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 ‘15) with a GPA of 3.0 or above. Programming in Java, Processing, and/or graphics tools are useful, but not necessary.

3. Course logistics

Term: summer 2015
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/ modifications to existing apps. 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 for 3 weeks, MWF, 9.30 AM to 4.30 PM, in 207 EE, during summer ‘15. 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: Dr. R. Shankar, Professor, in collaboration with Prof. McAfee, Arts & Letters
Office address: Engineering East (EG-96) Bldg., Room 513
Contact telephone number: 561-297-3470
Email address: shankar@fau.edu
Android On-line Google Hangout/ BB Collaborate sessions: T 7 to 8.30 PM, R Sa 10 AM to 11.30 AM

5. TA contact information

TBA

6. Course description

The course will help students modify existing applications for Google’s Android mobile phone. Students in groups of three will use Java and Processing languages to improve an existing FAU application. Some students in each group may also primarily focus on graphics/aesthetics tools. The students will use a software emulator in a limited manner and a real phone to improve and demonstrate the improved application (‘project’). The application extension will be related to sensors, analytics, visualization, or animation (one or two of the four listed). The focus is on computer science and engineering aspects to design, develop, debug, and test. But we do recognize that a good app needs both functionality and aesthetics. So, both aspects are encouraged and expected within each group. Students will work in teams of 3; we expect to form teams of students with backgrounds/ interest in programming and digital arts. Thus, you do not have to background in both aspects. The exams and assignments will cover both aspects, if they were covered in common classes. Any material covered in separate concurrent sessions
7. Course objectives/student learning outcomes/program outcomes

Course objectives

This course is designed to combine programming with graphics and animation to build game Apps. Incorporation of computer science and engineering concepts behind connectivity, data bases, and animation will help develop interesting game or citizen science extensions to 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

Class I ndividual Assignments – 20%; Three Project Assignments: 15%; One mid-term and one final exam: 30%; Final demo, video and presentation: 15%; Project (report and demo video) at open source sites: 20%; and Android community service (bonus): 10%

There will be 3 project assignments, 4 class assignments, and 2 exams, all geared to ensure that you are successful in your project and understanding of Android. Project Assignments are to be submitted on behalf of the team. However, assignments and exams are individual. For the exam(s), you will have 24 hours to take the 1 hour exam. You will work in groups of three. 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. You will use Blackboard, LinkedIn, and GitHub for interaction and documentation. We may divide the class into two groups on some days so we can cover both Java and Graphics material at the same time. More in the class.

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:

10. Policy on makeup tests, late work, and incompletes
There is one exam during the term (but no final exam) in this course.

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 are not powerful enough for our smart phone App development.

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. 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 Java, Processing, and XML, in developing their project. Graphics tools also have scripting languages that are easy to learn (they will be similar to the Processing language). All of the open source community believes in free sharing of their intellectual contributions. We encourage the same of all our students. Document your project fully at Github and find ways to help each other. Acknowledge any help you received from your colleagues and on-line resources.

15. Required texts/reading


Obtain only one of the two books. Share the other book with a teammate. All the books' apps are
available online and free to download.

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

We will run two parallel sessions during some of the following sessions, with the intent to cover all the material so teams are prepared for developing Apps:

2. Installation of Android SDK (on Eclipse), Java with Android, Android APIs. Simple Apps from Google’s Android site.
3. Discussion of up to 4 existing FAU Apps - Your team will be selecting one of them for modification and improvement in one of the 3 or 4 pre-selected ways.
5. 2D image tools, vector graphics with Inkscape or Adobe Illustrator, raster graphics with GIMP or Photoshop. Image and Audio Formats and Compression, png, jpg, mp4, wav, mp
6. Layout, Backgrounds, Buttons, interactive widgets, screen resolutions.(App Inventor For intro)
7. User Experience, Ease of Use, Intuitive Interfaces
8. Basic Video Editing (iMovie, MS MovieMaker, OpenShot are free and open source)
9. Intro to Autodesk’s Maya and Unity3D (Unity3D Pro needed to publish to Android).
10. Advanced Android concepts: OpenGL ES, Google Map, Fragments, SQLite, web access, and cloud computing, as appropriate.
11. App Development. Project Demo, Presentation, & Video

18. Technical Resolution Policy - You will be using Blackboard tools for some of the submissions. 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 exams will be one hour long and will be individual. They 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. (2) Assignments are individual and may be given in class or assigned for completion at home. (3) The project assignments will help you modify an existing app in stages. 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 for 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 ends. (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 course with strong emphasis on projects. You will be developing a state-of-the-art smart phone App. We have much experience in this area, having taught 600+ students during the past 4+ years.

   By the start of Day 2, you should have posted your biosketch at LinkedIn (so as to introduce yourself to others in the class) and signed three forms (photo and video release form and IP release form; and a
21. Technology Requirements:

Each team should have a laptop for their use. 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 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.