SARDAR VALLABHBHAI PATEL EDUCATION SOCIETY'S
R. N. G. PATEL INSTITUTE OF TECHNOLOGY - RNGPIT
An Autonomous Institute u/s UGC Act 1956
Approved by AICTE & affiliated to Gujarat Technological University
Bardoli - Navsari Road, At: Isroli (tajpore), Po: Afwa, Tal: Bardoli, Dist: Surat, Pin - 394620
Phone: 95129 00457, 95129 00458 • Email: Info@rngpit.ac.in • Website: www.rngpit.ac.in

Program Name: Integrated M.Sc. (IT)
Level: Post Graduate
Branch: Information Technology
Subject Code: 1BS403
Subject Name: Mobile Application Development Using Android

w. e. f. Academic Year:	2025
Semester:	4
Category of the Course:	Major Course

Prerequisite:	Basic understanding of programming concepts and GUI elements.
Rationale:	This course provides students with essential knowledge of Android application development while highlighting UI/UX principles to help them create efficient, intuitive, and user-centric mobile applications.

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			**C Total Credits L+T+ (PR/2)**	**Assessment Pattern and Marks**				**Total Marks**
L	**T**	**PR**	**C**	**Theory**		**Tutorial / Practical**		
				SEE (TH)	IAT	CCE	SEE (P)	
2	0	4	4	70	30	20	30	150

Where SEE: Semester End Examination, IAT: Internal Assessment Test, CCE: Continuous and Comprehensive Evaluation

Course Content:

Unit No.	Content	No. of Hours	% of Weightage	Corresponding CO(s)
Section A				
1.	**Introduction to Mobile Technologies & Development Platforms** 1.1. Characteristics of mobile OS vs desktop OS 1.2. Mobile platforms: Android, iOS, Windows 1.3. Android architecture and kernel basics 1.4. Evolution of Android versions 1.5. Android development tools 1.6. Android deployment process and publishing essentials	3	10%	CO1
2.	**Core Components of Mobile Applications** 2.1. Activity lifecycle 2.2. Screen components 2.3. Intents 2.4. Fragments 2.5. Resources	6	20%	CO2
3.	**Design Elements and UI Components** 3.1. Introduction to UI design 3.2. Layouts 3.3. User input elements 3.4. Navigational elements 3.5. Informational elements 3.6. Data representation 3.7. Dialogs 3.8. Menus	6	20%	CO3
Section B				
4	**Services and User Alerts** 4.1. Background services 4.2. Long-running and repeated services 4.3. SMS and Notification Manager 4.4. Alerts 4.5. Call and Location Services	3	10%	CO4

5.	**Working with Data Storage Mechanisms** 5.1. Shared Preferences 5.2. File handling 5.3. SQLite database: CRUD operations, helper class, table operations 5.4. Content providers	**6**	**20%**	**CO5**
6	**Working with Multimedia** 6.1. Multimedia APIs and raw resources 6.2. Camera usage and configuration 6.3. Animations: frame-by-frame and tweened 6.4. Audio, video, and voice recording operations	**6**	**20%**	**CO6**
	Total	**30**	**100%**	

Course Outcome:

After Completion of the Course, the Student will able to:

No	Course Outcomes	Bloom's Taxonomy Alignment
01	Explain mobile technologies, mobile architecture, and development environments.	U
02	Understand components, life cycle, intents, fragments, and resource management.	U
03	Design user interfaces using layouts and UI elements.	A
04	Utilize background services and notifications.	A
05	Apply suitable data storage mechanisms.	A
06	Integrate multimedia elements.	A

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks(%)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	**40**	**40**	**-**	**-**	**-**

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) Text Books:

1. Lee, W.-M. (2018) Beginning Android Application Development. 4th edn. New Delhi: Wiley India.
2. DiMarzio, J.F. (2020) Beginning Android Programming with Android Studio. 2nd edn. Hoboken: Wiley.
3. MacLean, D., Komatineni, S. and Allen, G. (2018) Pro Android. 5th edn. New York: Apress.

(b) Reference Books:

1. Meier, R. (2018) Professional Android. 4th edn. Indianapolis: Wrox.
2. Phillips, B., Stewart, C. and Marsicano, K. (2019) Android Programming: The Big Nerd Ranch Guide. 4th edn. Boston: Pearson Education.
3. Gargenta, M. and Nakamura, M. (2015) Learning Android. 2nd edn. Sebastopol: O'Reilly Media.
4. Burnette, E. (2016) Hello, Android: Introducing Google's Mobile Development Platform. 5th edn. Dallas: Pragmatic Bookshelf.

(c) Open source software and website:

1. developer.android.com (Official Android Documentation)
2. material.io (UI Guidelines)
3. nptel.ac.in – Mobile Application Development Lectures
4. pcloudy.com – Types of Mobile Applications

Suggested Course Practical List:

Sr. No.	Name of Practical
1	Create a sample Android project and project structure.
2	Design a Login screen using Linear and Relative Layouts.
3	Implement Explicit and Implicit Intents.
4	Create Fragments and implement fragment communication.
5	Implement different UI elements (EditText, RadioButton, CheckBox, and Spinner).
6	Create a RecyclerView with a custom adapter.
7	Implement DatePicker, TimePicker, AlertDialog & ProgressDialog.
8	Store and retrieve values using Shared Preferences.
9	Perform file read and write operations in internal storage.
10	Implement SQLite CRUD operations with a helper class.
11	Access Call Logs or Contacts using Content Providers.
12	Create and manage background services.
13	Implement Notifications and Alarm Manager.
14	Integrate audio, video, and camera functions into a social media app.
15.	Create a mobile application that displays a splash screen with a logo for 3 seconds and then automatically navigates to the home screen.

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