1. Course Title/Number, Number of Credit Hours	
Mobile Applications for Google's Android EGN 1935	3 credit hours

2. Course Prerequisites, Co-Requisites and Where the Course Fits in the Program of Study
Prerequisites: Students 11th grade or higher (in fall '13) with a GPA of 3.0 or above.

3. Course Logistics
Term: Summer 2013 Android is the first major open source development environment for development of mobile applications. It has a number of powerful features, such as the 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. You will be exposed to many relevant tools and resources in the class so you can implement a reasonable variation of the chosen application in the class. The course will be held during 6/10-6/28, MWF, 9:30 a.m. - 4.30 p.m., in Engineering East (EE), room 207. The phones and tablets are available in EE 408 to experiment with on T R, 10 a.m. to 4 p.m. These devices may be brought to the class in EE 207 on some of the days.

4. Instructor Contact Information	
Instructor's name	Ravi Shankar, PhD, Professor, in collaboration with Prof. McAfee, Arts & Letters
Office address	Engineering East, Room 513
Office Hours	Android On-line BB Collaborate sessions: T 7 to 8.30 p.m., R Sa 10 a.m. to 11.30 a.m.
Contact telephone number	561.297.3470
Email address	shankar@fau.edu

5. Course Description
The course will help students develop applications for Google's   Android mobile phone. Students in groups of two will migrate an application from App Inventor, a high level, easy-to-use tool (but with limited capability at present), to the Java level (which yields an optimized program with significantly more sophistication). The students will use a software emulator for the phone to develop the application and a real phone to demonstrate the application. The focus is on computer science and engineering aspects to develop, debug, and test, and obtain performance metrics to compare and contrast the two implementations.

6. Course Objectives/Student Learning Outcomes/Program Outcomes	
Course objectives	This course is designed to help high school students to learn programming at a more intuitive level (of App Inventor, which uses a Lego like interface) and at a more sophisticated level (of Java). They will develop the same App using both. This will give them an opportunity to compare the two on a set of engineering quality-of-service metrics (code size, latency, speed, and battery power).
Student learning outcomes & relationship to ABET a-k objectives: *We believe that our course addresses all of the ABET sub-criteria a-k, but for the following: h and j. .*	(a) an ability to apply knowledge of mathematics, science, and engineering (b) an ability to design and conduct experiments, as well as to analyze and interpret data (c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability (d) an ability to function on multidisciplinary teams (e) an ability to identify, formulate, and solve engineering problems (f) an understanding of professional and ethical responsibility (g) an ability to communicate effectively

	(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
	(i) a recognition of the need for, and an ability to engage in life-long learning
	(j) a knowledge of contemporary issues
	(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

7. Course Evaluation Method

There will be 4 project assignments, 7 quizzes, and 2 exams, all geared to ensure that you are successful in your project and understanding of Android. Assignments are to be submitted on behalf of the team. Exams are individual and will be held in the class using blackboard. The quizzes will be assigned to the teams. You will work in groups of two. The project assignments will help you develop/improve an existing App. An updated and cumulative report is due during the last four sessions..

The Project Assignments   are worth 28%,
The Quizzes are worth 21%.
The Exams are worth 40%.
The final Demo and report are worth 11%
Individual team member's grades may differ dependent on input from other teammates.

Note: The minimum grade required to pass the course is C.

8. Course Grading Scale

Grading Scale: It will not be based on a curve. Expected distribution is given below:
90 and above: "A", 85-89: "A-", 80-84: "B+", 75-79: "B", 70-74 : "B-", 65-69: "C+", 60-64: "C", 55-59: "C-", 50-54: "D+", 45-49: "D", 40-44: "D-", 39 and below: "F."

9. Policy On Makeup Tests, Late Work and Incompletes

There are two exams during the term (but no final exam) in this course, one each on Java level tools and on App Inventor level program development. The students will make a presentation on the project chosen.

A grace period of 2 days is allowed for submission of assignments. Two lowest score quizzes will be dropped.

Incomplete grades are against the policy of the department. Unless there is solid evidence of medical or otherwise serious emergency situation incomplete grades will not be given.

10. Special Course Requirements

Students are expected to use their own laptops. Thin clients used in our labs may not be powerful enough for our smart phone App development. Further, they currently lack some tools. These issues are expected to be addressed better in a few years as progress is made in the IT field.

11. Classroom Etiquette Policy

Students have to use laptops in the class to conduct tool installation, training, programming, etc . Also, classes will be more problem solving oriented – you will be asked to read and try out tutorials ahead of time. There will be significant interaction among the students and the professor/ teaching assistants, during the class room, on a basis to solve problems and gain deeper insight. This will be tested with daily quizzes . So, have your laptop ready and be prepared to use it during the lectures. Here is a site with Net Etiquette rules: www.albion.com/netiquette/corerules.html - please familiarize yourself with it.

12. Disability Policy Statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Office for Students with Disabilities (OSD) located in Boca Raton campus, SU 133 (561) 297-3880 and follow all OSD procedures.

13. Honor Code Policy

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

We will use mostly open source tools. Much code, tutorial, java docs, etc., are freely available at many sites on line, including our own, android.fau.edu, d.android.com, App inventor sites, and others. . The students will use open source tools and standard languages such as App Inventor, Java and XML, in developing their project All of the open source community believes in free sharing of their intellectual contributions. We encourage the same of all our students. Maintain your blog sites, review others' blog sites, and find ways to help each other. Acknowledge any help you received from your colleagues and on-line resources.

14. Required Texts/Reading

Deitel, P., Deitel, H., Deitle, A., and Morgano, M., Android for Programmers – An App-Driven Approach, Prentice Hall, Upper Saddle River, NY, 2012, ISBN: 10-0-13-212136-0.
Wolber, D., et al., App Inventor: Create Your Own Android Apps, O'Reilly Media; 1 edition (May 10, 2011), ISBN-10: 1449397484

Students are expected to buy one of the two books and team up with another student who bought the other book. One of the school counties involved in our area buys these books and lends them to their students.

15. Supplementary/Recommended Readings

android.fau.edu, www.appinventor.mit.edu, and d.android.com

16. Course Topical Outline, Including Dates For Exams/Quizzes, Papers, Completion of Reading

1. Days 1 to 4: Android SDK installation and use. Programming with Java and XML, and use of Android SDK to develop Apps, and perform emulation/run on smart phones.
2. Days 5 and 6: App Inventor, Translation of Code from App Inventor to Java, and vice versa.
3. Days 7 to 9: Project definition, development, debugging, and testing. Presentation and demo.

Dates :   Quizzes- During Days 2,3, 4, 5, 6, 7, and 8:
               Mid-Term exams – Days 4 and 7
               Project Assignments – Days 6 to 9
               Design Report and Documentation – Due on Day 9
               Demo, Presentation, & Video – Due on Day 9 (20 minutes)

17. Technical Resolution Policy - You will be using Blackboard tools for communication. On the Welcome page, once you log in, you have the option to Submit a Ticket (see on the left hand side) to the Online Support Center. They may also be reached at 561-297-3999. However, they will not be able to help you with the installation and use of the tool suite used in the class. We have excellent tutorials at android.fau.edu and many on-line sites. First try these things and if you still have difficulties, feel free to contact Dr. Shankar.

18. Test Policy – (1) The Quizzes will be available on-line. The team can collaborate and respond to these. These will typically require the use of tools, references, and resources to answer questions on programming, debugging, testing, application components, software engineering, system design, etc., as pertinent to that day's material covered and/or that day's project focus. These are expected to take about 1 hour to discus and respond. **(2)** The Mid Term exams will be one hour long and will be individual. It is meant to ensure that you understand the basic principles before you undertake App development. It will be open notes, open book, and available on-line over a 24 hour period. Questions will be drawn from a large pool of multiple choice and fill-in-the-blank types of questions. They will be randomly assigned to you when

you sign in. You will be able to pause and continue the exam – but plan on being available continuously for about 1.5 hours, assuming you will take breaks in-between. It will not be timed. **(3)** The project assignments will help you develop your project in stages, viz., storyboarding, technical mockups, system design, coding, and report generation. Sufficient examples from previous semesters will be made available. These are group oriented assignments. If a presentation, they will last about 20 minutes per team. If a report, it probably will be about 10 to 15 slides/pages for the submission. **(4)** Documentation is expected to document all the work accomplished (slides, assets, code, test suites, marketing video, demo, etc.) so we have all the material to improve upon it. These are due at the end of the third week. **(5)** Demo, Presentation, and Marketing Video – These are due on the final Friday – your group will make a 20 minute presentation on campus.

19. Other Important Information - This is a rapid paced summer course with strong emphasis on projects. You will be developing a marketable smart phone App. We have much experience in this area, having taught 360+ students during the past 2+ years. We expect that mainly pre-engineering students will register for this course.

By the start of Day 2, you should have posted your biosketch (so as to ease the process of team formation) and signed two forms (photo and video release form and IP release form). Details will be provided in the Day 1 folder.

20. Technology Requirements:

General System Requirements for Android SDK
Supported Operating Systems
- Windows XP (32-bit) or Vista (32- or 64-bit) or Windows 7
- Mac OS X 10.4.8 or later (x86 only)
- Linux (tested on Linux Ubuntu Hardy Heron)
    - 64-bit distributions must be capable of running 32-bit applications. For information about how to add support for 32-bit applications, see the Ubuntu Linux installation notes.
Supported Development Environments
- Eclipse IDE
    - Eclipse 3.4 (Ganymede) or 3.5 (Galileo)
        - Note: Eclipse 3.3 has not been tested with the latest version of ADT and support can no longer be guaranteed. We suggest you upgrade to Eclipse 3.4 or 3.5.
        - Recommended Eclipse IDE packages: Eclipse IDE for Java EE Developers, Eclipse IDE for Java Developers, Eclipse for RCP/Plug-in Developers, or Eclipse Classic (3.5.1+)
        - Eclipse JDT plugin (included in most Eclipse IDE packages)
    - JDK 5 or JDK 6 (JRE alone is not sufficient)
    - Android Development Tools plugin (optional)
    - Not compatible with Gnu Compiler for Java (gcj)
- Other development environments or IDEs
    - JDK 5 or JDK 6 (JRE alone is not sufficient)
    - Apache Ant 1.6.5 or later for Linux and Mac, 1.7 or later for Windows
    - Not compatible with Gnu Compiler for Java (gcj)
Note: If JDK is already installed on your development computer, please take a moment to make sure that it meets the version requirements listed above. In particular, note that some Linux distributions may include JDK 1.4 or Gnu Compiler for Java, both of which are not supported for Android development.
Hardware requirements
- For the base SDK package, at least 600MB of available disk space. For each platform downloaded into the SDK, an additional 100MB is needed.

General System Requirements for MOTODEV Studio
MOTODEV Studio for Android is 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, in terms of backward compatibility. Most current operating systems released during 2011 or earlier should be supported. Use the following info as a guide. The installation tutorial will help you make the final decision.
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)

Fedora Linux
- Fedora Linux version 11
- KDE version 4.2.2
- 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)