Department of Computer and Electrical Engineering and Computer Science
Florida Atlantic University
Course Syllabus

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 '14) with a GPA of 3.0 or above.

3. Course logistics
Term: summer 2014 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 6/9-6/27, MWF, 9.30 AM to 4.30 PM, in 207 EE. The Phones and Tablets are available in 408 EE to experiment with on T R, 10 AM to 4 PM. These devices may be checked out for the course duration. They are due back in fully functional form on the last day of classes; otherwise your final grade will not be posted until you return or replace the same.

4. Instructor contact information	
Instructor's name *Office address* *Office Hours* *Contact telephone number* *Email address*	Dr. R. Shankar, Professor, in collaboration with Prof. McAfee, Arts & Letters Engineering East (EG-96) Bldg., Room 513 Android On-line Google Hangout/ BB Collaborate sessions: T 7 to 8.30 PM, R Sa 10 AM to 11.30 AM 561-297-3470 shankar@fau.edu

5. TA contact information TBA	

6. Course description
The course will help students develop applications for Google's Android mobile phone. Students in groups of two will use Processing language to develop sensor-focused applications. The students will use a software emulator in a limited manner and a real phone to develop and demonstrate the application ('project'). The applications are likely to be related to the exhibits at the Museum of Science and Discovery in Ft. Lauderdale, FL. The focus is on computer science and engineering aspects to design, develop, debug, and test.

7. 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 Processing language), with

	focus on the Math and Physics principles behind Android sensors. Incorporation of computer science and engineering concepts behind connectivity, data bases, and animation will help develop interesting sensor-based applications.
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.

8. Course evaluation method

There will be 2 project assignments, 4 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 document progress in your App. An updated and cumulative report is due three days after the course is over. The Project Assignments (Project proposal and presentation/demo) are worth 30%, The Quizzes are worth 30%. The Exams are worth 20%. The final report and documentation is worth 20% Extra work to help the class with tutorials, links, etc 10% (bonus points). Individual team member's grades may differ dependent on input from other teammates.	*Note*: The minimum grade required to pass the course is C.

9. 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."

10. 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 the two halves of the required text book. The students will make a presentation on the project chosen. .

A grace period of 2 days is allowed for submission of assignments Students are expected to be in attendance during all the class hours.

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.

11. 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. Talk to Dr. Shankar if you need a laptop for use during the course.

12. 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 four quizzes . So, have your laptop ready and be prepared to use it during the lectures. Here is a site with Net Etiquette rules: http://www.albion.com/netiquette/corerules.html - please familiarize yourself with it.

13. 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.

14. 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.

15. Required texts/reading

 Rapid Android Development: Build Rich, Sensor-Based Applications with Processing, Daniel Sauter, The Pragmatic Bookshelf, 2013, ISBN-13: 978-1-03778-506-2

16. Supplementary/recommended readings

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

17. Course topical outline, including dates for exams/quizzes, papers, completion of reading

1. Day 1: Programming with Processing, Ketai library and Android SDK to develop smart phone Apps for sensors. Use of Nexus 7. Touch Screen, Motion and Position Sensors - Chapters 1-3/Text

2. Day 2: Camera and Location Devices - Chapters 4 and 5/Text. Quiz 1 on pedometry (measure walked distance) and object distance measurement. Use of Math and Physics principles.

3. Day 3: Peer to Peer Networking - WiFi, Bluetooth, and NFC - Chapters 6, 7, and 8 / Text. Quiz 2 on object recognition.

4. Day 4: Working with Data - SQLite - Chapters 9 and 10/Text. Exam 1

5. Day 5; Creating 3D Graphics - OpenGL - Chapters 11 and 12/ Text. Quiz 3 on web services and data visualization

6. Day 6: App ideas – presentations by professionals. Quiz 4 on animation and graphics

7. Day 7: Sensor Fusion – software sensors for improved performance; Brainstorming on App Ideas. Exam 2. Project Assignment 1 (project proposal) is due.

8. Day 8: App Development

9. Day 9: App Development. Project Assignment 2 – Demo, Presentation, & Video (20 minutes) in the afternoon.

10. Due date for the final design report with full documentation (code, assets, marketing video, slides, and a 5 page paper): The following Monday after the last day of the classes (7/2/14) – post it at github.org, an open source repository.

Dates   Quizzes- During Days 2,3, 5, 6:

       Mid-Term exams – Days 4 and 7

       Project Assignments – Days 7 and 9

       Design Report and Documentation – Due on Monday after the last day of classes

       Demo, Presentation, & Video – Due on Day 9 (20 minutes)

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18. 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.

19. Test Policy – (1) The Quizzes will be available on-line. The team can collaborate and respond to these. These will typically be hands-on and will require trial and error type of experimentation. They will help you learn to solve problems by invoking fundamentals in Math and Physics, and in the process,, gain confidence in your abilities **(2)** The 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. The presentation will last about 20 minutes per team. **(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 on the Monday after the three week course. **(5)** Demo, Presentation, and Marketing Video – These are expected to be complete on the final Friday – your group will make a 20 minute presentation on campus. All of these will be uploaded to Github on that day. The final paper of the documentation and any other missing info must be uploaded to the Github site by the following Monday.

20. 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 600+ students during the past 3+ 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 at LinkedIn (so as to ease the process of team formation) and signed three forms (photo and video release form and IP release form; and a form on responsible use of Nexus 7 phone and laptop checked out). Details will be provided in the Day 1 folder.

21. Technology Requirements:

Each team should have a laptop for their use. If you wish to check out one from us, talk to Dr. Shankar. Each team will be given a Nexus 7 smart phone/tablet for use during the course. Some teams may need two of them - we will make them available as needed. You should have Java 1.6+ installed. You will be using Processing PDE and Eclipse IDE, along with Android SDK Download. Instructions will be provided on Day 1. Bring your laptop to the class.

Supported Operating Systems
- Windows XP (32-bit) or Vista (32- or 64-bit) or Windows 7 and 8
- 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.**