GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering
Subject Code: 3170726
Semester – VII

Subject Name: Mobile Application Development

Type of course: Elective

Prerequisite: Basic Knowledge of OOPS concept and Core java

Rationale: There is a growing number of people who uses smartphones and tablets and hence **mobile app development** has ability to access a large segment. Android has an advantage of being open source. This course will enable the students to develop mobile application using Android.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
2	0	2	3	70	30	30	20	150

Sr. No.	TOPICS	Hrs.
1	**Pre Requirements (Basic Knowledge of OOPS concept and Core java)**	1
2	**Fundamental :** Software Engineering with SDLC, Flow chart, DFD, SQL database	1
3	**Android OS** Introduction to Android, Android System with Architecture, Android Architecture, Development with Android – Platforms, Tools, Versions, Setup Android Environment, Say Hello to Android Application, Building Blocks of Android Application, Work with Activity, Activity Lifecycle, Intents Fragments, Fragment Lifecycle	2
4	**Android UI And Component using Fragments** Create Android UI, Working with Layout, Create Custom Layouts, Work with UI Components and Events, Material Design Toolbar, Tab Layout, Recycler View and Card View, Android Menus	5
5	**Database Connectivity** Storage in Android, Shared Preferences, Shared Preferences Layout, Android Requesting Permission at run time (Android 6.0), Work with SD Card and Files, Database in Android, Realm-No SQL Database	5
6	**Applicability to Industrial Projects** Web services and Parsing, JSON Parsing, Access web data with JSON, Connect to Web Services, Using Async Task & Third Party Library : Retrofit	4
7	**Advanced Android Development** Google Map, Location Service and GPS, Creating Google Map, Work with Location, Location service with Location Manager, Find Current Location, Geo coding	5

	Graphics and Animation, Work with 2D Graphics, Bitmap, Animation, Frame Animation, Tween Animation, View Animation, Multimedia in Android, Play Audio Files, Play Video Files Work in Background, Services, Notification Services, Broadcast Receiver Introduction to Firebase with simple CRUID Operation	
8	**Work with android system** Text to Speech, Camera, Taking Picture with Camera, Manage Bluetooth Connection, Monitor and Manage Wi-Fi, Accelerometer Sensor & Gyroscope. **Development and Deployment** Delvik Debug Tool, Logcat, Emulator Control, Device Control, Work with ADB, Connect Real Devices, Execute Application on Real Device, Publish your Application	5
	Total	28

Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	30	60	-	-	-

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Course Outcomes: Students will be able to

Sr. No.	CO statement	Marks % weightage
CO-1	Understand Android architecture, activities and their life cycle.	10
CO-2	Apply the knowledge to design user interface using Android UI And Component	40
CO-3	Manage system database, remote database operations using web services and Firebase	20
CO-4	Apply knowledge of map, location services, Graphics, android system and background services	25
CO-5	Publish and distribute Android Application	05

Books:
1) Android Application Development Black Book by Pradeep Kothari, DreamTech
2) Beginning Android 4 Application Development by Wei Meng Lee, Wrox
3) Android Wireless Application Development By Lauren Darcey, Shane Conder, Pearson U

List of Open Source Software/learning website:
1. https://developer.android.com/

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List of Practical:

Sr	Practical
1	Design Login activity and implement control events : Use EditText, Checkbox and Buttons
2	Implement Practical 1 using following layouts: 1. Linear Layout 2. Relative Layout 3. Table Layout
3	Create Activities & implement following 1. Implicit intent 2. Explicit Intent 3. StartActivityForResult
4	Implement activity Lifecycle and State Callbacks
5	Practical : Use an Options Menu
6	Create a Recycler View and list the details of student using following fields: 1. Name 2. Address 3. Photo (Image) 4. Delete (Button Operation)
7	Practical: Theme, Custom Styles, Drawables
8	Practical: Save user data in a database
9	Use an AsyncTask to access remote database (make a use of simple PhP Web service)
10	Use Retrofit to access remote database (make a use of simple PhP Web service)
11	Practical : Use Firebase to perform CRUID operation
12	Practical: BroadcastReceiver
13	Practical: Notifications
14	Practical: Get and Save User Preferences
15	Practical : make a use of android system
16	Using location service get the current location and display in TextView
17	Practical : Display the use of animations