PG DEPARTMENT OF COMPUTER SCIENCE				*CLASS: I M.Sc.* Computer Science				
Sem	**Course Type**	**Course Code**	**Course Title**	**Credits**	**Contact Hours/week**	**CIA**	**Ext**	**Total**
II	Elective 2	21P2DME2(E)	Android Programming	4	5	25	75	100

Nature of Course				
Knowledge and skill	✓		Employability oriented	
Skill oriented			Entrepreneurship oriented	

Course Objectives

1. To understand the basics of activities and multiple layouts.
2. To understand the usage of menus in designing widgets.
3. To explore the App architecture with fragments.
4. To acquire knowledge in handling database, files and notifications.
5. To impart graphics and animation process.

Unit	Content	Hrs	K-Level	CLO
I	**Activities and Layout:** Introduction-Declaring an Activity- Starting a new activity with an intent object-Switching between activities-Passing data to another activity-Returning a result from an activity-Saving an activity's state-Storing persistent activity data-Understanding the activity life cycle. **Layouts:** Introduction –Defining and inflating a layout- Using Relative layout- Using linear layout- Creating tables- Table Layout and Grid Layout-Recycler View replaces List View – Changing layout properties during runtime.	15	Up to K2	1
II	**Views, Widgets and Styles:** Introduction- Inserting a widget into a layout-Using Graphics to show button state-Creating a widget at runtime-Creating a custom component-Applying a style to a view-Turning a style into a theme-Selecting a theme based on the Android version. **Menus and Action Mode:** Introduction-Creating an options menu-Modifying menus and menu items during runtime-Enabling Contextual Action Mode for a view-Creating a pop-up menu.	15	Up to K3	2
III	**Fragments and System UI:** Introduction-Creating and Using a Fragment-Adding and Removing Fragments during runtime-Passing data between Fragments. **Home Screen Widgets, Search and the System UI:** Introduction- Creating a shortcut on the Home Screen-Creating a Home Screen widget- Adding Search to the Action Bar-Showing your App full-screen	15	Up to K3	3

IV	**Data Storage:** Introduction-Storing simple data-Read and Write a text file to internal storage-Read and Write a text file to external storage-Including resource files in your project-Creating and Using an SQLite database-Accessing data in the background using a Loader-Accessing external storage with scoped directories in Android N. **Alerts and Notifications:** Displaying a message box with AlertDialog- Displaying a progress dialog-Making a Flashlight with a Heads-up Notification.	15	Up to K4	4
V	**Graphics and Animation: Using the Touchscreen and Sensors:** Listening for click and long-press events- Pinch-to-zoom with multi-touch gestures- Reading sensor data-using Android Sensor Framework events- Reading device orientation. **Graphics and Animation**: Introduction-Scaling down large images to avoid Out of Memory exceptions-A transition animation-defining scenes and applying a transition- Creating a Compass using sensor data and RotateAnimation-Creating a slideshow with ViewPager-Creating a Card Flip Animation with Fragments-Creating a ZoomAnimation with a Custom Transition-Displaying Animated image (GIF/WebP) with the new ImageDecoder library- Creating a Circle image with the new ImageDecoder.	15	Up to K4	5

Book for Study

"Android 9 Development" by Rick Boyer, Cookbook, 3rd Edition, Packet Publishing ltd 2018.

Chapters

Unit-1- Chapter 1, 2
Unit 2- Chapter 3, 4
Unit-3- Chapter 5, 6
Unit-4- Chapter 7, 8
Unit-5- Chapter 9, 10

Books for Reference

1. "Android Programming for Beginners" by John Horton- 1st Edition, Packt Publishing.
2. "Android Programming Unleashed" by B.M.Harwani – Pearson Education 2013.
3. Android Programming by Bill Phillips and Chris Stewart – O'Reilly Media Publishers, Third Edition.

Web Resources

1. https://www.tutorialspoint.com/android/index.htm
2. https://www.w3adda.com/android-tutorial
3. https://www.w3points.com/android-tutorial/
4. https://sites.google.com/site/cse4707/file-cabinet

Rationale for Nature of the course

- Build native interfaces, open source, expressive and flexible UI and native performance.

Activities on Knowledge and Skill

- Practice to write Application coding
- Group Discussion
- Seminar

Pedagogy

Chalk and talk, Materials, PPT, Assignment, Seminar, Problem solving, Group discussion, Interaction and Demonstration.

Course Designer(s) Name

1. Ms. S.Saranya

2. Mrs. R. Lakshapriya

Lesson Plan

UNIT	Topics to be covered	Hours	Mode
I	Declaring an Activity- Starting a new activity with an intent object. Layouts.	7 8	Lecture, PPT Lecture, PPT
II	Inserting a widget into a layout-Using Graphics to show button state Menus and Action Mode	8 7	Lecture, PPT Lecture
III	Creating and Using a Fragment. Home Screen Widgets, Search and the System UI.	7 8	Lecture Lecture, PPT
IV	Data Storage. Creating and Using an SQLite database. Alerts and Notifications.	5 5 5	Lecture Lecture, Seminar Lecture, PPT
V	Using the Touch screen and Sensors. Graphics and Animation. Creating a Card Flip Animation with Fragments.	4 6 5	Lecture, GD Lecture,PPT Lecture,PPT, Assignment

Course Learning Outcomes

On the successful completion of the course, the students will be able to

CLOs	COURSE LEARNING OUTCOMES	K -Levels
CLO 1	Develop various Android applications related to layouts and pass information between multiple activities.	**Up to K2**
CLO 2	Describe how to design simple GUI applications, use built-in widgets and components.	**Up to K3**
CLO 3	Discuss the usage of fragments in android platform. Design and develop user interfaces for the Android platform.	**Up to K3**
CLO 4	Design Android applications which make use of internal storage.	**Up to K4**
CLO 5	Rate the importance of animation techniques and graphics with simple graphical objects on a display screen.	**Up to K4**

Mapping of CLOs with POs

CLOs / POs	PO1	PO2	PO3	PO4	PO5	PO6
CLO 1	2	2	1	1	1	2
CLO 2	2	2	1	2	1	2
CLO 3	2	2	1	2	1	2
CLO 4	2	2	2	2	3	2
CLO 5	2	2	3	3	3	2

(3 –Advanced Application, 2 – Intermediate Level, 1- Basic Level)

Continuous Internal Assessment (CIA): 25 Marks

Components	Marks	K Level
Test (Average of two tests) (Conducted for 40 marks and converted into 10 marks)	10	(Refer Next Table)
Assignment	5	K4
Seminar	5	K4
Quiz	5	K4
Total	25	

Learning Outcome Based Education & Assessment (LOBE)

Formative - Blue Print – Model for Android Programming
Articulation Mapping – K Levels with Courses Learning Outcomes (CLOs)

Internal	CLOs	K- Level	Section A		Section B (Either/or Choice)	Section C (Open Choice)
			Short Answers			
			No. of Questions	K- Level		
CIA I	CLO 1	Up to K2	2	K2	2(K1&K1)	2(K2)
	CLO 2	Up to K3	3	K2	2(K3&K3)	1(K3)
CIA II	CLO 3	Up to K3	2	K1	2(K2&K2)	2(K3)
	CLO 4	Up to K4	3	K3	2(K4&K4)	1(K4)
Question Pattern (CIA I & II)	No. of Questions to be asked		5		4	3
	No. of Questions to be answered		5		2	2
	Marks for each question		2		5	10
	Total Marks for each section		**10**		**10**	**20**

- *CLO5 will be allotted for individual Assignment which carries five marks as part of CIA component.*

Distribution of Section-wise Marks with K Levels *

K Levels	Section A (No Choice)	Section B (Either/or)	Section C (Open Choice)	**Total Marks**	% of Marks without choice	Consolidated %
K1	-	10	-	**10**	16.67	**67**
K2	10	-	20	**30**	50	
K3	-	10	10	**20**	33.33	**33**
K4	-	-	-	**-**	-	**-**
Total Marks	**10**	**20**	**30**	**60**	**100**	**100**

K Levels	Section A (No Choice)	Section B (Either/or)	Section C (Open Choice)	**Total Marks**	% of Marks without choice	Consolidated
K1	4	-	-	**4**	6.67	**24**
K2	-	10	-	**10**	16.67	
K3	6	-	20	**26**	43.33	**43**
K4	-	10	10	**20**	33.33	**33**
Total Marks	**10**	**20**	**30**	**60**	**100**	**100**

Learning Outcome Based Education & Assessment (LOBE)

Summative - Blue Print – Model for Android Programming
Articulation Mapping – K Levels with Courses Learning Outcomes (CLOs)

UNIT	CLOs	K- Level	Section A		Section B		Section C (Either/or Choice)	Section D (Open Choice)
			MCQs		Short Answers			
			No of Questions	K - Level	No of Questions	K - Level		
1	CLO 1	Up to K2	2	K1 & K1	1	K2	2(K1&K1)	1(K2)
2	CLO 2	Up to K3	2	K2 & K3	1	K2	2(K3&K3)	1(K3)
3	CLO 3	Up to K3	2	K2 & K3	1	K1	2(K2&K2)	1(K3)
4	CLO 4	Up to K4	2	K3 & K4	1	K3	2(K4&K4)	1(K4)
5	CLO 5	Up to K4	2	K3 & K4	1	K1	2(K4&K4)	1(K4)
No. of Questions to be asked			10		5		10	5
No. of Questions to be answered			10		5		5	3
Marks for each question			1		2		5	10
Total Marks for each section			10		10		25	30

- K1 – Remembering and recalling facts with specific answers
- K2 – Basic understanding of facts and stating main ideas with general answers
- K3 – Application oriented – Solving Problems
- K4 – Examining, analyzing, presentation and make inferences with evidences

Distribution of Section – wise Marks with K Levels

K Levels	Section A (No Choice)	Section B (No choice)	Section C (Either/or)	Section D (Open choice)	Total Marks	% of Marks without choice	Consolidated
K1	2	4	10	-	**16**	13.33	**13%**
K2	2	4	10	10	**26**	21.67	**22%**
K3	4	2	10	20	**36**	30.00	**30%**
K4	2	-	20	20	**42**	35	**35%**
Total Marks	10	10	50	50	**120**	100	**100%**