

# B. V. Patel Institute of Business Management, Computer & Information Technology, UTU 2018

## B.C.A. 5th Semester 060060507- CC13 Fundamentals of Mobile Application Development

### Teaching Schedule

**Course Objectives:** To develop skills to describe mobile technologies, mobile environment and to develop Android application for mobile device using Android SDK, android application resource, application component, and Android APIs.

**Course Outcomes:** Upon completion of the course, students shall be able to

- CO1: Describe the different mobile technologies, mobile development platform and mobile GUI.
- CO2: Comprehend how Android applications works, their life cycle, Intents, fragments and resources.
- CO3: Design and develop useful Android applications with compelling user interfaces by using View, View Group, menu, and dialog elements.
- CO4: Use Android's APIs for data storage, retrieval, user preferences, files, databases, and content providers.
- CO5: Utilize the power of background services, notifications, and broadcast receiver.
- CO6: Use Android's communication APIs for SMS, telephony and location based API.

Unit	Sub Unit	No. of Lecture (Hour)	Topics	Reference	Teaching Methodology To be used	Evaluation Parameters
<b>1. Overview [04 Hours]</b>						
	1.1	1	Introduction to Mobile Technologies	WM#1, Page No:03 - 05	Discussion	
	1.2	1	Platform Architecture and Features		Presentation	
	1.3	1	Mobile Platform Versions	WM#1, Page No:02-03	Discussion	
	1.4		Development Tools for Mobile Application	WM#1, Page No:09-14	Chalk and talk	
	1.5	1	Anatomy of Mobile Application	WM#1, Page No:29 -33		
	1.6		Creating Virtual Device and Sample Application	<a href="https://developer.android.com/studio/run/managing-avds">https://developer.android.com/studio/run/managing-avds</a>		
<b>2. Core Components [08 hours]</b>						

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Information Technology, UTU 2018**

2.1	1	Activity life cycle	DM#2,Page No:44 - 50 WM#2, Page No:36-40	Video lecture	
2.2	1	Generating and Deploying Application file	WM#12, Page No:471-481	Demonstration	
2.3	3	Linking Activity using Intents	DM#2,Page No:56-61 WM#2, Page No:53-57, 59-68		Quiz
2.4	3	Calling built -in applications	WM#2, Page No:85-97		

**3. Resources and Designing Interface [12 Hours]**

3.1	1	Application Resource	DM#2,Page No:50-55 RM#3,Page No: 65-69	Demonstration	
3.2	2	Types of Layouts	DM#5,Page No:130-140 WM#3,Page No: 107-112 RM#4,Page No:98-100	Chalk and talk	Unit Test (Pr)
3.3	2	GUI Elements	DM#3,Page No:69-96 WM#4,Page No: 160-179,191-202 WM#5,Page No: 219- 230,243-249	Active Learning Activity	
3.4	2	Creating Dialog box in Application	DM#10,Page No:205-216 WM#4,Page No:179-191 WM#4, Page No:42-53 <a href="https://www.lynda.com/Android-tutorials/Android-Communicating-User/513591-2.html">https://www.lynda.com/Android-tutorials/Android-Communicating-User/513591-2.html</a>	Video Session & Hands-on	
3.5	3	Usage of Menu	DM#6,Page No:146-149 WM#5,Page No: 234-242 <a href="https://www.lynda.com/Android-tutorials/Android-Development-Essential-Training-Manage-Navigation-Events">https://www.lynda.com/Android-tutorials/Android-Development-Essential-Training-Manage-Navigation-Events</a>	Discussion and Demonstration	
3.6	2	Animation basics	DM#18,Page No:391-403 RM#11,Page No:442-446	Video	

**4. Data Persistence [10 Hours]**

4.1	3	User Preferences	DM#25,Page No:559-560 WM#6,Page No: 251-263 RM#7,Page No:221-223	Demonstration	
4.2	2	Internal Storage	DM#25,Page No:561-562 WM#6,Page No: 263-273 RM#7,Page No:246-248	Discussion and Hands on	
4.3	2	External	DM#25,Page No:562-562		

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			Storage	WM#6,Page No: 263-273 RM#7,Page No:246-248		
	4.4	3	Database management	DM#25,Page No:564-577 WM#6,Page No: 273-290 <a href="https://www.lynda.com/AndroidTutorials/Welcome/112584/121155-4.html">https://www.lynda.com/AndroidTutorials/Welcome/112584/121155-4.html</a>	Demonstration	Unit Test (Th)
<b>5. System Services [08 Hours]</b>						
	5.1	3	Standard Broadcast Actions	<a href="http://developer.android.com/reference/android/content/Intent.html">http://developer.android.com/reference/android/content/Intent.html</a> DM#16,Page No:343-346	Chalk and talk	
	5.2	1	Alarm Manager	DM#16,Page No:365-370 RM#9,Page No: 351-353 WM#8,Page No:321-324 RM#17,Page No: 713-715	Demonstration	
	5.3	2	SMS Manager	RM#9,Page No: 351-353 WM#8,Page No:321-324 RM#17,Page No: 713-715	Discussion and hands on	
	5.4	2	Notification Manager	DM#16,Page No:346-350, WM#2,Page No: 98-103	Demonstration	Section Test
<b>6. Media APIs [06 Hours]</b>						
	6.1	1	Using Media APIs	DM#20 ,Page No:451-452	Discussion	
	6.2	3	Multimedia audio content-Creating and Playing, Kill and Releasing Memory	DM#20,Page No:453-456	Presentation	Internal Exam TH+PR
	6.3	1	Playing Background Sounds	DM#20,Page No:464-465	Chalk and talk	
	6.4	1	Playing Video Content	DM#20,Page No:465-468	Demonstration	

### **Text Book:**

1. Dave MacLean, Pro Android 5, Apress.[DM]

### **Reference Book:**

1. Wei- Meng Lee, Beginning Android 4 Application Development, Wiley India Pvt Ltd. [WM]
2. Reto Meier, Professional Android 2 Application Development, Wiley India Pvt Ltd.[RM]
3. <https://developers.google.com/android/>[Note: Reference for location based API.
4. Lauren Darcey, Shane Conder, Android Wireless Application Development, Pearson.[LD]
5. Mark L Murphy, Beginning Android, Wiley India Pvt. Ltd.[MM]

**Note: # denotes chapter number.**

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## ❖ Course Objectives and Course Outcomes Mapping:

To make students to develop mobile application for mobile devices using resource, application component on mobile environment: C01, C02, C03, C04, C05

To make them utilize mobile development APIs: C06

## ❖ Course Units and Course Outcomes Mapping:

Unit No.	Unit	Course Outcome					
		C01	C02	C03	C04	C05	C06
1	Overview	✓					
2	Core Components	✓	✓				
3	Resources and Designing Interface	✓	✓	✓			
4	Data Persistence	✓	✓	✓	✓		
5	System Services	✓	✓	✓		✓	
6	Media APIs	✓	✓	✓	✓		✓

## ❖ Programme Outcomes:

P01: Proficiency in and ability to identify problems related to computer science as well as design and apply computational knowledge to solve them.

P02: Ability to design, develop, test and maintain system, component, product or process as per needs and specification.

P03: Understanding of professional and ethical role and responsibility.

P04: Recognition of the need for and ability towards life-long learning.

P05: Knowledge of programming languages, database systems, operating systems, software engineering, Web & Mobile technology and relevant modern issues along with strong project development skill.

P06: Ability to demonstrate the use of modern tools, models and languages to solve problems related to software development

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PO7: An ability to communicate effectively with a range of audiences.

❖ **Course outcome and programme outcomes mapping:**

	C01	C02	C03	C04	C05	C06
<b>PO1</b>	✓	✓	✓	✓	✓	✓
<b>PO2</b>	✓	✓	✓	✓	✓	✓
<b>PO3</b>	✓	✓	✓	✓	✓	✓
<b>PO4</b>	✓	✓	✓	✓	✓	✓
<b>PO5</b>	✓	✓	✓	✓	✓	✓
<b>PO6</b>	✓	✓	✓	✓	✓	✓
<b>PO7</b>						

❖ **Computing Environment:**

A student must have the following computing environment in laboratory and/or on his/her laptop and.

- ✓ Android SDK
- ✓ Android Studio V1.5.1

❖ **Modes of Transaction (Delivery):**

Unit No	Topic Detail	Teaching Approach	PO mapped
<b>3.3</b>	GUI Elements	Active Learning Activity (10 Minutes Paper) Students will be given a layout design covered in the lecture duration and will be ask to write source code for the layout in last 10 minutes. Source code will be review by teacher and remarks will be provided to students regarding their progress in the upcoming lecture.	<b>PO2,PO3,PO5</b>
<b>3.4</b>	Creating Dialog box in Application	Video Session& Writing Skill: Video Session: Student will list out the major class used for implementation, and its usage in layout.	<b>PO1,PO2, PO3,PO4, PO5,PO6</b>

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		Writing Skill: one definition will be given to them and write source code for the features used in the list out classes from the video session.	
<b>5.1</b>	Standard Broadcast Actions	Hands-On & Video Session: Video Session: Student will list out the major class used for implementation, and its usage in layout. Hands-On: One definition will be given to them to implement the list out features.	<b>P01,P02, P03,P04, P05,P06</b>

### Activities/Practicum:

The following activities shall be carried out by the students.

- ❖ Student shall develop project using Android SDK.
- ❖ Self-Study of following part of the syllabus shall be done by the students:
- ❖ Frame, ScrollView, ImageButton, RadioGroup, WebView, AutoCompleteTextView, TimePicker, ACTION\_BOOT\_COMPLETED, ACTION\_PACKAGE\_REMOVED

The following activities shall be carried out by the teacher.

- ❖ Discuss the purpose of Android and its market value.
- ❖ Demonstrate the use of Activity life cycle, GUI elements, SQLite, and Services.

### Number of Practical Problems in Journal: 12

Unit Number	Number of Questions	Time required to implement and debug the question (in hours)	Minimum required of Journal Certification
Unit 1	1	4	1
Unit 2	2	8	3
Unit 3	3	12	3
Unit 4	2	8	2
Unit 5	3	12	3
Unit 6	1	4	1

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<b>TOTAL</b>	12	48	12
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## Concept Map:

It is a hierarchical / tree based representation of all topics covered under the course. This gives direct / indirect relationship /association among topics as well as subtopics.

### Unit-1:Overview

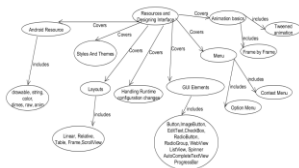


### Unit-2: Activities, Intents, and Fragment

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## Unit-3: Designing User Interface



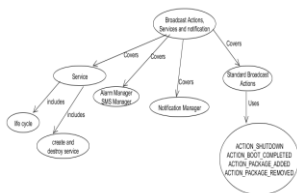
## Unit-4: Data Persistence



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## Unit-5: Broadcast Actions, Services and notification



## Unit-6: Telephony and Location based APIs

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