

ENG 1935 – Mobile Applications for Google's Android  
Summer 2010



**\*New Opportunity:** This year, we are introducing a new program, with support from the SBA (small business administration). In this course, you will develop mobile applications to run on Google's Android Phones. We wish to attract students with different interests (arts, science, or business) to work in groups of three.

**\*\* An industry panel will rank the projects. Students will be awarded a total of \$12,000 in scholarships, based on these rankings.**

**1. Course Description and Prerequisites:** The course will help students develop applications for Google's Android mobile phone. Students in groups of three will develop a marketable application. The students will use a software emulator for the phone to develop the application and a real phone to demonstrate the application. Arts, Computer Science, and Business aspects will be combined to develop these applications. **Prerequisites:** Students 11<sup>th</sup> grade or higher (in fall '10) with a GPA of 3.0 or above.

**2. Course Objectives (what we will do in the class):** Android is the first and the only open source development environment for development of mobile applications. It has a number of powerful features, such as web browser, Google Map, GPS, accelerometer, and bluetooth built in and available to be easily embedded in your application. That means that you will be able to take advantage of a wide variety of resources in building your application more rapidly and to be more sophisticated. We (and the Android user community) have built up many good design examples and tools that should help you imagine and implement many new applications. Your team project will be graded based on its uniqueness, aesthetics, and promotional video/animation. You will be exposed to many relevant tools and resources in the class and one-to-one (as relevant) so you can implement a reasonably complex application in the class.

**3. Course Outcomes (What we expect you to learn):** You will feel confident enough after this course to take on development of many innovative applications. There is a rapidly growing market for Android mobile phones and applications. Good applications will achieve remarkable commercial success in a very short time. We hope many of you will achieve that success!

**4. Text Book:** Burnette, E., Hello Android: Introducing Google's Mobile Development Platform, The Pragmatic Bookshelf, Raleigh, NC, 2008, ISBN: 1-934356-17-4

**5. Resources (needed / to be provided):** This is a rapidly evolving field. We have various latest Android development phones and a large collection of student designs completed by our engineering students. You will be using MotoDev, a software development environment provided free by Motorola that integrates Google's Android SDK (software development kit) and Eclipse IDE (integrated development environment), and provides their own enhancements. Google has worked hard to make this application development environment as friendly as possible to any novice developer. We have supplemented this with our own innovations with high school students in mind. More than 20 of our own student designs will be available for the high school students to draw inspiration from. You may wish to bring your own laptop to install the development environment, so you can continue the development during the off hours. You will also have access to computers at 345 S&E, 319 S&E, and 417 S&E. The Android phones are located in 417 S&E.

**6. Grading Scheme:** There will be 5 home assignments and 5 project assignments, all geared to ensure that you are successful in your project. Both types of assignments are to be submitted on behalf of the team. We expect different members of the team will take the lead for different assignments, depending upon its emphasis on creativity, functionality, or marketing. However, one person will be designated as the leader of the team.

- The home assignments are worth 30%,
- The project assignments are worth 40%.
- Remaining 30% of the grade will be awarded upon project completion.
- Individual team member's grades may differ dependent on input from other teammates.

Since this is an open source environment, we expect that you will adapt ideas from many sources. Up to 50% of your project intellectual value can come from other sources, which must be acknowledged.

## 7. Course Schedule Details:

**Monday, 6/14/10:** Focus – Android Phone



- Morning: Introduction to Android, Instructions for Android/MotoDev Installation.
- Afternoon: Explore exciting Google Applications
- Home Assignment: Run Moonlander and Hangman applications and submit proof
- Project Assignment: Discuss among yourselves and form groups of three students. Each team member will require background/interest/passion in arts, science, or business. Together the team will develop a functional Android application that is aesthetically pleasing and has a marketing video/animation to accompany it, by the end of the three- week session.

### Wednesday, 6/16/10: Focus – Visualization



- Morning: XML (extensible markup language) for touch screen layouts. Examples
- Afternoon: UI (user interface) Design: Dos and Don'ts; Software tools for drawing and visualization: Visio and Photoshop. Compare Hangman implementations.
- Home Assignment: Do story-boarding for hangman application
- Project Assignment: Decide on the team and a project. Write a paragraph on system specifications. Provide story-boarding for your project. Sketch an Ad campaign.

### Friday, 6/18/10: Focus – Design and Implementation



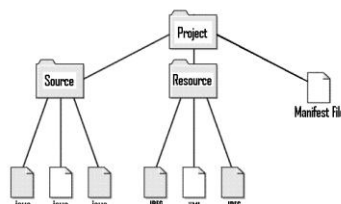
- Morning: Java Programming Language
- Afternoon: Application Design – use of Scratch and AppInventor from MIT. Implementation: Combine Java and XML files for Sudoku and hangman example.
- Home Assignment: Embed music, sound, and images in Sudoku
- Project Assignment: use Scratch/ App Inventor to show design logic for each screen. Write XML code for each UI screen. Collect your image and sound files.

### Monday, 6/21/19: Focus – Major Building Blocks



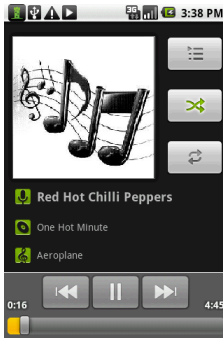
- Morning: Integration of web browser, Google Maps, Location Based Services, and Bluetooth.
- Afternoon: Parked Car Locator. Group Discussions
- Home Assignment: Embed web browser in Sudoku
- Project Assignment: Write Java code and integrate XML, images, and any building blocks. We will help you. Ask for help!

### Wednesday, 6/23/10: Focus – Architecture Design



- Morning: Architecture Design Principles. Examples of Sudoku and Hangman
- Afternoon: Examples from Engineering Student Designs
- Home Assignment: Understand the architecture of any relevant design
- Project Assignment: Develop your project architecture

**Friday, 6/25/10:** Focus – Multimedia Building Blocks



- Morning: Multimedia and Graphics Animation – with Java and open GL(Canvas, 2D sprites, and Animation)
- Afternoon: Aids for promotional video/animation: Maya and Unity
- Home Assignment: Modify an application example using multimedia embedding tools
- Project Assignment: Develop promotional video / animation, perhaps on the Emulator.

**Monday, 6/28/10:** Focus - Sensor and Actuator Building Blocks



- Morning: Use of Camera, Accelerometer, Vibrator, and Compass.
- Afternoon: Bar Code Reader and Pedometer, Group Discussions
- Home Assignment: None
- Project Goal: Write functional part of the code, with help from our student teaching assistants.

**Wednesday, 6/30/10:** Focus – Project



- Morning : Meet with us. We will help with your project
- Afternoon: Meet with us. We will help with your project

## Friday, 7/2/10: Focus – Project Demos



Computer Science

- 20 minute demo with Android phones and Emulator, with a 10 minute break in-between
- Morning: Six team presentations
- Afternoon: Four team presentations
- 4 PM: Awards and Certificates – By Dean, Engineering and

## ***8. Submission and Lab Usage Requirements:***

The students will submit their reports via blackboard at [blackboard.fau.edu](http://blackboard.fau.edu) The classes will be held in 345 S&E. Labs at 345 S&E, 319 S&E and 417 S&E are available for use during the other days of these 3 weeks of the course. The Android development phones are available in the lab at 417 S&E. You will have FAU Student ID card-based access to these labs. Please get your FAU student ID card issued. It will be very useful.

Note to parents of children under the age of 18: During the course of our program, we may take pictures of your child or your child's work, which could be used for publicity purposes. There will be an authorization form to be signed. By signing that form, you authorize Florida Atlantic University (FAU) and its official representatives to use, without obligation, photos or motion pictures of you, your child(ren), and/or their work for any and all publicity, publications, and advertising purposes that the FAU may designate

We provide here information on home PC/ Laptop requirements: MOTODEV Studio for Android™ has been tested for compatibility with the following systems. Although MOTODEV Studio may be compatible with other systems, Motorola offers support only for the systems described below.

### **Microsoft Windows**

- Microsoft Windows XP Professional Version 2002 with Service Pack 3
- Java™ Runtime Environment (JRE) 6.0 Update 13
- Intel® Core™ 2 Duo CPU, 2.33 GHz
- 2 GB RAM
- Over 1.5 GB of free disk space (needed to install both MOTODEV Studio for Android and the Android SDK and plug-ins from Google; MOTODEV Studio itself only needs 150 MB)

### **Mac OS X**

- Mac OS X version 10.5.7
- Java 2 Runtime Environment, Standard Edition 5.0 32-bit
- Intel Core 2 Duo CPU, 2.4 GHz
- 4 GB RAM

- Over 1.5 GB of free disk space (needed to install both MOTODEV Studio for Android and the Android SDK and plug-ins from Google; MOTODEV Studio itself only needs 150 MB)

### **Ubuntu Linux**

- Ubuntu Linux version 9.0.4
- GNOME version 2.26.1
- Java Runtime Environment (JRE) 6.0 Update 14 32-bit
- Intel Core 2 Duo CPU, 2.4 GHz
- 2 GB RAM
- Over 1.5 GB of free disk space (needed to install both MOTODEV Studio for Android and the Android SDK and plug-ins from Google; MOTODEV Studio itself only needs 150 MB)

## ***9. Instructors and Contact Information:***

### ***Instructors:***

- Dr. Ravi Shankar will be the main instructor. He will lecture on Android.
- Dr. Georgiana Hamza-Lup will lecture on the Java programming language
- Professor Fran McAfee will address issues on user-interface design
- Two undergraduate students, Charles Norona, and Victor Gallego, will help the students in all aspects of the design and development process.

**Contact Information:** Feel free to contact Dr. Shankar at [shankar@fau.edu](mailto:shankar@fau.edu), (561) 297-3470, 416 S&E Building, FAU, Boca Raton, FL.

**10. Class Dates, Time and Location:** The classes will be held MWF 9.30 AM to 4.30 PM, with a break for lunch (from 12.30 PM to 1.30 PM), during 6/14/10 to 7/2/10, in room 345 S&E (science and engineering building), building #43, on the FAU, Boca Raton, campus. Map: <http://uavp.fau.edu/Flashmap/FAUMap.html>. Students will have access to the Android phones in 417 S&E during the non-class hours to develop their applications. A blackboard site (at [blackboard.fau.edu](http://blackboard.fau.edu)) will provide all the related documents. Students will use the blackboard site to submit their assignments.

**11. For Further Information:** [android.fau.edu](http://android.fau.edu)