SANKALCHAND PATEL UNIVERSITY
।। अथातो ज्ञानजिज्ञासा ।।

Faculty of Engineering and Technology

Bachelor of Technology
Effective from Academic Year: 2018-19

Branch Name:	Computer Engineering / Information Technology
Semester/Year:	Semester VI / Third Year
Subject Title:	Mobile Application Development using Android
Subject Code:	1ET1030606
Pre-requisite:	Basic knowledge of Java Programming

Course Objective:

This course will help student to Understand Android development and its future perspective and growth in the marketplace. This will also help student to Implement Data and Knowledge Management and use of Various android Devices. The subject offers hands on experience in Android development.

Teaching Scheme (Hours per week)				**Evaluation Scheme (Marks)**				
				Theory (Marks)		**Practical (Marks)**		
Lecture (L)	**Tutorial (T)**	**Practical (P)**	**Credit**	**University Assessment**	**Continuous Assessment**	**University Assessment**	**Continuous Assessment**	**Total (Marks)**
03	-	02	04	70	30	30	20	150

Subject Contents

Sr. No	**Topic**	**Total Hours**	**Weight (%)**
01	**Getting Started With Android Programming**: What Is Android, Android Versions, Features of Android, Architecture of Android, Android Devices in the Market, Installing the Android SDK Tools and Configuring the Android SDK Manager, Eclipse, Android Development Tools (ADT),Creating Android Virtual Devices (AVDs),Creating Your First Android Application	05	15%
02	**Activities, Fragments, and Intents:** Understanding Activities, Linking Activities Using Intents, Fragments, Calling Built-In Applications Using Intents and Notification	05	15%
03	**Getting To Know The Android User Interface:** Understanding the Components of a Screen, Adapting to Display Orientation, Managing Changes to Screen Orientation, Utilizing the Action Bar, Creating the User Interface Programmatically, Listening for UI Notifications	10	20%
04	**Designing Your User Interface With Views:** Views, Pickers, List View, Special fragments Handling Pictures, Menus	07	10%
05	**Data:** User preferences, data files, creating and using databases, Content Providers ,Sharing data in android.	04	10%
06	**Web Service:** Consuming Web service , Consuming and parsing JSON data, Socket programing	03	10%

07	**Android Services:** Creating Services, Inter service communication and activity and threading, Triggering, scheduling and optimizing background tasks	03	15%
08	**Publishing Android Application:** Preparing for publishing m Deploying APK on android market	02	5%

Course Outcome:

After successful completion of the course, student will be able to:

Design and develop the application based on Android platform,

Reference books:

1. Beginning Android™ 4 Application Development by Wei Mend Lee, wrox
2. Professional Android 2 Application Development Reto Meier Wiley India Pvt Ltd
3. Beginning Android Mark L Murphy Wiley India Pvt Ltd 3
4. Professional Android Sayed Y Hashimi and Satya Komatineni Wiley India Pvt Ltd

List of Experiments (Reference):

1 Install Android Studio, Hello World, Logging
- Install Android Studio.`
- Create a virtual device.
- Create and Run Hello World on emulator and device.
- Explore project layout.
- Generate and view log statements.
- Explore manifest file.

2 Practical: Make Your First Interactive UI
- Add Views and UI elements in Layout Editor to the app's home screen.
- Edit layout XML.
- Add click behavior to a button (show a toast).
- Change the UI through a button click.
- Write a method to use string resource to define a message to appear in the UI.
- Experiment with using different layouts.
- Explore other UI Elements in the Layout Manager.

3 Practical: Working with TextView Elements
- Use a scroll view for text with minor HTML formatting

4 Practical: Learning Resources
- Get answers from android.developer.com.
- Create new projects with different templates.
- Create a new project based on a sample in the SDK.
- Find out how to add a launcher icon for your app.
- Find out the most popular Android OS in India.

5 Practical: Create and Start Activities
- Create a new activity and layout
- Start the new activity from an existing activity with an explicit intent
- Pass user-entered information from one activity to the other
- Pass information back to the main activity

9 Practical: Lifecycle and State Callbacks
- Add Lifecycle callbacks
- Save and restore instance state

7 Practical: Start Activities with Implicit Intents
- Send an implicit intent to start an activity (open web site)
- Send an implicit intent to start an activity (open location)
- Use an intent filter to allow other apps to start an activity in your app
- Use ShareCompat.IntentBuilder

8 Practical: Using the Debugger

9 Practical: Testing your code

10 Practical: Use support library

11 Practical: Use Keyboards, Input Controls, Alerts, and Pickers

- Experiment in your app with different keyboards for user input, spelling suggestions, and auto-capitalization.
- Add a spinner input control for selecting one value out of a set of values.Lecture hours:
- Create new app to show an alert, and record the user's selection (OK or Cancel). MOVE TO CONCEPT.
- Update app to show date and time pickers and record the user's selections.

12 Practical: Use an Options Menu and Radio Buttons

- Set up an options menu and overflow menu
- Add items to the option (overflow) menu.
- Add radio buttons for user selection.
- Add Up navigation to the app bar.

13 Practical: Create a Recycler View

- Create an activity that displays data in a RecyclerView.
- Make the items in the list clickable
- Add a floating action button to add items to the list

14 Practical: Theme, Custom Styles, Drawables

- Define and use a theme
- Define and use a custom style that uses a drawable

15 Practical: Add a FAB and Cards

- Create an app that uses a Floating Action Button (FAB)
- Add an activity that uses cards. Optionally, style the cards.
- Customize your app's theme and styles to use Material Design styles and colors.

16 Practical: Put yourself in the Users shoes

- Test your app for accessibility, using Talkback and Explore by Touch. Switch to monochrome color space
- Put in earplugs, can you still use your app?
- Wear the darkest glasses you can find, can you still use your gloves?
- Put on gloves, can you still use your app?
- How would you make one of the apps you have written so far more accessible?

17 Practical: Implement Localized Strings

- Create localized strings in your app
- Test by changing default language

18 Practical: Use Espresso to test your UI

- Use Espresso to Test Your UI

19 Practical: Create an AsyncTask

- Create a simple AsyncTask to do work in the background

20 Practical: Google APIs Explorer, JSON, Books API

- Use the Books API in the Google APIs Explorer to investigate request format and JSON response format
- Create a new app that uses the Books API and AsyncTask to search for the author of a book.
- Write the code to parse the response and extract and display the relevant information
- Debug errors when the Internet permission is missing
- Add the missing permission to the Android Manifest.
- Verify your fix by running and testing your app.

21 Practical: Use AsyncTaskLoader

- Use AsyncTaskLoader instead of AsyncTask to show book search results in a RecyclerView

22 Practical: BroadcastReceiver

- Create an app with a BroadcastReceiver

23 Practical: Notifications

- Trigger a Notification
- Add Actions to your Notification

24 Practical: Alarm Manager

- Implement an alarm manager

25 Practical: Job Scheduler

- Use JobScheduler to do background updates

26 Practical: Firebase Job Dispatcher

27 Practical: Get and Save User Preferences

- Implement Settings menu to allow users to enter preferences
- Implement code to retrieve and user user preferences

28 Practical: Save user data in a database

- Create an app that allows users to enter notes
- Save the notes in a SQLite database Create an app that stores data in an SQL database.
- Display the data in a RecyclerView.
- Allow users to add, delete, and edit data items.

29 Practical: Querying and Searching a Database

- Use the content resolver to add data to the database