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| **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 2014Android 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 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 & LettersEngineering East (EG-96) Bldg., Room 513Android On-line Google Hangout/ BB Collaborate sessions: T 7 to 8.30 PM, R Sa 10 AM to 11.30 AM561-297-3470shankar@fau.edu  |
| **5. TA contact information**There will be 3 TAs in the class: (1) Victor Gallego, PhD Candidate, vgalleg1@fau.edu ; (2) Adrian Kruss, Senior Undergraduate student, Engineering, akruss@fau.edu ; (3) John Ruiz, Senior Undergraduate Student, Arts, jruiz27@fau.edu . There is also another graduate student, Luis Rodriguez, who will be available by email for help. lrodri97@my.fau.edu .  |
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| **6. Course description** |
| The course will help students develop applications for Google’s Android mobile phone. Students in groups of two will use Processing and Java languages to develop sensor-focused applications. The students will use a software emulator in a limited manner and a real tablet (Nexus 7, 2013) 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, analyze, 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) and combine with more sophisticated processing with Java. There will be 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 4 project assignments, 6 quizzes, and 1 exam, 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 three. We will randomly form your groups. The project assignments will help you document progress in your App. An updated and cumulative report is due five days after the course is over. Wiki assignment on your team work is worth 20%. Project assignments on the wiki are worth 15% - and will involve the stages of proposal, storybook, and mockups, and presentation, worth 5% each. These will be posted at the group wiki so others can learn from the same, add their suggestions, etc. Other teams may gain bonus points for their contributions.  The Quizzes are worth 30%.The Exam is worth 10% - it will be held the first Friday. The final demo, video, and presentation is worth 15% - to be held on the last Friday. It will also be Project Assignment 3. The final project report and documentation for the App is worth 10% - due 7/2. The checked out devices are due by then in good functional condition, for grades to be posted on time. This is also Project Assignment 4. 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: only exams are individual. Some quizzes may be individual; but most quizzes and all wiki/ project assignments are group/team-based.  | *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 on the sensor-based App development, from the text book. The other exam will be based on java and Android SDK, as covered at the website d.android.com and our website: android.fau.edu. The students will make a presentation on the project chosen. .* *Students are expected to be in attendance during all the class hours. If you miss any part of the classes, you cannot continue in the class.* *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. We will have an update on it in the class. 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](http://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](http://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. PDE. Use of Nexus 7. Touch Screen, Motion and Position Sensors and Location devices - Chapters 1-4/Text; Confluence for Wiki, Parse for database operations; Twitter and Instagram accounts. Class hashtags. Quiz 1 on touch sensor. Quiz 2 - start collecting data.
2. Day 2: Camera and Peer to Peer Networking - WiFi, Bluetooth, and NFC - Chapters 5- 8 /Text. Quiz 2 on pedometry (measure walked distance). Quiz 3 on object distance measurement and recognition- start collecting data. A demo. Use of Math and Physics principles.
3. Day 3: - Working with Data - Chapters 9 and 10/ Text. Quiz 3 on object recognition and distance measurement. 3D Graphics with Open GL ES and Java - Chapters 11 and 12/ text.
4. Day 4: Installation of Android SDK (on Eclipse), Java with Android, Android APIs. Simple Apps from Google’s Android site. Quiz 4 on an Android App. Wiki Assignment on Sensor due.
5. Day 5; User Interface and Graphics tools (Open GL ES, Maya, and Photoshop) . Quiz 5 on animation and graphics. Edits on the Sensor Wiki (by other teams) - due.
6. Day 6: Visit to MODS. App ideas – presentations by MODS professionals. Exam on Java (may be online). Project Assignment 2 proposal due - at your Wiki site.
7. Day 7: Advanced Android concepts: Google Map, Fragments, SQlite, web access, and cloud computing. Brainstorming on App Ideas. Exam 2. Quiz 6 on advanced Java Apps. Project Assignment storyboard and mockups due.
8. Day 8: App Development. Comments by other teams on the proposal due.
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 Wednesday after the last day of the classes (7/2/14) – post it at our Confluence site. We may have you post it at the Github site.

Dates Quizzes (in-class/ take-home)- During Days 1, 2, 3, 4, 5, and 7 Mid-Term exams – Days 4 and 6 Project Assignments – Days 4, 6, 7, 8, and 9 Design Report and Documentation – Due on Wednesday after the last day of classes  Demo, Presentation, & Video – Due on Day 9 (20 minutes) |
| **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 during a class period, as appropriate. 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 Wednesday 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 signed two forms (photo and video release form from Ms. Lewis, and a form on responsible use of Nexus 7 phone checked out from our team). 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 student will be given a Nexus 7 smart phone/tablet for use during the course. You will be using Processing PDE and Eclipse IDE, along with Android SDK Download. Instructions will be provided on Day 1 and later. 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](http://developer.android.com/sdk/installing.html#troublehooting).
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