Kadi Sarva Vishwavidyalaya, Gandhinagar
MCA Semester II
MCA-26 (A) : Mobile Cross Platform Development (New)

Rationale: The complexity of mobile app development was compounded by the difficulty of building out a back end that worked across multiple platforms. Although it was time-consuming and expensive, it was often easier to build native applications for each mobile OS. The problem was that the code built for one operating system could not be repurposed for another OS. Cross-platform development provides a solution to those challenges. With a cross-platform app, some or even all of the source code can be shared across platforms, such as Android and iOS.

Prerequisite:
Knowledge of Object-Oriented programming, basic HTML and database concepts

Learning Outcomes:
- Creation of Native Apps
- Creation of Cross-Platform Apps
- Learning of Flutter and react Native
- User Interface components relative to Cross-Platform apps

Teaching and Evaluation Scheme: The objective of evaluation is to evaluate the students throughout the semester for better performance. Students are evaluated on the basis of continuous evaluation system both in theory and practical classes based on various parameters like term work, class participation, practical and theory assignments, presentation, class test, Regular Attendance, etc.

Sub Total Credit	Teaching scheme (per week)		Examination scheme				
			MID	CEC	External		Total Marks
	Th	Pr	Th	Th	Th.	Pr.	
3	3	-	25	25	50	-	100

Course content:

Unit I: Cross Platform Development [20%]
What is Cross-Platform Development, Need for Cross-Platform Development, Native vs Cross-Platform Development, Benefits and drawbacks of Cross-Platform Development, Popular Cross-Platform Development frameworks – Flutter, React Native, Xamarin, Ionic, Sencha

Unit II: Basics of Flutter [20%]
Introduction of Flutter, Understanding Widget Lifecycle Events, Understanding Widget Tree and Element Tree, Basics of Flutter installation, creating a Hello World App, Learning Dart Basics – Data types, Variables, Operators, Flow Statements (if-else, for, while, do-while, break, continue, switch-case), Functions, importing packages and using classes

Unit III: User Interface through Flutter [20%]

Widgets: Using basic widgets, using images and icons, Using the form widget;
Adding Animation to app: Using Animated Container, Using Animated CrossFade, Using Animated Opacity, Using Animation Controller, Using Staggered Animation;
Building Layouts

Unit IV: Basics of React Native [20%]

Introduction to React Native, Setting Up the Development Environment, Understanding Components and States, Creating Your First React Native App

Unit V: User Interface through React Native [20%]

Navigation in React Native, Flexbox, Images, ListView, ScrollView, APIs – MapView & GeoLocation, Native Alert and WebView

Text Book:

1. Beginning Flutter, a Hands-on Guide to App Development, Marco L. Napoli, Wiley, 2020
2. React Native for Mobile Development, Akshat Paul, Abhishek Nalwaya, Apress Publication

Reference Books:

1. Flutter in Action by Eric Windmill, MANING, 2019
2. Google Flutter Mobile Development Quick Start Guide, Packt, 2019
3. Learning React Native, Bonnie Eisenman, O'Reilly, 2nd Edition
4. React and React Native, Adam Boduch and Roy Derks, Packt Publishing

Unit wise coverage from Text Book

Unit 1: Link - https://www.techtarget.com/searchmobilecomputing/definition/cross-platform-mobile-development

Unit 2: Book 1 - Chapters 1, 2, 3, 5

Unit 3: Book 1 - Chapter 6, 7, 10

Unit 4: Book 2 - Chapters 1, 2

Unit 5: Book 2 - Chapters 4, 5