ITP 341 – Android App Development
Units: 4

Location: TBD

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Hours of Service: 8am–5pm M-F
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Course Description

This course teaches how to develop applications for smartphones and tablets supporting open-source operating systems such as Android. We will go through the process of building a mobile application from start to finish using the Android SDK (Software Development Kit). You will learn how to leverage the Kotlin programming knowledge to design mobile interfaces, how to use the libraries to build applications that have the proper look and feel, how to use table views, how to design and handle user input, and other aspects as time permits. During the lab sessions, students will create applications using Android Studio IDE (Integrated Development Environment).

Learning Objectives

- Develop Android mobile app using Kotlin
- Design UI for mobile and tablet screens
- Evaluate and integrate third-party APIs and libraries into mobile app
- Apply principles of effective UI design
- Understand the hardware and software constraints of developing for mobile platforms
- Understand the advantages and disadvantages of working in an open-source platform

Prerequisite(s): ITP 265 or CSCI 104L

Format

This course will make use of Blackboard for content and assignments. Lecture slides and any supplemental course content will be posted to Blackboard for use by all students. Any and all announcements for the course will be posted to Blackboard. All assignments will be posted to Blackboard and will be submitted through Blackboard. **Please familiarize yourself with Blackboard before the course begins**.

Required Readings and Supplementary Materials

Phillips, Bill, et. al. *Android Programming: The Big Nerd Ranch Guide (3rd ed)* Big Nerd Ranch Guides, 2017.

ISBN: 0134706056

Supplementary Books

Annuzzi, Jr., Joseph, et. al. *Introduction to Android Application Development: Android Essentials (4th Edition)*. Addison-Wesley Professional, 2013.

ISBN: 0321940261

Grading Breakdown

Item	% of Grade
Assignments	50
Midterm Exam	20
Final Project (see breakdown below)	30
Total	100

Grading Scale
Course final grades will be determined using the following scale (round to two decimal places)

A	100-93	B-	82-80	D+	69-67
A-	92-90	C+	79-77	D	66-65
B+	89-87	C	76-73	F	64 or below
B	86-83	C-	72-70		

Programming Assignments
Programming assignments will generally be due one week after they are assigned and should be completed individually. App code should be submitted on Blackboard and must compile.

Social Impact of Tech Assignment
This assignment will have staggered due dates for different students throughout the semester. Students will identify a societal impact that is caused by technology and present a discussion in class. This assignment will be weighted the same as a programming assignment.

Final Project Details
Schedule
Week 12 – Submit project proposal
Week 13 – Revise proposal if necessary
Weeks 14 to 16 – Work on project (in-class milestone week 14)
Final exam period – Final presentation (Graded)

Basic Requirements
The final project must be a mobile app (written in Kotlin) that is successfully deployed on an Android device. The concept of the app is up to the student, but the app's primary purpose must be to provide a social benefit. The social impact may be focused on a small or large community, socioeconomic group, underrepresented group, a geographic region, etc. The proposal should explain the social need addressed as well as explain how the app will help. The proposal should include wireframes of the initial idea / design and a general description of the app.

The final app will be graded on how it fulfills the requirements and the quality / completion of the code. Successful projects will follow the Android style guidelines and UI standards, allow for user interaction, and demonstrate concepts learned during the course. A project must represent the student's sole effort; online tutorials or class examples may be consulted, but they must be improved upon and noted in the final documentation. Failure to note and provided links to any reference material will be considered cheating.

Project Grading Breakdown

Item	Points
Project use of Kotlin	5
App Icon and other images in assets with multiple resolutions	10
Propose use of Jetpack Compose	5
MVVM Design Pattern	10
Persistent Storage	5
Technology #1: API	15
Technology #2: Various Options	15
App compiles, runs and is fully implemented	10
User Interface: Flow, Material Design Guidelines	15
Comments in code and project files organized well	10
Total	**100**

Grading Timeline
Assignments will receive feedback within one week.

General Policies
Students are expected to:
- Attend and participate in lecture discussions and critiques
- Attend and complete weekly Assignments
- Manage and complete individual class projects

Students are responsible for completing assignments and projects by stated deadlines. Most assignments will be uploaded to the course's Blackboard site.

Extra Credit Policy
Android is large ecosystem with many more elements that can be covered in a single class. To encourage exploration and self-study, each assignment has up to 10% extra credit bonus for features beyond the scope of the course.

Sometimes there will be specific recommendations for bonus features to implement, and sometimes it will be left to the student. Points will be earned based on rigor (how difficult was the feature to implement), functionality (does the feature work properly), and applicability (does the feature make sense given the larger assignment). It is the responsibility of the student to state in their Blackboard submission that they included extra features.

Late Policy
- Assignments are due on the stated day on Blackboard (typically at 11:59 pm)
- Students are given 3 "grace days" (self-granted extensions) which may be used for extra time without penalty
- Grace days may be used for assignments only, **not the final project**
- Grace days may be used for one assignment, distributed them across several assignments, or even better, saved them for a crisis that thankfully never comes
- Instructor-granted extensions are only considered after all grace days are used and only given in rare, exceptional situations

- **Late work will not be accepted after all the grace days have been used**

Important: it is the responsibility of the student to state in their Blackboard submission that they intend to use a grace day.

(Adapted from Stanford's EE365 policy)

Grading Issues

Students will have two weeks after graded feedback is given to contest scores (e.g. assignments, midterm, and project). After two weeks, scores will not be changed.

ITP Labs

Before logging onto an ITP computer, students must ensure that they have emailed or saved projects created during the class or lab session. Any work not saved will be erased after restarting the computer. ITP is not responsible for any work lost.

ITP offers Open Lab use for all students enrolled in ITP classes. These open labs are held beginning the second week of classes through the last week of classes. Please contact your instructor for specific times and days for the current semester.

Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Readings	Deliverable/ Due Dates
Week 1	Android Studio, Kotlin Basics Function	Ch. 1 (Phillips)	HW 1 - Kotlin
Week 2	Classes Kotlin Intermediate	Ch. 1 (Phillips)	HW 1 - Kotlin
Week 3	Composable Basics State Management	Ch. 3 (Phillips)	HW 2 - Profile
Week 4	View Layouts Mad Libs Demo	Ch. 9 (Phillips)	HW 3 - Choose
Week 5	Collection Types MVVM	Ch. 5 (Phillips)	HW 4 - Tip Calculator
Week 6	Debugging and Testing Gestures / Animation	Ch. 2 (Phillips)	HW 5- Flashcards
Week 7	Lists / Midterm Review Midterm	Ch. 7, 10 (Phillips)	HW 5- Flashcards
Week 8	Navigation Data Persistence	-	HW 6- Flashcards 2.0
Week 9	Photos Location Services, Map	Ch. 8 (Phillips)	HW 6- Flashcards 2.0
Week 10	Coroutines Networking, API	Supplemental readings provided	HW 6- Flashcards 2.0
Week 11	Unsplash Demo Lazy Grids	Ch. 8 (Phillips) Supplemental readings provided	HW 7 - Unsplash feed
Week 12	Firebase Intro Firebase - Firestore	Ch. 25 (Phillips)	Project Proposal
Week 13	Firebase - Auth Firebse - Storage	Ch. 8 (Phillips) Supplemental readings provided	Final Project
Week 14	Deployment	Ch. 13 (Phillips)	Final Project
Week 15	Open Labs	Ch. 18-19 (Phillips) Supplemental readings provided	Final Project
FINAL			Final Project Due during schedule file examination by USC

Note: Students will work on the social issues assignment in teams, and each team will be given staggered due dates during the semester

Statement on Academic Conduct and Support Systems

Academic Conduct

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, "Behavior Violating University Standards" https://policy.usc.edu/scampus-part-b/.   Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Support Systems

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. https://engemannshc.usc.edu/counseling/

National Suicide Prevention Lifeline - 1-800-273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. http://www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.
https://engemannshc.usc.edu/rsvp/

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: http://sarc.usc.edu/

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. https://equity.usc.edu/

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. https://studentaffairs.usc.edu/bias-assessment-response-support/

The Office of Disability Services and Programs
Provides certification for students with disabilities and helps arrange relevant accommodations. http://dsp.usc.edu

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. https://studentaffairs.usc.edu/ssa/

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. https://diversity.usc.edu/

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible, http://emergency.usc.edu

USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.
Provides overall safety to USC community. http://dps.usc.edu