BEGINNING ANDROID DEVELOPMENT
Course Syllabus

Course Number: APD-0246               OHLAP Credit: No
OCAS Code: None
Course Length: 120 Hours
Career Cluster: Information Technology
Career Pathway: Programming and Software Development
Career Major(s): Mobile Development

Pre-requisite(s): Fundamentals of Technology or Business and Computer Fundamentals

Course Description: This course in Beginning Android Development introduces the student to the basics of the Android OS and the features of the Android platform, as well as some of the popular devices in the market. Students learn how to download and install the required tools to develop Android applications and test them on the Android Emulator. Students create Apps that use Activities and Intents; analyze the components of UI and build UI for an Android device; design different types of views, create menus, and display images that enhance the end user experience; manipulate data that can be stored internally or externally; and analyze the use of content providers and create their own content provider. Students develop code to programatically send and receive SMS and e-mail. Furthermore, students demonstrate how to connect to web servers and build programs that manipulate Maps for the end user’s needs. Additionally, students develop services (programs that run in the background) that run asynchronously on a separate thread. Students also learn how to publish Android applications that are ready for distribution.


Course Objectives: A. Demonstrate Knowledge of Android Tools
1. Verbalize different Android Versions and Features of Android
2. Describe the Architecture of Android devices
3. Differentiate the various Android Devices in the Market
4. Summarize the Android Market and Android Developer Community
5. Locate and install the Android SDK and its Tools on a local computer
6. Configuring the Android SDK Manager for a local computer
7. Distinguish and explain the uses for the Eclipse software
8. Identify and discuss the Android Development Tools (ADT)
9. Create Android Virtual Devices (AVDs) on a local computer
10. Name and explain the anatomy of an android application

B. Demonstrate Knowledge of Activities, Fragments, and Intents
1. Apply Styles and Themes to an Activity on an android apparatus
2. Build a Dialog Window and Progress Dialog for the end user
3. Resolve Intent Filter Collision on a device
4. Return Results from an Intent on android apparatus
5. Design code to PassData Using an Intent Object on an Android platform
6. Compose code to add Fragments Dynamically and identify the Cycle of a Fragment
and interactions between Fragments on an android apparatus
7. Define and describe the Intent Object of a device
8. Use Intent Filters, add Categories and display Notifications on an Android apparatus

C. **Demonstrate Knowledge of the Android User Interface**
   1. Identify and explain the various Views, ViewGroups, and Layouts that can be displayed on the screen using an Android device
   2. Construct code to Anchor Views for the display orientation of the Android screen
   3. Build code to Resize and Reposition the display orientation of the Android screen
   4. Develop code to Detect and Control Orientation Changes for the Android display
   5. Add and customize Action Items To The Action Bar and Application Icon on an Android platform
   6. Create the User Interface Programmatically using an Android device
   7. Modify code to “Listen” for UI Notifications on Android apparatus
   8. Override Methods Defined in an Activity on an Android platform
   9. Register Events for Views using an Android apparatus

D. **Demonstrate Knowledge of Designing the User Interface with Views**
   1. Construct TextView View on an Android platform
   2. Construct Button, Image Button, EditText, CheckBox, ToggleButton, RadioButton, and RadioGroup Views using an Android device
   3. Construct TimePicker View and DatePicker View on Android apparatus
   4. Construct ListView View and Spinner View using an Android device
   5. Identify, explain, and design a ListFragment, DialogFragment, and a Preference Fragment using an Android device

E. **Demonstrate Knowledge of Displaying Pictures and Menus with Views**
   1. Identify the Gallery and create ImageView Views to display pictures using an Android device
   2. Manipulate the ImageSwitcher and GridView for displaying pictures using an Android apparatus
   3. Create the Helper Methods and add Options and Context Menus for different views using an Android device

F. **Demonstrate Knowledge of Data Persistence**
   1. Manipulate Access Preferences Using An Activity using an Android platform
   2. Programmatically Retrieve and Modify the Preferences Values using an Android apparatus
   3. Modify the Default Name of the Preferences File using an Android device
   4. Construct a feature to save to Internal Storage and external Storage (SD Card) data using an Android device
   5. Create and modify databases for data manipulation and storage on an Android platform

G. **Demonstrate Knowledge of Content Providers**
   1. Create and modify Predefined Query String Constants, Projections, Filtering, and Sorting using an Android platform
   2. Create and manipulate Content Providers on an Android apparatus

H. **Demonstrate Knowledge of SMS Messaging**
   1. Develop a code for Sending SMS Messages Programmatically and getting Feedback After Sending a Message using an Android platform
   2. Design a code for Sending SMS Messages Using Intent and receiving SMS Messages on an Android apparatus
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3. Create and evaluate Caveats and Warnings for messages using an Android platform
4. Design a code for Sending E-Mail utilizing Android devices

I. Demonstrate Knowledge of Location-Based Services
   1. Design for Displaying Maps and obtaining the Maps API Key using an Android platform
   2. Displaying the Zoom Control and changing Views for Maps on an Android mechanism
   3. Navigate to Specific Locations and add Markers using an Android apparatus
   4. Design for retrieving a That Was Touched function and location data on an Android device
   5. Design for Geocode and Reverse Geocode using an Android appliance

J. Demonstrate Knowledge of Networking
   1. Consuming Web Services Using HTTP
   2. Download Binary Data and Text Content utilizing Web Services on a device
   3. Access Web Services on the device Using The GET Method
   4. Consume JSON Services and use Sockets Programming for Android Web services

K. Demonstrate Knowledge of Developing Android Services
   1. Design and manipulate Android Services on an Android device
   2. Perform Long Running and Repeated Tasks in a Service on using an Android platform
   3. Execute Asynchronous Tasks on Separate Threads Using IntentService on an Android apparatus
   4. Create Communication between Services on using an Android mechanism
   5. Define and explain Threading using an Android device

L. Demonstrate Knowledge of Publishing Android Applications
   1. Construct Versioning for Applications for Android device
   2. Construct Digital Signing for Android Applications for Android platforms
   3. Manipulate APK files and the adb.exe Tool for an Android apparatus
   4. Evaluate and specify Web Server Publishing on the Android Market

ODCTE Objectives

Teaching Methods: The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures: 1. Students are graded on theory and shop practice and performance.
   2. Each course must be passed with seventy (70%) percent or better.
   3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

Description of Classroom, Laboratories, and Equipment: Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.
Available Certifications/College Credit

The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

College Credit Eligibility:

The student must maintain a grade point average of 2.0 or better.