



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Computer Applications

Level: PG

Course / Subject Code: MC03094031

Course / Subject Name : Mobile Application Development

w. e. f. Academic Year:	2025-26
Semester:	3
Category of the Course:	Core Courses

<b>Prerequisite:</b>	Knowledge of the Core Java Programming, database concepts
<b>Rationale:</b>	Smartphones and mobile applications have grown in popularity in recent years. This trend is expected to continue, resulting in an increased demand for professionals who can create mobile applications. Android mobile application development is a relevant and important topic for computer applications students because it allows them to apply their programming skills and knowledge to create real-world applications. The course provides students with hands-on experience in developing mobile applications using Android. This is essential for students to be able to apply the concepts they have learned in a real-world setting. This course will help students to build core competencies in mobile application development with relevant skills and knowledge, practical experience, and career opportunities in a growing and dynamic industry.

## Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Describe various concepts of mobile programming that make it unique from programming for other platforms.	UN
02	Create, test and debug Android application by setting up Android development.	CR
03	Demonstrate methods in storing, sharing and retrieving data in Android applications.	AP
04	Use rapid prototyping techniques to design and develop sophisticated mobile interfaces.	CR
05	Create interactive applications in android using databases with multiple activities including audio, video and notifications and deploy them in marketplace.	CR

\*Revised Bloom's Taxonomy (RBT)

## Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Tutorial / Practical		
				ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150



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## Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	<b>Basics of ANDROID</b> Introduction to ANDROID: ANDROID SDK Features, Introduction to Development Features Developing for ANDROID, developing for mobile and embedded devices, ANDROID development tools Creating Applications using ANDROID Basics of an ANDROID application, introduction to manifest, externalizing resources, application lifecycle, ANDROID activities	6	10%
2.	<b>Use Interface in Android</b> Building user interfaces Introduction to layouts, introduction to fragments, creating new views, introduction to adapters Intents and broadcast receivers Introduction to intents, creating intents and broadcast receivers Using Internet resources Downloading and parsing internet resources, using the download manager, using internet services.	9	25%
3.	<b>Working with Data in Android</b> Files, saving state and preferences Creating, saving and retrieving share preferences, including static files as resources, working with the file system <b>Database and content providers</b> Introducing ANDROID databases, content values and cursors, working with SQLite databases, creating content providers, using content providers, native ANDROID content providers. <b>Working in background</b> Introducing services, using background threads, using alarms.	9	25%
4.	<b>Enhancing user experience</b> Introduction and addition of action bar, Creating and using menus and Action bars action menus, introducing dialogs, let us make toast, Introducing notifications, <b>Advanced User experience:</b> Designing for every Screen size and density, Introducing Android Text-to speech, Using speech recognition, Controlling Device vibration, Working with Animations, Enhancing your views, Advanced Drawable resources, Copy, paste and the clipboard.	9	15%
5.	<b>Advanced Android Audio, video and using the camera:</b> Playing audio and video, manipulating raw audio, using camera to take pictures, recording video, adding media to media store <b>Telephony and SMS:</b> Hardware support for telephony, using telephony, introducing SMS and MMS	9	15%
6.	<b>Publishing your App:</b> Monetizing, promoting and distributing the	3	10%



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	applications, Signing and publishing applications, distributing applications, introduction to monetizing applications		
	<b>Total</b>	<b>45</b>	<b>100</b>
7.	<b>Web Services (Only for implementation in lab)</b> <b>Introduction, Web services Types, Consuming Web Services, Performance Case Study:</b> Simple Android Web service, How to call Java web services in Android, Android JSON or XML web services, Authenticate users using web service	-	-

### Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
10	30	30	10	10	10

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

### References/Suggested Learning Resources:

#### (a) Books:

1. Lauren Darcey and Shane Conder, "Android Wireless Application Development", Pearson Education, 2nded.(2011)
2. Mark L Murphy, "Beginning Android", Wiley India Pvt Ltd (2009)
3. Sayed Y Hashimi and Satya Komatineni, "ProAndroid", Wiley India Pvt Ltd (2009)

#### (b) Open source software and website:

1. <https://developer.android.com/index.html>
2. Android Developer Fundamental Course by Google and Advance Android Developer Course by Google (<https://developer.android.com/courses>)

### Suggested Project List, if any:

S. No.	Practical Outcomes (PrOs)	App rox. Hrs.
1	Set-up of Android development environment, managing AVD and understanding its various components.	02
2	Understanding of Various Components available in Android Application	02
3	Develop a "Hello World" Application in Android and understand the structure of an Android Application	02



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4	Develop Android Application to demonstrate methods of Activity Life Cycle.	02
5	Design Android Activities using LinearLayout, RelativeLayout, GridView, FrameLayout, and ConstraintLayout	06
6	Design various Activities using different Layouts and available Widgets(Text View, EditText, Button, RadioButton, CheckBox, ImageButton, ToggleButton, TimePicker, DatePicker, ProgressBar, ImageView) to make the user-friendly GUI.	04
7	Develop code to demonstrate different ways of Handling different events (onClick, onLongClick etc.) over Button, EditText etc. to perform action in Android application at run-time.	04
8	Develop code to demonstrate Event handling of CheckBox and RadioButton selection.	02
9	Develop code to navigate between different activities and pass the data from one activity to other activity using Intent.	02
10	Develop an android application to store data locally using Shared Preferences and access-modify in different activities.	02
11	Develop the code to implement the ListView and the Spinner views, perform add, update, remove items operations and implement the item selection event handling over ListView and Spinner for appropriate example.	04
12	Develop the code to manage Permission using Manifest file and run time from Activity, and toggle state of WiFi and Bluetooth.	02
13	Develop android applications to demonstrate user interaction with the application using Options Menu, Context Menu and Popup Menu.	04
14	Develop Android Applications to demonstrate different Alert Dialogs and the Custom Dialog.	04
15	Develop Android Application for local database connectivity and performing basic database operations (select, insert, update, delete) using SQLiteDatabase and SQLiteOpenHelper Classes	04
17	Develop an Android Application to demonstrate the use of RecyclerView and CardView for displaying list of items with multiple information	04
18	Develop a simple application to display “Hello <Application Name>” using Kotlin	02
19	Develop an android application using Kotlin having a Button “Click” and upon clicking on that Button a Toast message “Button Clicked” should be displayed on screen through Toast Message	02
20	Publish an Android Application on Play Store	02



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**Note:** More Practical Exercises can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.

## CO- PO Mapping:

Semester 3	Course Name : Mobile Application Development							
	POs							
Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	3	3	1	2	1	2
CO2	2	3	2	2	1	2	-	2
CO3	1	3	2	2	2	2	-	2
CO4	2	1	2	3	2	1	-	2
CO5	2	2	1	2	1	2	1	3

Legend: '3' for high, '2' for medium, '1' for low and '-' for no correlation of each CO with PO.

Note: The CO-PO mapping is indicative; the institute/faculty member can change as required.

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