**Course Syllabus**

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| **Office Hours:** | M - 12:45-1:45, W - 12:45-2:45 |

**Textbook:**

Professional Android 4 Application Development, by Reto Meier

ISBN-13: 978-1-118-10227-5

**Prerequisites: [(ITM 311 with min. grade of D)]**

**Course Description**

Intelligent device application development is covered with various technologies on mobile and robotic platforms. Utilizing contemporary toolkits, the student considers design and development on emulated and real "smart" devices including smart phones, personal digital assistants, sensors, actuators, and robots. Numerous exercises reinforce concepts gained throughout the course. A term project will integrate course topics into a comprehensive intelligent device application. This course may be taken more than once but only for 6 hours of ITM 455/555 or ITMD 455/555. (Credits: 2-2-3)

**Course Objectives**

Engage students in learning about Mobile Application development. This section will focus on mobile applications for Android platforms . Students will learn how to successfully build and publish apps for the Android Marketplace.

**Course Outcomes**

On successful completion of this unit, students will be able to:

A. Understand the technical challenges posed by current mobile devices, including competitive devices and wireless communications; be able to evaluate and select appropriate solutions.

B. Appreciate the need to keep up with rapid changes and new developments; be able to identify current trends in mobile communications technologies and systems. Use of mobile analytics.

C. Select and evaluate suitable software tools and Google APIs for the development of a particular mobile application and understand their strengths, scope and limitations.

D. Use an appropriate application development to design, write and test small interactive programs for mobile devices (cells or tablets).

E. Demonstrate a deployable working app to sites such to Google’s Play store and similar type stores.

F. Work a fully documented, including wiring the prototype model of the app and presentation of the mobile app. Themes are selected based on current trends in the mobile world.

**C**

**Course Requirements**

Student Responsibilities: Class attendance and active participation are essential if students are to receive maximum benefit from the class. Participation requires preparation including completion of reading, labs, projects and exams by the due dates. If you cannot attend class or complete assignments, labs, projects or exams on time, please let the instructor know beforehand so that we can discuss alternative strategies. It is the student’s benefit to use their time wisely whether it is in preparation for class, during scheduled class, or in the lab. When students are in any IIT lab environment, they should abide by the college policies. Questions and comments are welcome.

Exams and make-up policy: There will be a mid term and final exam for the course. No retakes of exams are allowed unless there are extraordinary circumstances. Any exams (except the final) may be taken early if the instructor is given adequate time to prepare testing arrangements.

Assignments: It is extremely critical that students complete all assignments timely otherwise late points will be deducted accordingly. Submitting assignments timely in the order assigned will ensure progression according to the academic design of the course. **The instructor will not accept bulk assignments**.

Email: Every attempt will be made to answer email daily. Please indicate in your email clearly the problem you are experiencing in your subject and body of your email. Please also include your name and course enrolled.

Academic Policy: Any violations of IIT policies regarding academic honesty and or integrity will be referred automatically to the appropriate college authorities for disposition. Please see appropriate pages in the college catalog for definitions and regulations. The minimum penalty for cheating will be a **zero** for all parties involved on that exam, assignment, lab, project or quiz.

Withdraw policy: No longer attending a class does not constitute an automatic withdrawal. Students are expected to withdraw from the course if they have decided not to pursue the course anymore.

Classroom behavior: During the class time, considerate conduct by all persons is important to a favorable learning environment. Any infringement on the rights of others to get an education will be dealt with in an appropriate manner. Please set all electronic devices such as cell phones or pagers to silent or vibrate mode. No cell phone talking is permitted in the classroom. If you must take the call, please continue your conversation outside of the classroom and please make it short so as to not miss your lecture material.

General notes: In order to achieve the course objectives, it is important to enjoy the class in addition to complying with the above requirements, and the rules and policies of IIT. Most students sign up for the courses with the best intentions. If you are experiencing course/college related problems, please feel free to discuss it with your instructor before a crisis develops so we can resolve them in a manner beneficial to all parties involved.

Reasonable accommodations will be made for students with documented disabilities. In order to receive accommodations, students must obtain a letter of accommodation from the Center for Disability Resources and make an appointment to speak with me as soon as possible. The Center for Disability Resources (CDR) is located in the Life Sciences building, in room 218, with telephone 312-567-5744 or with email at [disabilities@iit.edu](mailto:disabilities@iit.edu).

**Grading and Evaluation Criteria.** Grade distribution is represented as follows:

A – 90% and up

B – 80 to <= 89.99%

C – 70 to <= 79.99%

D – 60 to <= 69.99%

F – 59 and below

The class has the following grade weight based on a point scale

Midterm- 100 points

Final - 200 points

Final project- 200 points

Labs (8) - 400 points

Total points-  **900** points

**Grad students**: The expectation is that graduate students will do all the requirements of the all undergrad students with the following additions:

\* Applications will be fully documented and tested out in both debug mode and release modes

\* All types of IO will have exception handling included in your applications

\* Final project may include the following additions: -Google Services/API’s -Google Analytics -Firebase Cloud Messaging (FCM) Services incls. CCS (Cloud Connection Server)/XMPP + Delivery Receipt API -Application Signing -Publishing with Google Play, etc. -Application reporting & assessment

-Securing the app -Database, File Processing

Lab programs will be based on the following point allocations: Program correctness: 30 points (Your program runs and executes without errors, meeting all program requirements with readable program output display)

Design Approach and Documentation: 15 points (Program must follow standard programming style. Please examine programming styles from class demo’s, textbooks, proper usage of blocks and indentations, proper documentation, meaningful variable names, comment statements, algorithm development, and programming logic used/approach to resolve assigned problem. **Label each lab with your name at the top of your source code as well as your lab number!!! Each lab must have adequate snapshots of output for full credit as well.**)

Program enrichments: 5 points (Error proof program, extra features included, OOP methodology consideration, reliability and ease of maintenance-above and beyond)

**Blackboard – The IIT Online Classroom**

We will use IIT's Blackboard system (<http://blackboard.iit.edu>) to communicate weekly agendas, submit homework, labs, ask questions, to post lecture materials and get feedback. Each student should have been notified of his or her Blackboard account for this course. If you have not been notified, go to above web page where there is contact information. Blackboard weeks start from Monday through Sunday.

Tentative course topical coverings by week:

1. Course overview.

Android versioning, the SDK/Studio IDE overview. Gradle. The AVD.

1. Android features and capabilities. App Creation Essentials. UI layouts. Life Cycles.
2. Android Architecture. Intents, Splash screens.
3. Creating Views. Adapters.
4. File Processing. XML parsing vs. JSON parsing.
5. Fragments. Advanced interfaces-Navigation Drawer, Tabbed Layouts.

Recycler View, Card View Widgets.

1. SQLite database introduction. Content Providers. Preferences.
2. SQLite continued. Cursors. LogCat.
3. SQLite continued. Master / Detail views. **Mid term**.

Final Project intro.

1. Concurrency, background services.
2. Advanced UX. Intro to API’s– Google, Facebook, Firebase
3. API’s continued
4. Distribution of App on the Play Store. Marketing your App.

Digital signing.

Final project presentations.

1. Final project presentations continued.
2. Final project presentations continued. **Final Exam Study**.