Computer Science Department

CS 230 – Developing Mobile Apps

Course Outline
Fall 2019

Professor:

Name: Russell Butler, Ph.D.
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Office: Johnson 114A
Extension: 2420
Office Hours: Monday, Wednesday, Friday 9:30 am – 11:00 am
Tuesday and Thursday by appointment (email)

Schedule:

Lecture/Lab:	Monday	2:30 pm to 4:00 pm	Nicolls 113
	Wednesday	2:30pm to 4:00 pm	Nicolls 113

Objective:

Learn how to program mobile apps for Android

Content:

This course will cover mobile application development for the Android operating system using Android Studio. Basic programming knowledge is assumed, as the majority of the course (assignments, final project) will involve hands-on coding of mobile apps in Java/Kotlin programming languages. Setting up and using Android Studio IDE and basic version control (git) will be covered in the introduction along with basics concepts of Android OS. Students will learn how to design and develop applications to account for the limited screen size and memory of mobile devices. Topics to be covered include networking, streaming, sensors (camera, GPS, gyroscope, etc), Google Maps, 2D graphics, and mobile app specific software engineering patterns. The course concludes with monetization (ads, in-app purchases, etc) and app store optimization strategies. The goal is for each student to develop and release an app by the end of the course.

Credits: 3

Organization

1.5 hours of lecture per week
1.5 hours of lab per week
4-8 hours of personal time per week

Specific Objectives:

By the end of the course, the student should be able to:

1) Write clean, concise Java programs using classes, interfaces, and generics.
2) Build and debug a mobile application using Android Studio.
3) Employ Android best practices and recommended architecture for building robust, production quality apps including concepts such as *separation of concerns* and use of *persistent models* to drive UI.
4) Adhere to Android design guidelines for visual and navigation patterns and follow quality guidelines for *compatibility*, *performance*, and *security*.
5) Recreate basic functionality of top apps such as WhatsApp and Instagram
6) Deploy a mobile application to the Google Play Store and optimize the app store listing to maximize downloads
7) Monetize an app using in-app purchases and advertising
8) Identify trends and opportunities in the mobile landscape

Organization:

Lecture time (Monday and Wednesday) will be used to introduce and practice new concepts relating to app development in Android. Lectures will be delivered in the lab using Powerpoint, students will then gain immediate hands-on experience on lab computers in Android Studio following the lecture. Lecture examples and lab solutions will be given in Java, but the student is free to use either Java or Kotlin for their labs and assignments.

Evaluation:

Labs:	10%
Assignments:	60%
Final project:	30%

There will be 8-10 labs (worth 1% each), 3 assignments (worth 20% each) and a final project (worth 30%). Assignments/project may be completed individually or in pairs (2 people max), labs must be completed individually. Failure to submit an assignment/project before the deadline will result in a loss of 5% on that assignment/project for each day late (including weekends). Plagiarized or undelivered assignments/projects will be given 0%. All assignments will be in Android and must be coded in either Java or Kotlin. The final project may be coded using the student's platform of choice, but source code must be provided and the app must be published to either Google Play Store or Apple App Store by the final deadline. If the final project is not published by the deadline due to Apple/Google review concerns, the student must demonstrate a working app to the instructor by the final deadline along with proof that the app is under review.

Resources:

https://developer.android.com/
(no textbook)