GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering
Subject Code: 3732308

Semester – III
Subject Name : Mobile Applications and Services

Type of course:

Prerequisite: Wireless Communication and Mobile Computing

Rationale: In the digital age, Mobile applications are used widely with the three main mobile platforms and their ecosystems, namely Android, iOS, and PhoneGap/WebOS. This course explores emerging technologies and tools used to design and implement feature-rich
mobile applications for smart phones and tablets. It also take into account both the technical constraints relative to storage capacity, processing capacity, display screen, communication interfaces, and the user interface, context and profile.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE(E)	PA (M)	PA (V)	PA (I)	
3	0	0	3	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1	**Unit 1:** Introduction:Introduction to Mobile Computing, Introduction to Android Development Environment, Factors in Developing Mobile Applications, Mobile Software Engineering, Frameworks and Tools, Generic UI Development Android User	5
2	**Unit 2:** More on Uis: VUIs and Mobile Apps, Text-to-Speech Techniques, Designing the Right UI, Multichannel and Multimodal Uis, . Storing and Retrieving Data, Synchronization and Replication of Mobile Data, Getting the Model Right, Android Storing and Retrieving Data, Working with a Content Provider	6
3	**Unit 3:** Communications via Network and the Web:State Machine, Correct Communications Model, Android Networking and Web, Telephony Deciding Scope of an App, Wireless Connectivity and Mobile Apps, Android Telephony Notifications and Alarms:Performance, Performance and Memory Management, Android Notifications and Alarms, Graphics, Performance and Multithreading, Graphics and UI Performance, Android Graphics	8

4	**Unit 4:** Putting It All Together : Packaging and Deploying, Performance Best Practices, Android Field Service App, Location Mobility and Location Based Services Android Multimedia: Mobile Agents and Peer-to-Peer Architecture, Android Multimedia	**7**
5	**Unit 5:** Platforms and Additional Issues : Development Process, Architecture, Design, Technology Selection, Mobile App Development Hurdles, Testing, Security and Hacking , Active Transactions, More on Security, Hacking Android	**7**
6	**Unit 6:** Recent trends inCommunication protocols for IOT nodes, mobile computimng techniques in IOT, agents based communications in IOT	**3**

Reference Books:

1. Wei-Meng Lee, Beginning Android™ 4 Application Development, 2012 by John Wiley & Sons

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	identify the target platform and users and be able to define and sketch a mobile application	20
CO-2	understand the fundamentals, frameworks, and development lifecycle of mobile application platforms including iOS, Android, and PhoneGap	50
CO-3	Design and develop a mobile application prototype in one of the platform (challenge project)	30

List of Experiments:

1. Implement on mobile platform a simple calculator. Use different layouts to show buttons of calculator.
2. Implement an Android application that converts Fahrenheit to Celsius and Celsius to Fahrenheit.
3. Implement an Android application that takes rupees as input and gives spinner control with options Euro, Frank and Dollar and converts them accordingly.
4. Implement an Android application, that takes user personal details as input. Store them in database and when user enters his mobile number retrieve all information.
5. Implement an Android Application that creates a menu with following options.

Display menu items for example – List the choice of food items

Display list of selected items

Calculate the bill.

6. Implement an Android Application that rotates a red ball in clockwise direction for 1 minute and after that yellow ball in the anticlockwise direction.
7. Write a program on mobile platform to transfer file from one mobile to another mobile. Upload this application on app store.
8. Write an application on mobile platform that continuously tracks the location of the mobile phone.
9. Write an app on mobile platform to read contact details from mobile phone and send it via internet to a particular Email address.
10. Write an application for generating a grid of 10x10 squares with alternate red and yellow color. Perform testing on the application.

Major Equipment:

Computer systems having following minimum technical configurations

Processor:i3 or i5 or higher

RAM : minimum 4 GB

HDD : 1 TB

Internet and wifi connectivity

Licence Window/Linux operating system

List of Open Source Software/learning website:

nptel.ac.in