

Spring 2012 – FEEDS/Distance Learning Class
COT 6930 – Android Components

Course Syllabus: Software tool and library development for the Android mobile platform using Java and XML, to facilitate rapid development of optimized Android applications.

Text: Murphy, Mark L., The Busy Coder's Guide to Android Development, ComonsWare, Nov 2011, ISBN: 978-0-9816780-0-9. This book will be available free for registered students.

Reference: These books may also be available free for students. That needs to be verified:

Murphy, Mark L. The Busy Coder's Guide to Advanced Android, CommonsWare, March 2012, ISBN: 978-0-9816780-5-4..

Murphy, Mark, L., Android Programming Tutorials, CommonsWare, Nov 2011, ISBN: 978-0-9816780-7-8.

Murphy, Mark, L., Tuning Android Applications, CommonsWare, Oct 2011, ISBN: 978-0-9816780-6-1

Pre-requisite: Java and XML.

Instructor: Ravi Shankar, Professor and Director, CSI, CEECS

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Office Hours: 9 AM to 3 PM Friday

Course Time and Place: MW 9.45 AM to 11.20 AM, FEEDS/Distance Learning Class, CM 128

Course Description: The course will explore ways to incorporate tools, methodologies, and libraries to rapidly develop optimized Android applications. Android provides substantial support. The course will attempt to go further in taming the complexity and facilitating application development. Complete application development is not a goal here. You will be given existing Apps; Your responsibility is to use them to develop Android library/tool/methodology to improve such Apps with regard to user/programmer/component developer experience. SDK kit and emulation will be used in the course. Android phones supporting Android 2.2 are available for limited testing. You are welcome to explore development on more recent Android versions. Either you already are familiar with Android smart phone App development or you will learn the same within the first two weeks of the semester. I will give you access to material (tutorials, videos, applications, etc., to get you up to speed). I will also cover such material in the class, in an accelerated fashion. This is a graduate level class.

Preparation before the class: Installation of Android or Motodev SDK, and emulation of a few Apps. To the extent possible, class related installations will be assigned ahead of the lecture, so we can spend class time discussing the topic and any installation related issues. Project focus areas (items 5 to 10) are to expose you to possibilities. You will use that to develop a set of helper classes, a tool, or a methodology, for a specific application domain. Due to a shorter semester during summer and also to accommodate students new to Android, only 3 of the 6 topics will be covered this summer, dependent on student interest.

Main Topics:

1. Brief Intro to Android: Overview, Life cycle, components, and overall structure (2 lectures)
2. Applications: Emphasis on different components and simple Apps (2 lectures)
3. Frameworks – Examples used: JAR, JUnit, Jena, Javadoc, and Android Scripting (5 lectures)
4. Mid-term Exam: Android material covered in the classes, quizzes, and assignments (1 lecture)
5. Web Services - Patterns and On-line resources (3 lectures)
6. NDK and SDK – Multimedia and Optimization (3 lectures)

7. Concurrency – Bluetooth and Threads (3 lectures)
8. Hardware – Sensors and DSP (3 lectures)
9. Databases – SQLite and Semantic Web (3 lectures)
10. Graphics and Animation – Unity and Open GL ES (3 lectures)
11. Individual Project: on any tool, methodology, or library component development. This will be based on your background and interest, but will focus on one of the items 5 through 10 above, in terms of improving the experience of one of the stakeholders (user /programmer/component developer). .

Tools and Languages used: XML, Java , Motodev with Android SDK and Eclipse IDE.

Grading:	Quizzes (8, drop two lowest scores)	20%	(on concepts and focus areas)
	Midterm Exam (around week 5)	20%	(on Android concepts)
	Project Assignments (4), Week 5 on	40%	(on proposal and interim reports)
	Final Project Demo and Report	20%	(video/live Demo and Report)
	Bonus: Android Community Help	10%	(via blogs, tutorials & links)