

**JEFFERSON COLLEGE**

**COURSE SYLLABUS**

**CIS170**

**INTRODUCTION TO ANDROID PROGRAMMING**

3 Credit Hours

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## CIS170 Introduction to Android Programming

### I. CATALOGUE DESCRIPTION

- A. Pre-requisites:
1. Reading Proficiency
  2. CIS129 Programming Logic with a Grade of “C” or better, or Instructor Permission
- B. 3 Credit Hours
- C. This course introduces programming for the Android mobile operating system. The topics covered include: mobile application guidelines in general, the Android Software Development Kit (SDK), and advanced Java concepts unique to the Android operating system. Programming assignments will provide practical experience in developing applications for Android. (S)

### II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

Compare and Contrast features of Android Development platform tools	Quizzes Exams
Describe how the Android Platform is Structured, Android Runtime, and Android Resources	Quizzes Exams
Describe the role of XML with Java and Android	Quizzes Exams
Demonstrate effective use of Objects, Variables, Methods, Classes and Interfaces: Java Constructs with Object-oriented applications	Quizzes Exams Hands-On Exercises
Analyze console applications that include classes, inheritance, overloading, and effective use of data types	Quizzes Exams Hands-On Exercises
Demonstrate proper Android Screen Design utilizing UI Design, UI Objects and UI Instantiation Methods including: Activity, View, and ViewGroup	Quizzes Exams Hands-On Exercises
Demonstrate making Apps Interactive with Intents, Event Handling, and Menus	Quizzes Exams Hands-On Exercises
Create and modify existing code using Imaging Concepts, Formats, and Techniques including Multi-State Imagery and Panel Layouts	Quizzes Exams Hands-On Exercises
Demonstrate Frame Animation Concepts and Techniques by using the Android AnimationDrawable Class, XML Markup, and MainActivity	Quizzes Exams Hands-On Exercises

Demonstrate Digital Video including: Streaming Video, Media Player, and MediaController Classes	Hands-On Exercises Quizzes Exams
Describe Android Content Providers including: Providing Data to Applications	Hands-On Exercises Student Presentation
Describe True Wearables versus Android Peripherals	Quizzes Exams
Demonstrate the use of Android Studio including: IntelliJ and the Android SDK Bundle downloading and installation	Hands-On Exercises
Demonstrate the configuration of Android TV including: Apps for iTV	Hands-On Exercises

### III. OUTLINE OF TOPICS

- A. Setting Up Your Android App Development System
  1. The history of the Android OS: Impressive growth
  2. Advantage Android: How can Android benefit me?
  3. Assembling your Android development workstation
  
- B. Configuring Your Android App Development System
  1. Eclipse ADT and Android Studio Development Environment
  2. Android Virtual Devices: Creating the AVD
  
- C. An Introduction to the Android Application Development Platform
  1. How the Android platform is structured: Java, XML, Media
  2. Android Runtimes: The Android RunTime VM
  3. Creating your first Android application
  4. Android resources: Asset project folders
  
- D. Introduction to XML: Defining an Android App, its Design, and Constants
  1. Extensible Markup Language: XML overview
  2. XML inflation: How XML works with Java
  3. XML's role: Revisiting how Android works
  
- E. Introduction to Java: Objects, Methods, Classes, and Interfaces
  1. OOP Terminology: Variables, Methods, Constraints
  2. Modifiers: Data Types, Access, Inheritance
  3. Creating your hello universe class: Galaxy
  4. Coding Galaxy objects: Constructor method
  
- F. Android Screen Design: Writing to the Display Using Activity and View
  1. How Activity, View, and ViewGroup Relate
  2. The ViewGroup class: A subclass of view
  3. Updating the UI in Java: Using UI objects
  4. A UI Instantiation method: createUiTextViews()

- G. Making Apps Interactive: Intents, Event Handling, and Menus
  - 1. The Menu class and interface: Android Menus
  - 2. Creating an EditGalaxy UI: Using a RelativeLayout
  - 3. Finishing up the RelativeLayout UI design
  - 4. Event handling: Using Event listeners
  
- H. Android UI Design: Using Advanced ViewGroup Layout Containers
  - 1. Using the Android GridLayout UI container
  - 2. GridLayout Parameters: Configuring your grid
  - 3. Using the Android SlidingPaneLayout class
  - 4. Using SlidingPaneLayout: Galaxy selector
  
- I. Android Graphic Design: Making Your UI Designs Visual
  - 1. Imaging concepts, formats, and techniques
  - 2. The ImageButton Class: Multi-state buttons
  - 3. Creating Multi-State imagery: Using GIMP
  - 4. Creating your ImageButton's XML structure
  
- J. Android Animation: Making Your UI Designs Move
  - 1. Frame animation concepts and techniques
  - 2. The Android AnimationDrawable class
  - 3. Creating frame animation using XML Markup
  - 4. Creating frame animation in MainActivity
  - 5. Tween animation concepts and techniques
  
- K. Digital Video: Streaming Video, Media Player, and MediaController Classes
  - 1. Create a PlayVideo.java activity subclass
  - 2. Creating your activity play XML UI design
  - 3. Digital video concepts: Bitrates & codecs
  - 4. Creating digital video content: Terragen3
  - 5. Android media player: Video playback engine
  
- L. Digital Audio: Providing Aural Feedback for UI Designs Using SoundPool
  - 1. Audacity 2: Creating digital audio assets
  - 2. Android SoundPool: Audio engine & methods
  
- M. Android Service Class and Threads: Background Processing
  - 1. Android service classes: Characteristics
  - 2. Creating a service subclass: AmbientService
  - 3. Starting a service: Using .startService()
  
- N. Android Content Providers: Providing Data to Applications
  - 1. An overview of Android content providers
  - 2. Creating the activity: ContactGalaxy.java

3.     TableLayout: Creating tabular UI designs
  4.     ContactGalaxy Class: Accessing your database
  5.     Writing to a database: addGalaxyViceroy( )
- O.    Developing for Android Wearable Devices
1.     True Wearables versus Android Peripherals
  2.     Development Strategy: Android, Wear SDK, or Plug-In
  3.     Smartwatch optimization fundamentals: Display and CPU
  4.     Creating your EarthTime.APK Android App
  5.     EarthTime UI design: Styling an AnalogClock
- P.    The Future of Android: The 64-Bit Android 5.0 OS
1.     Creating your first Android 5 project
  2.     Android TV: Setting up Android 5 apps for iTV
  3.     Porting the EarthTime app to Android TV

#### IV.   METHOD(S) OF INSTRUCTION

- A.    Lecture
- B.    Hands-On Lab Exercises
- C.    Online Tutorials
- D.    Student Presentations

#### V.    REQUIRED TEXTBOOK(S)

Wallace Jackson, *Android Apps for Absolute Beginners*, (Current Edition),  
Apress, ISBN: 9781484200209

#### VI.   REQUIRED MATERIALS

USB Flash Drive (at least 16 GB)

#### VII.  SUPPLEMENTAL REFERENCES

Online tutorial sites and documentation found at <http://developer.android.com/>  
will be used extensively throughout the course.

#### VIII. METHOD OF EVALUATION

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|---------------------------|-----|
| A.    Class Participation | 10% |
| B.    Quizzes             | 30% |

- C. Hands-on Examinations 50%
- D. Student Presentation 10%

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (Technology Center 101; phone 636-481-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College Website <http://www.jeffco.edu>).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.