Uka Tarsadia University

B. Tech.

Semester IV

MOBILE APPLICATION DEVELOPMENT WITH iOS

IT4021

Effective from – July 2022

Syllabus version: 1.00

Subject Code	Subject Title	Teaching Scheme			
		Hours		Credits	
		Theory	Practical	Theory	Practical
IT4021	Mobile Application Development with iOS	3	4	3	2

Subject Code	Subject Title	Theory Examination Marks		Practical Examination Marks	Total Marks
		Internal	External	CIE	
IT4021	Mobile Application Development with iOS	40	60	100	200

Objectives of the course:

- To build solid foundation in programming fundamentals using Swift as the language.
- Design & develop an iOS authentic application using concepts like Core iOS and Cocoa Touch frameworks, MVC Architecture, core data and RESTful API.

Course outcomes:

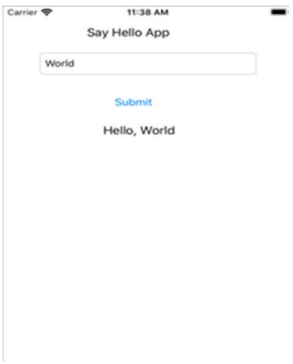
Upon completion of the course, the student shall be able to,

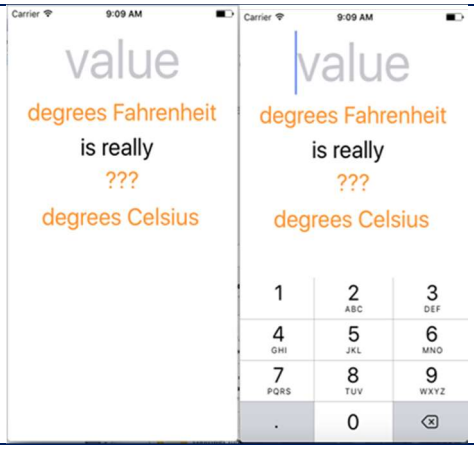
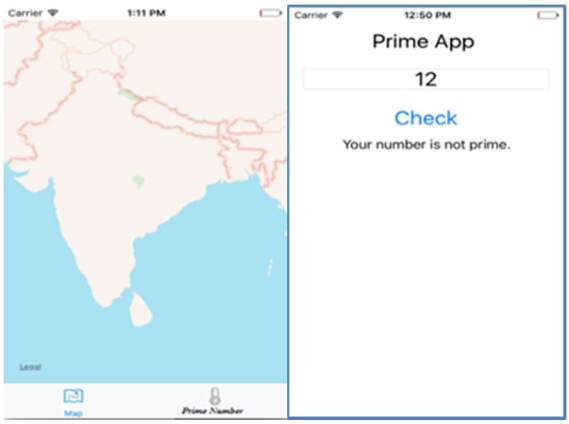
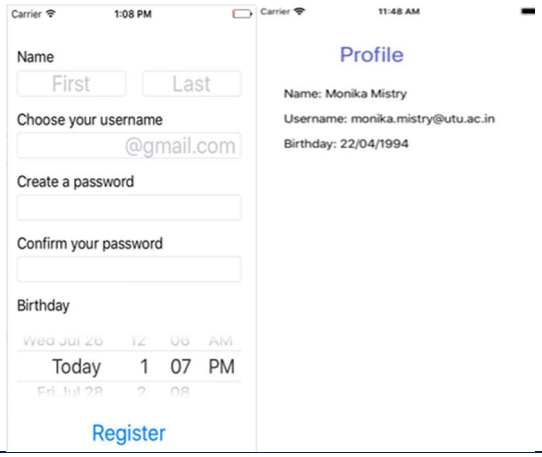
CO1: Comprehend basic concepts of iOS and swift programming.
CO2: Design user interface and manage views programmatically.
CO3: Use TableView and binding with static data and data sources.
CO4: Design a live application with gestures and navigation.
CO5: Apply and correlate rich data bound controls and manage storage techniques.
CO6: Design mobile application which communiqués with web resources.

Sr. No.	Topics	Hours
	Unit – I	
1	**iOS Application and Swift Basic:** Model - View –Controller, Interface Builder, Creating the Model Layer, Swift Programming Basic, The View Hierarchy, View and Frames, The Auto Layout System.	06
	Unit – II	
2	**Interface Design:** Basic UI with Object Library , Delegation , The View of View Controller, Setting the Initial View Controller , UITabBarController, Loaded and	08

	Appearing Views, Interacting with View Controllers and their Views ,Creating View Programmatically.	
Unit – III		
3	**Table View:** UITableViewController, UITableView's Data Source, UITableViewCells, Editing UITableView, Subclassing UITableViewCell.	08
Unit – IV		
4	**Navigation, Touch and Gesture:** UINavigationController, Navigating with UINavigationController, Appearing and Disappearing Views, Managing the Keyboard, UINavigationBar, Camera, Touch Event, UIGestureRecognizer Subclass, Multiple Gesture Recognizer, UIMenuController.	08
Unit – V		
5	**Collection View and Data Persistence:** Application State and Transitions, Writing to File System with Data and Error Handling, Collection View, Collection View Data Source, Customizing Collection Layout, Creating a Custom UICollection ViewCell, Core Data and Relationships.	08
Unit – VI		
6	**Web Services, JSON and Swift UI:** Use of Cocoa pods and Manage pods in Application., Developing RESTful Web Services, Sending the Request, JSON Data, Introduction to SwiftUI.	07

Sr. No.	**Mobile Application Development with iOS (Practical)**	**Hours**
1.	Introduction to iOS and Xcode.	02
2.	Case study of Swift programming language Running Swift Code to print Hello World.	04
3.	To print Swift Array (Max value) in Swift language.	02
4.	To convert base 10 integers into any other base in Swift language.	02
5.	To print Floyd's Triangle in Swift language	02
6.	Write a Program to implement Swift Function Parameters and Return Values.	02
7.	a. Write a Program to understand Swift while and repeat while Loop by a program to display numbers from 1 to 5. b. Write a Program to understand Nested Loops in Swift by a program to display 7 days of 2weeks.	02
8.	Write a program in swift to: a) Check number is even or odd. b) Print prime numbers in given range c) Check the string is palindrome or not.	04
9	a) To print Fibonacci Series in Swift Language.	04

	b) To print factorial of a given number in Swift language.	
10.	To implement UI switch using swift language.	02
11.	To implement UI slider using swift language.	02
12.	To implement stepper using swift language.	02
13.	To implement animation using swift language	02
14	To implement a simple date picker	02
15.	Create an iOS application to develop "Say Hello App". Use TextField to get user name as input. On tap of button, display user name with Hello in Label. 	02
16.	Create an iOS Application for Quiz. Create following layout given below and performed following functionality: a. Question and Answers Load from Data Source (Data Source contains String Array). b. Contains two buttons (Show Next Question) and two labels (Show Answer). c. Display next question on tap of Show Next Question button. d. Display answer on tap of Show Answer button. 	02
17.	Create an iOS application for Fahrenheit to Celsius conversion. Create layout as given below. If Text changing in FahrenheitTextField, automatically convert temperature in Celsius and display value change in CelsiusLabel. Note: Layout should be auto (automatically adjust to universal devices). Celsius value should be generated on text changed event. Keyboard should be automatically dismissing on tap of screen.	04

		
18	Create an iOS Application demonstrate use of Tab Bar Control in your application. Application contains following functionality: • Two tabs called Map and Prime Number. • On click of Map tag Map Should be open. • On Click of Prime Number, to Check Inputted Number is prime or not. • Map View should be created using programmatically. 	04
19	Create an iOS Application interface that look like registration view as given below. When user click on register display the data on second view. 	04
20.	Develop iOS application	08

Text book:

1. Christian Keur and Aaron Hillegass – iOS Programming THE BIG NERD RANCH GUIDE 6TH Edition- Big Nerd Ranch

Reference books:

1. Matt Neuberg - iOS 10 Programming Fundamentals with Swift - O'Reilly
2. Vandad Nahavandipoor -iOS 10 Swift Programming Cookbook: Solutions and Examples for iOS Apps – Shroff /O'Reilly

Course objectives and Course outcomes mapping:

- To build solid foundation in programming fundamentals using Swift as the language: CO1
- Design & develop an iOS authentic application using concepts like Core iOS and Cocoa Touch frameworks, MVC Architecture, core data and RESTful API. CO2, CO3, CO4, CO5, CO6

Course units and Course outcomes mapping:

Unit No.	Unit Name	Course Outcomes					
		CO1	CO2	CO3	CO4	CO5	CO6
1	iOS Application and Swift Basic	✓					
2	Interface Design		✓				
3	Table View			✓			
4	Navigation, Touch and Gesture				✓		
5	Collection View and Data Persistence					✓	
6	Web Services						✓

Programme outcomes:

PO 1: Engineering knowledge: An ability to apply knowledge of mathematics, science, and engineering.

PO 2: Problem analysis: An ability to identify, formulates, and solves engineering problems.

PO 3: Design/development of solutions: An ability to design a system, component, or process to meet desired needs within realistic constraints.

PO 4: Conduct investigations of complex problems: An ability to use the techniques, skills, and modern engineering tools necessary for solving engineering problems.

PO 5: Modern tool usage: The broad education and understanding of new engineering techniques necessary to solve engineering problems.

PO 6: The engineer and society: Achieve professional success with an understanding and appreciation of ethical behavior, social responsibility, and diversity, both as individuals and in team environments.

PO 7: Environment and sustainability: Articulate a comprehensive world view that integrates diverse approaches to sustainability.

PO 8: Ethics: Identify and demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work.

PO 9: Individual and team work: An ability to function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give/receive clear instructions.

PO 11: Project management and finance: An ability to demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: A recognition of the need for, and an ability to engage in life-long learning.

Programme outcomes and Course outcomes mapping:

Programme Outcomes	Course Outcomes					
	CO1	CO2	CO3	CO4	CO5	CO6
PO1		✓	✓	✓	✓	
PO2			✓	✓	✓	
PO3		✓		✓	✓	✓
PO4						
PO5			✓	✓	✓	✓
PO6						
PO7						
PO8						
PO9						
PO10						
PO11				✓		
PO12						