

CS 442: Mobile Applications Development

Course Instructor: Christopher Hield

Course Email: chield@iit.edu -or- christopher.hield@gmail.com

Course Summary

Students will learn a variety of software engineering techniques and patterns to assist in the rapid development of mobile applications, leveraging frameworks and APIs provided by the Android development platform. Application lifecycles, data management and persistence mechanisms, and user interface design (among other topics listed later) will be covered. Students will take ideas from concept to final implementation and when appropriate, students will learn the additional step of deploying their work on the appropriate application marketplace(s). Prerequisites: (CS 331 or CS 401) and (CS 351 or CS 402).

Course Objectives

- Acquire the skills needed to build applications targeting the Android mobile platform, making use of the substantial set of existing application and system level frameworks and development stacks
- Know how and when to use the appropriate software design techniques and patterns in complex software projects
- Weigh the relative pros/cons of different approaches to data management and persistence, and use existing implementations of them in software projects
- Take a mobile development project from concept and mockup to final, robust implementation
- Understand the limitations and necessary tradeoffs involved in designing software applications for resource-constrained platforms (such as the mobile platforms targeted by the course)
- Have experience using various facilities for concurrency and operation management, as alternatives to the traditional explicit multi-threaded model

Prerequisites

You must have taken the following:

Undergraduate curriculum: CS 350 and CS 351

Graduate curriculum: CS 401 and CS 402

Grading Policy

Course Grade Evaluation:

Assignments: 75% Weighting

Quizzes: 25% Weighting

Assignments will vary in complexity, duration, and grade-weight

*NOTE: Live-section students also have an attendance component factored into their grade
(described on the next page)*

**Grading Scale**

Undergraduate

A: 90%-100%	B: 80-89%	C: 70-79%	D: 60-69%	E: 0-59%
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Graduate

A: 90%-100%	B: 80-89%	C: 70-79%	E: 0-69%
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Course Lectures

Students are expected to either watch the live lecture broadcast each week, or watch the lecture recording within 3 days of the live session.

Be advised that a significant amount of course and assignment guidance is given in class and missing that assistance can severely compromise your ability to perform adequately in this course.

Text Resources

Google's Android Developer site (<http://developer.android.com>) is a great resource for all information related to Android App Development. It is kept up to date with current android releases, so it makes a great resource not only for students, but for professionals alike. Required readings will come largely from this resource. Other resources may be used from time to time as appropriate.

Course Performance Requirements

Course grades are *solely* based upon the student's academic performance as described earlier. This means that a student's grade is based *only* upon their performance on the assignments, quizzes, and attendance (for live-section students). No other factors will be considered. THIS POLICY WILL BE STRICTLY ENFORCED.

- ***Requests for special grade consideration or unearned credit (i.e., extra points) will not be acknowledged.***
- ***All assignment and quiz dates are firm and cannot be changed.***
- ***There will be no extra credit assignments given to specific individuals - please don't ask.***
- ***If you are not comfortable with this policy, please drop the class now.***

Coursework

All assignments in this course must be completed in a timely manner. For full credit on a given assignment, it must be submitted on time. Late assignments will be accepted with a 10% penalty per week past the deadline. (i.e., turned in from 1 minute to 1 week late = 10% penalty, 1 minute past 1 week to 2 weeks late = 20% penalty, 1 minute past 2 week to 3 weeks late = 30% penalty, etc.). *Note – the last assignment of the semester MUST be turned in on-time, and no late submissions will be accepted for that assignment.*

THIS POLICY WILL BE STRICTLY ENFORCED. If you are not comfortable with this policy, please drop the class now.



Academic Integrity

You are welcome to discuss assignments with classmates, but all assignment work must be your own. Academic integrity violations (i.e., plagiarism) *will* result in one of the following actions:

- Reduction in grade: Reduction in grade for the assignment or exam involved or reduction in grade for the entire course may be applied.
- Expulsion from a course: The student is assigned a punitive failing grade of 'E' for the course and can no longer participate in the course or receive an evaluation of coursework from the instructor.

Plagiarism in this course consists of (but is not limited to):

- Using software code provided to you by someone other than your instructor in your assignments
- Sharing your own (or anyone else's) assignment code with other students in this or any other course
- Using parts or all of any previously submitted assignments written by someone else
- Using any unauthorized assistance when working on assignments or taking quizzes
- Taking quizzes in a group setting, or in any context where you obtain assistance from others
- Using any assignment or quiz materials from a previous semester

If you are not comfortable with this policy, please drop the class now.

The IIT code of Academic Honesty may be found in the IIT student handbook at: (<http://web.iit.edu/student-affairs/handbook/fine-print/code-academic-honesty>)

Programming Environment

As this is an android course section, we will be using the Java programming language (with all available android extensions). All students *must* use the Android Studio IDE - we will cover its usage in class. No other languages or IDE's may be used.

Assignment Submission

All assignment submissions must be done via IIT's Blackboard. No submissions will be accepted via email or any other means. Please leave enough time as a due-date/time approaches to prepare and make your online submissions. Submissions that are timestamped after the due date/time will be considered late.

Disability Accommodations

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. The Center for Disability Resources (CDR) is located in Life Sciences Room 218, telephone 312 567.5744 or disabilities@iit.edu.

Course Topics

Topics covered in this course include (but are not limited to):

- Android & Mobile App Concepts
- Android Architecture
- Android Run Time
- Android SDK and Android Studio
- Running on Emulators
- Running on Devices
- Android App Elements
- Resources
- Manifest
- Gradle
- Activities
- Logging
- Bundles
- Java Classes
- UI Widgets
- Strings XML
- Toast & Snackbar
- Layout Managers
- Listeners
- Alternate Layouts (Landscape)
- Async Tasks
- Broadcast Receivers
- Content Providers
- Permissions and Security
- Internet Connectivity
- Data Processing (XML & JSON)
- List Views & Adapters
- Menus
- Multi-Activity Apps
- Intents
- Working with APIs
- Nested Layouts
- Gestures & Detection
- Material Design
- App Backwards Compatibility
- Styles & Themes
- Data Storage (Files & SQLite DB)
- Fragments
- Google Play Store

Topics may be added or dropped based upon technological developments and class performance.

Changes to Syllabus

This syllabus is subject to change as necessary during the semester. If a change occurs, it will be thoroughly addressed during class, and sent via email.

Please note, your attendance in this course beyond the first lecture will constitute an implicit confirmation that you have thoroughly read and understood this syllabus and agree to all content herein.