement different layout structures using Row, Column, and Stack widgets.	<b>CO1-CO5</b>
3.	a) Design a responsive UI that adapts to different screen sizes. b) Implement media queries and breakpoints for responsiveness.	<b>CO1-CO5</b>
4.	a) Set up navigation between different screens using Navigator. b) Implement navigation with named routes.	<b>CO1-CO5</b>
5.	a) Learn about stateful and stateless widgets. b) Implement state management using set State and Provider	<b>CO1-CO5</b>
6.	a) Create custom widgets for specific UI elements. b) Apply styling using themes and custom styles.	<b>CO1-CO5</b>

7.	a) Design a form with various input fields. b) Implement form validation and error handling.	CO1-CO5
8.	a) Add animations to UI elements using Flutter's animation framework. b) Experiment with different types of animations (fade, slide, etc.)	CO1-CO5
9.	a) Fetch data from a REST API. b) Display the fetched data in a meaningful way in the UI	CO1-CO5
10.	a) Write unit tests for UI components. b) Use Flutter's debugging tools to identify and fix issues	CO1-CO5

<b>Learning Resources</b>	
<b>Text Books</b>	
<ol style="list-style-type: none"> <li>1. Marco L. Napoli, Beginning Flutter: A Hands-on Guide to App Development.</li> <li>2. Rap Payne, Beginning App Development with Flutter: Create Cross-Platform Mobile Apps 1<sup>st</sup> Edition, Apres</li> <li>3. Richard Rose, Flutter &amp; Dart Cookbook, Developing Full stack Applications for the Cloud, Oreilly.</li> </ol>	
<b>Reference Books</b>	
<ol style="list-style-type: none"> <li>1. Mouaz M. Al-Shahmeh, Flutter Apps Development: Build Cross-Platform Flutter Apps with Trust</li> <li>2. Thomas Bailey, Alessandro Biessek, Flutter for Beginners - Second Edition: An introductory guide to building cross-platform mobile applications with Flutter 2.5 and Dart</li> </ol>	
<b>E-Resources &amp; other digital material</b>	
<ol style="list-style-type: none"> <li>1. <a href="https://codelabs.developers.google.com/codelabs/flutter-boring-to-beautiful#0">https://codelabs.developers.google.com/codelabs/flutter-boring-to-beautiful#0</a></li> <li>2. <a href="https://dart.dev/">https://dart.dev/</a></li> <li>3. <a href="https://flutter.dev/">https://flutter.dev/</a></li> <li>4. <a href="https://www.tutorialspoint.com/dart_programming/index.htm">https://www.tutorialspoint.com/dart_programming/index.htm</a></li> <li>5. <a href="https://www.youtube.com/watch?v=OLjyCy-7U2U">https://www.youtube.com/watch?v=OLjyCy-7U2U</a></li> <li>6. <a href="https://www.youtube.com/watch?v=5rtujDjt50I&amp;list=PLlxmoA0rQ-LyHW9voBdNo4gEEIh0SjG-q">https://www.youtube.com/watch?v=5rtujDjt50I&amp;list=PLlxmoA0rQ-LyHW9voBdNo4gEEIh0SjG-q</a></li> <li>7. <a href="https://www.youtube.com/watch?v=GLSG_Wh_YWc">https://www.youtube.com/watch?v=GLSG_Wh_YWc</a></li> </ol>	