

# CSC-455: Mobile Application Development

## General Information

<b>Course Number</b>	CSC-455
<b>Credit Hours</b>	3+1 (Theory Credit Hour = 3, Lab Credit Hours = 1)
<b>Prerequisite</b>	None
<b>Course Coordinator</b>	Not Specified

## Course Objectives

This course is a fundamental base for knowledge about mobile computing and application development platforms. The knowledge of algorithm design and programming gained in programming courses with continued emphasis on the logic underlying the transition from specification to program. Particular attention is paid to issues arising in the implementation of mobile applications: specifically, for android using databases and offline storage and web based services using object-oriented programming techniques.

## Catalog Description

CSC 455

## Course Content

Session No.	Week No.	Topic	Suggested Readings (Chapters)
01-03	01	<ol style="list-style-type: none"><li>1. Introduction to Android</li><li>2. Installation of Android Studio</li><li>3. Understanding Android Architecture and Runtime Environment</li><li>4. Building Android First App (Hello World!)</li></ol>	Book Chapter (1, 2) and Lecture Notes
04-06	02	<ol style="list-style-type: none"><li>1. Introduction to Layouts<ol style="list-style-type: none"><li>a. Constraint Layout</li><li>b. Relative Layout</li><li>c. Linear Layout</li><li>d. GridView</li><li>e. Table Layout</li></ol></li><li>2. Working with weight and gravity property</li><li>3. Introduction to Widgets<ol style="list-style-type: none"><li>a. TextView</li><li>b. EditText</li><li>c. Button</li><li>d. AnalogClock</li><li>e. Spinner</li><li>f. ListView</li></ol></li></ol>	Lecture Notes
07-09	03	<ol style="list-style-type: none"><li>1. Understanding the hierarchy of Android Project</li><li>2. Using the tools (ADB, Emulator, Monitor and Debugger)</li><li>3. Understanding LifeCycle of android App (Activity)</li></ol>	Book Chapter (2, 3) and Lecture Notes
10-12	04	<ol style="list-style-type: none"><li>1. Using Events to work with widgets</li><li>2. Working with Intents</li></ol>	Book Chapter (3, 4, 5) and Lecture Notes

		3. Explicit Intent <ul style="list-style-type: none"> <li>a. Creating apps with multiple activities</li> </ul> 4. Implicit Intent <ul style="list-style-type: none"> <li>a. Camera</li> <li>b. Media player</li> </ul> 5. Working with Intent Filter	
12-15	05	1. Understanding the state preferences 2. Understanding state of an application, How to maintain it, and how to restore it. 3. Create app based state preferences 4. Create activity based shared preferences 5. Adding Menu Bars <ul style="list-style-type: none"> <li>a. Context Menu</li> <li>b. Menu with icons</li> </ul>	Book Chapter (7) and Lecture Notes
<b>First Mid Term Exam</b>			
16-18	06	1. Working with File storage 2. Reading / Writing files 3. Reading files from Raw and Online 4. Lists and other widgets 5. Working with Android Built In Database (SQLite)	Book Chapter (15) and Lecture Notes
19-21	07	1. Working with Fragments 2. Creating swipe functionality along with fragments 3. Fragments using menu <ul style="list-style-type: none"> <li>a. Static Fragments</li> <li>b. Dynamic Fragments</li> </ul> 4. Android Text to Speech 5. Android Speech to text	Book Chapter (7, 8) and Lecture Notes
22-24	08	1. Working with Background Tasks 2. Using services 3. Bind service 4. Threads, AsyncTask and Handlers	Book Chapter (5) and Lecture Notes
25-27	09	1. Broadcast receivers 2. Working with UI Notifications 3. Static and dynamic broadcast receivers 4. Working with IPC using broadcast in services	Book Chapter (11) and Lecture Notes
28-30	10	1. Content Providers 2. Reading Content Providers 3. Creating Content Provider	Book Chapter (09) and Lecture Notes
<b>Second Mid Term Exam</b>			
31-33	11	1. Working with Network based apps 2. JSON and XML parsing 3. MAPs and GeoCoding	Book Chapter (05, 09) and Lecture Notes
34-36	12	1. Introducing Sensors 2. Working with accelerometer, gyroscope, light and proximity sensors 3. Working with SMS and Telephony 4. Introducing 2D Graphics 5. Exercises	Book Chapter (8) and Lecture Notes
37-39	13	1. Introduction to flutter <ul style="list-style-type: none"> <li>a. Importance</li> </ul> 2. Introduction to Dart <ul style="list-style-type: none"> <li>a. Writing dart code</li> </ul>	Book Chapter (9) and Lecture Notes

		3. Installation flutter framework + Android Studio or VS Code 4. Creating new project 5. Setting up virtual device 6. Hello World Flutter 7. Introduction to Flutter Widgets 8. Material App	
40-42	14	1. Widget <ul style="list-style-type: none"> <li>a. Scaffold Widget</li> <li>b. Image Widget</li> <li>c. Container Widget</li> <li>d. Icon Widget</li> <li>e. Column and Row Widget</li> <li>f. Card Widget</li> <li>g. Buttons <ul style="list-style-type: none"> <li>i. Floating app button</li> <li>ii. Raised button</li> <li>iii. Dropdown Button</li> <li>iv. Outline button</li> <li>v. Button bar</li> <li>vi. Popup button</li> </ul> </li> <li>h. Inputs <ul style="list-style-type: none"> <li>i. Checkboxes</li> <li>j. Radio buttons</li> <li>k. Slider</li> </ul> </li> </ul> 2. Layouts	Book Chapter (12) and Lecture Notes
43-45	15	1. Dialogs 2. Introduction to JSON 3. Introduction to Firebase Database <ul style="list-style-type: none"> <li>a. Firebase Authentication</li> <li>b. Configuring Application</li> </ul> 4. Hotel Reservation Project (Assignment)	Book Chapter (19) and Lecture Notes
<b>Final Exams</b>			

### Text Book

1. Professional Android 4 Application Development by Reto Meier

### Reference Material

1. Instructor's notes
2. Head First To Android Development (by Ori'e'lly)

### Course Learning Outcomes

	Course Learning Outcomes (CLO)
1	<b>Design</b> and <b>develop</b> Android device-specific, native applications and cross platform
2	<b>Describe</b> the components and structure of a mobile development framework (Google's Android Studio)
3	<b>Integrate</b> database and server-side technologies to provide complete mobile development solutions
4	<b>Analyze</b> the working of android code.

### CLO-SO Map

	SO IDs											
CLO ID	GA1	GA2	GA3	GA4	GA5	GA6	GA7	GA8	GA9	GA10	GA11	GA12
CLO 1	0	0	1	0	0	0	0	0	0	0	0	0
CLO 2	1	0	0	0	0	0	0	0	0	0	0	0
CLO 3	0	0	1	0	0	0	0	0	0	0	0	0
CLO4	0	0	0	1	0	0	0	0	0	0	0	0

### Approvals

Prepared By	Nisar Ahmed Siddiqui
Approved By	Not Specified
Last Update	Thursday, August 15, 2019