Course Code	Course Title				
2UST502	**Mobile application Development – Flutter**				
	TH		**P**	**TUT**	**Total**
Teaching Scheme(Hrs.)	**03**		**--**	**--**	**03**
Credits Assigned	**02**		**--**	**--**	**02**

Examination Scheme	Marks							
	CA		**ESE**	**TW**	**O**	**P**	**P&O**	**Total**
	ISE	**IA**						
	30	**20**	**--**	**--**	**--**	**--**	**--**	**50**

Course Objectives

To Build real native mobile apps for the two most popular mobile platforms - iOS and Android.
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Course Outcomes

At the end of successful completion of the course the student will be able to

CO1: Use development tools that support both mac OS and Windows.
CO2: Understand Flutter, Dart and the concept behind widgets
CO3: To make asynchronous API calls, store and retrieve data from a remote server, and use the JSON format for server communication.
CO4: Firebase Database, Firebase Authentication integration for Flutter App Firebase Authentication for our Flutter App to safely handle changes to Firebase.

Module No.	Unit No.	Details	Hrs.	CO
1		**Introduction to development with flutter**	**08**	
	1.1	Setting up Development Environment: Understanding the Flutter Architecture, Flutter macOS Setup, Flutter Windows setup	**02**	CO1
		Introduction to Dart Programming Language Coding style and naming convention, Declaring variables, Numbers, Booleans, const and final keywords Dart Types, Dart operators, Control flow and functions, Understanding classes and constructors, Data structures.	**06**	CO2
2		**Creating UI with Flutter**	**12**	**CO 2**
	2.1	Basics and Understanding Widgets: Exploring default project structure, Flutter Basic Layouts, Widgets in flutter, Adding custom images, fonts.	**02**	
	2.2	Working with TextFields, Buttons, Scaffold, Material App, Drawer, Navigation Bar, Floating Action button, Snack bar, Lists and Conditionals, Handling user input.	**05**	
	2.3	Forms and validation with Flutter: Labels and Hint Text, Customizing Keyboard Type, Handling Password Inputs, Displaying Buttons with Raised Button, Changing Widget Colors, Layout Control, Form Validation, Referencing Widgets with Global Keys, The Form Widget and FormState, Creating a Global Key, Referencing FormState with Global Keys, Validating via FormState, Triggering Validation, Retrieving Form Values.	**05**	
		#Self-learning : Explore Date picker and calendar widget.		
3		**Navigation and multiple screens**	**06**	**CO2**
	3.1	Passing Data via the Constructor, Using Named Routes & Passing Data With Named Routes, Screens & Navigation , onGenerateRoute & onUnknownRoute	**06**	
4		**State Management**	**10**	**CO3**
	4.1	What is State and How do we Manage it, How do Callbacks work in Dart?, The ListView Builder, Lifting State Up Challenge, Flutter App Architecture Patterns, Introducing the Provider Package, Using a Provider and a Change Notifier to Manage State.	**06**	

	4.2	Advanced Flutter Architecture – The Bloc Pattern BLOC's vs Stateful Widgets, The Purpose of Streams with Blocs, Annotating Stream Types, Issues with Bloc Access.	**04**	
5		**Integrating flutter apps with firebase**	**09**	**CO4**
	5.1	Firebase console, Firebase services - Authentication, Realtime Database.	**05**	
	5.2	HTTP Requests with Flutter Photos API, Working with JSON, The HTTP Package.	**04**	
		#Self-learning : Study Firebase Storage service.		
		Total	**45**	

Students should prepare all Self Learning topics on their own. Self-learning topics will enable students to gain extended knowledge of the topic. Assessment of these topics may be included in IA and Laboratory Experiments.

Recommended Books:

Sr. No.	Name/s of Author/s	Title of Book	Name of Publisher with country	Edition and Year of Publication
1.	Eric Windmill	Flutter in Action	Manning Publications (28 December 2019)	1st Edition
2.	Marco L. Napoli	Beginning Flutter: A Hands On Guide to App Development	Wrox (15 November 2019)	1st Edition
3.	Prajyot Mainkar , Salvatore Giordano	Google Flutter Mobile Development Quick Start Guide: Get up and running with iOS and Android mobile app development Paperback	Packt Publishing; 1 edition.	March 30, 2019
4.	Ivo Balbaert , Dzenan Ridjanovic	Learning Dart	Packt Publishing; 2 edition (25 September 2015)	2nd Edition
5.	Mark Clow	Learn Google Flutter Fast: 65 Example Apps	Independently published (April 1, 2019)	1st Edition