



## COURSE OUTLINE

<b>Course Number</b> IST 208		<b>Course Title</b> Android Application Development	<b>Credits</b> 4
<b>Lecture hours</b> 3	<b>Laboratory hours</b> 2	<b>Pre-requisite:</b> COS102 or equivalent	<b>Implementation</b> Spring 2019

### **Catalog description:**

Teaches how to develop applications for Android devices using Java programming language along with the Android SDK. Students learn how to apply Java and object-oriented technology to mobile application development. Doing real projects within the Android Studio integrated development environment further advances practical programming knowledge and skills.

**Is course New, Revised, or Modified?** Revised

### **Required texts/other materials:**

Reference Division Booklist

**Revision date:** Spring 2019

**Course coordinator:** Meimei Gao, X3483, gaom@mccc.edu

### **Information resources:**

Textbook  
Android developer web site (<http://developer.android.com>)

**Other learning resources:** LMS e.g. BLACKBOARD

## **Course Goals:**

### ***The student will be able to:***

1. Define the main characteristics and functionality of Android devices. (GE Goal 4, MCCC CS Goals D and E)
2. Install, configure and use Android development environment. (GE Goal 4, MCCC CS Goals D and E)
3. Design Android user interface and use event-driven programming technology. (GE Goal 4, MCCC CS Goal B)
4. Describe the life cycle of the activities in an Android application. (GE Goal 4, MCCC CS Goal D and E)
5. Develop software solutions using programming skills including user input, variables, control structures, classes/objects, methods, lists and arrays. (GE Goal 4, MCCC CS Goal B)
6. Build Android application using Java programming language with Android SDK (GE Goal 4, MCCC CS Goal B)
7. Test and deploy mobile applications to mobile devices. (GE Goal 4, MCCC CS Goals B, D and E)

## **Course-specific General Education Knowledge Goals and Core Skills.**

### **General Education Knowledge Goals**

**Goal 4. Technology.** Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

### **MCCC Core Skills**

**Goal B. Critical Thinking and Problem-solving.** Students will use critical thinking and problem-solving skills in analyzing information.

**Goal D. Information Literacy.** Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

**Goal E. Computer Literacy.** Students will use computers to access, analyze or present information, solve problems, and communicate with others.

## **Units of study in detail.**

### **Unit I      **Installation and Configuration of Android Development Environment****

#### **Learning Objectives**

##### ***The student will be able to...***

- Describe the components of Android development environment [CG2]
- Install and configure Android development environment [CG2]

### **Unit II      **Introduction to Android****

#### **Learning Objectives**

##### ***The student will be able to...***

- Describe the market for Android applications and the features of Android. [CG1]
- Build a simple Android application. [CG1&2]
- Run an Android application in the emulator. [CG1&2]

### **Unit III      **Android User Interface and Event Handling****

#### **Learning Objectives**

##### ***The student will be able to...***

- Develop a user interface using Android controls. [CG3, 5 & 6]
- Use XML layout file. [CG3, 5 & 6]
- Create an Android project that includes event handling. [CG3, 5 & 6]
- Use onCreate( ) method. [CG3, 5 & 6]

- Create multiple Android Activities and add new class files. [CG3, 5 & 6]

## **Unit IV      User Input, Variables and Operations**

### **Learning Objectives**

#### ***The student will be able to...***

- Configure the Android Manifest file. [CG3, 5 & 6]
- Create a user interface with user input. [CG3, 5 & 6]
- Use Spinner control. [CG3, 5 & 6]
- Declare and use variables to hold the data; get the data from user input; use arithmetic operations and show variable data on a user interface. [CG3, 5 & 6]

## **Unit V      Decision-Making Controls**

### **Learning Objectives**

#### ***The student will be able to...***

- Use RadioGroup and RadioButtons in Android application. [CG 3, 5&6]
- Write code with decision-making using *if / if-else* statements. [CG 5&6]

## **Unit VI      Lists and Array**

### **Learning Objectives**

#### ***The student will be able to...***

- Create an Android project using a list and extend the ListActivity class. [CG5&6]
- Develop a user interface that uses ListView. [CG3, 5&6]
- Use an array to create a list. [CG 5&6]
- Code a setListAdapter to display an array. [CG 5&6]
- Design a custom ListView layout with XML code. [CG3, 5&6]
- Call the onItemClick method when a list item is selected. [CG3, 5&6]
- Use switch statement to control the flow of code execution. [CG 5&6]

## **Unit VII      Intents and Web Brower**

### **Learning Objectives**

#### ***The student will be able to...***

- Call an intent to work with outside app. [CG 5&6]
- Launch web site through the use of a URI. [CG 5&6]

## **Unit VIII      Timer and Audio**

### **Learning Objectives**

#### ***The student will be able to...***

- Control the execution of Android activities using timer. [CG 5&6]
- Describe the life cycles of the activities in an Android application. [CG4]
- Use finish( ) method. [CG 5&6]
- Add audio to an Android application. [CG 5&6]

## **Unit VIII      Displaying Pictures in a GridView**

### **Learning Objectives**

#### ***The student will be able to...***

- Create an Android project using a GridView Control. [CG 3, 5&6]
- Display two-dimensional grid of images and handle the item click event. [CG 3, 5&6]

## **Unit IX      Date, Time and Clocks**

### **Learning Objectives**

#### ***The student will be able to...***

- Use the Calendar class. [CG 5&6]
- Use date, time, and clock controls. [CG3, 5&6]
- Launch a dialog box containing a DatePicker control. [CG 5&6]
- Code an onDateSetListener method. [CG 5&6]

## Unit X Navigating with Tabs

### Learning Objectives

#### **The student will be able to...**

- Create an Android application using a tab layout. [CG3, 5&6]
- Code an XML layout with a TabHost control. [CG3, 5&6]
- Extend a TabActivity class. [CG 5&6]

## Unit XI Creating Animation

### Learning Objectives

#### **The student will be able to...**

- Create an Android application with animation. [CG3, 5&6]
- Use Frame animation. [CG3, 5&6]
- Use Tween animation. [CG3, 5&6]

## Unit XII Persistent Data

### Learning Objectives

#### **The student will be able to...**

- Create an Android application with persistent data with Key-Value Sets, Files and SQLite Databases. [CG3, 5&6]

### Evaluation of student learning:

Achievement of the course objectives can be evaluated through the use of the following tools:

- Labs and homework assessing students' problem solving ability and programming skills. (CG2, 3, 5, 6 & 7)
- Tests assessing students' comprehension of programming environments and concepts. (CG1, 3, 4, 5 & 6)
- A term project to assess the students' ability to solve relatively complex problems using formal programming language. (CG3, 4, 5, 6 & 7)

Specific methods for evaluating student progress through the course are up to the discretion of the instructor. Below is an example of grade breakdown:

The final grade is based on the following values:	
Middle Term Exam	15%
Laboratory & Project Assignments	45%
A Term Project	15%
Final Exam	25%
Total	100%

### Academic Integrity Statement:

As per the student handbook, "A student will be guilty of violating academic integrity if he/she (a) knowingly represents the work of others as his/her own, (b) uses or obtains unauthorized assistance in the execution of academic work, or (c) gives fraudulent assistance to another student." Students should read the Academic Integrity policy in the MCCC Rights and Responsibilities Student Handbook. **Academic Dishonesty will result in failure of this course.**