

NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	Master of Computer Application (2-Years Programme)
Course Code:	3MCA302
Course Title:	Mobile Application Development Technologies
Course Type:	Core
Year of Introduction:	2021-22

Credit Scheme

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Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. apply the concepts of mobile technologies in developing various applications
2. utilize various tools and technologies to create mobile applications
3. design the data centric applications for mobile devices
4. develop multi-platform applications for mobile devices

Syllabus:

Unit	Syllabus
Unit-I	Introduction: Introduction to Mobile application development technologies, development Environment, Issues of Mobile application development, Building and Debugging on Multiple Platforms, Mobile Web to Mobile Applications.
Unit-II	User Interfaces: Designing the Right UI for Mobile Devices, Working with User Interface with JQuery mobile.
Unit-III	Mobile application Development Components: Application, Activity, Intents and Services Managing a Cross-Platform Codebase, HTML5 APIs and Mobile JavaScript CSS3: Transitions, Transforms and Animation.
Unit-IV	Storing and Retrieving Data: Synchronization and Replication of Mobile Data, Storing and retrieving data from SQL Lite, Working with a Content Provider, Reading and Writing to Contacts
Unit-V	Communications via Network and the Web: Communications Model, Android Networking and Web Telephony, Wireless Connectivity and Mobile Apps, Android Telephony. Notifications and Alarms: Performance and Memory Management, Android Notifications and Alarms.
Unit-VI	Graphics: Performance and Multithreading , Graphics and UI Performance , Android Graphics, Android Multimedia, Accessing Device Sensors, Accessing Camera, Data and Files, working with Videos, Images and Audio.
Unit-VII	Mobility and Location Based Services: Working Offline Sync and Caching, Deploying Apps, Performance Best Practices, Android Field Service App. Multi-platform mobile application development technology: Introduction to React Native, React Native UI Elements and Redux, React Native Alerts, notifications, and database connectivity.

Self-Study: The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

- Suggested Readings/References:
1. Reto Meier, Professional Android 4 Application Development, Wrox Publication
 2. B.M. Harwani, Android Programming Unleashed, Sams Publishing
 3. Greg Nudelman, Android Design Patterns: Interaction Design Solutions for Developers, John Wiley & Sons
 4. Wei-Meng Lee, Beginning Android 4 Application Development, Wrox Press
 5. Jonathan Simon, Head First Android Development, O'Reilly Media

Suggested List of Experiments:	Sr. No.	Title	Hours
	1	To configure and understand the Android structure and IDE tool with Android Studio. Description: Make sure you have installed at least 2 APIs of android and run Hello World program on virtual and real device.	02
	2	To design and develop basic level calculator which include input items from user and perform operations like: addition, subtraction, multiplication, division etc. and display the results to the user.	04
	3	To develop an application by using list view and spinner view to list out some items on screen by selecting any of the item's system display complete information about that item. Also show addition and deletion of the items from the spinner view.	04
	4	To create fragment activity with swipe control in your application	04
	5	To implement concepts of Android Components – Intent To show Communication between two Activities: In first Activity take two input from user send these two numbers or strings via intent to second activity, perform the user defined operations on these two numbers/strings in second activity. Now sent back to first activity and show the results to the user on first activity.	04
	6	To implement a Database in Android - using SQLite (Local Database) To Design a database application which have following functionalities: a) Implement a database-oriented application for mobile: Create a database, create minimum two tables, now show the following operation: i) Addition	06

of records ii) Updating of records, iii) Deletion of records iv) retrieving of records based on some criteria searching of a records)

- b) Show the Navigation of records through first, last, previous, next operations.
- 7 To implement the Notifications and Broadcast receiver To create a user defined notification for some broadcast event occurred. (either system event or user defined events you can consider) 04
- 8 To implement various Android Components – content provider To implement a content provider app which retrieve the contact details of the mobile and able to add new contact also. 04
- 9 To design a camera application which: Uses the live camera and design component module to authenticate the user based on his signature and photograph uploaded during the registration and based on this allow user to perform the voting. 04
- 10 To use Google map and GPS API: 04
To design an app which include the advance feature, where user will get all the information regarding the candidate information stored in a database as soon as he will travel to different areas using Google map and GPS API.
- 11 To demonstrate Parsing (1): design a app which uses JSON Parsing (retrieving data from a server) for an application to fetch data from remote server to local system. 04
- 12 To demonstrate Parsing (2): design a app which uses XML Parsing (retrieving data from a server) for an application to fetch data from remote server to local system. 04
- 13 To implement Animation To design an app which implement animated welcome activity of your application which show some kind of animation using multithreading concept. 04
- 14 To design a React Native powered Android apps: A basic counter with buttons to increment and decrement the counter 04
- 15 To design a React Native powered Android app: A generic login page with email id as user-id, and password. 04

Suggested Case List: -NA-