GROSSMONT COLLEGE

 Official Course Outline

COMPUTER SCIENCE INFORMATION SYSTEM 295 – ANDROID APPLICATION DEVELOPMENT WITH JAVA

 1. Course Number Course Title Semester Units Semester Hours

 CSIS 295 Android Application 3 2 hours lecture: 32-36 hours

 Development with Java 3 hours lab: 48-54 hours

 64-72 outside-of-class hours

 for lecture

 144-162 total hours

 2. Prerequisites

None.

Corequisite

 None.

 Recommended Preparation

 A “C” grade or higher or Pass in CSIS 293 or equivalent.

 3. Catalog Description

This course is intended to give the student basic and intermediate skills in the development of applications for any Android powered smart phone. Students will utilize the Java programming language and a modern Integrated Development Environment (IDE) to analyze and design real world applications. By the end of the class, they will register as Android Developers and submit an application to the Android Market maintained by Google, Inc. They will become skilled in use of the Android Application Programming Interfaces (API’s) to develop applications that exhibit and/or utilize desirable attributes such as: 1) web browsing with Adobe Flash Player; 2) use of Google Maps; 3) location awareness with the ability to utilize/generate visual/audible directions; 4) complex Graphic User Interfaces (GUI) based on and using Android widgets; 4) development of and/or integration with telephony and networking applications; 5) sprite animation; 6) Open GL graphics; and 7) game development using existing game engines.

 4. Course Objectives

 The student will:

1. Describe and analyze existing applications to identify desirable characteristics and capabilities of such programs.
2. Analyze the Android Operating System to recognize its basic capabilities.
3. Examine and compare the Android Operating System against competitors such as iPhone, Symbian, and others.
4. Design and develop Android applications using the Java programming language and modern IDE.
5. Design and develop applications that implement and use the Android API’s.
6. Design and develop applications that implement and use a rich GUI.
7. Design and develop programs that utilize smart phone hardware such as GPS, Wi-Fi, accelerometers, cameras, SD storage cards, Bluetooth, telephony.
8. Demonstrate submittal of a completed application program to the Android Market.
9. Choose to register as an Android Developer.

5. Instructional Facilities

 Standard computer lab with one internet-connected workstation per student with appropriate software installed.

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 6. Special Materials Required of Student

 Flash/USB drive or cloud storage for backup of in-class work.

7. Course Content

1. The Android Operating System (OS).
2. Different versions of the OS and development requirements.
3. Eclipse and the Android Development Tools.
4. Configuring the IDE.
5. Android widgets.
6. Development of rich GUI’s.
7. Adding audio and video support.
8. Graphics with Open GL.
9. Access to and display of web pages (web browsing).
10. Use of Wi-Fi API’s.
11. Display management through use of accelerometers
12. Location awareness and navigational applications.
13. Database management with SQLite
14. Touch and gesture User Interface (UI) management.
15. Use of Smart Phone hardware such as SD cards, Bluetooth, telephony.
16. Use of the camera and photo/video management.
17. Multimedia and game development.

 8. Method of Instruction

1. Lecture
2. Demonstration
3. Student exercises
4. Reading assignments

 9. Methods of Evaluating Student Performance

 a. Hands-on exercises.

 b. Projects and lab activities: an example would include the writing of a program to solve a problem with a scientific or business situation or an interactive game.

 c. Objective examinations and quizzes including a final examination.

10. Outside Class Assignments

 a. Textbook reading assignments.

 b. Prepare programming projects such as scientific, business, and action game Apps in the Java programming language.

c. Algorithm and problem-solving exercises.

11. Texts

 a. Required Text(s):

 DiMarzio, J.F. *Beginning Android Programming with Android Studio.* 4th edition, Hoboken, NJ: John Wiley & sons, Inc., 2017.

b. Supplementary texts and workbooks:

 None.

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 Addendum: Student Learning Outcomes

 Upon completion of this course, our students will be able to do the following:

* 1. Analyze and formulate a problem suited to today’s smart phones
	2. Design and develop an Android Application that utilizes today’s smart phone hardware such as GPS awareness, accelerometers, cameras, networking, Bluetooth, and telephony.

Date approved by the Governing Board: May 15, 2018