

CIS 3515

Introduction to Mobile Application Development

Instructor:

Karl Morris
Email: karl.morris@temple.edu
Location: SERC 327
Office hours: T, W 12:30 - 1:30 PM or by appointment
URL: <https://temple.zoom.us/j/92632784928>

Textbook:

<https://developer.android.com/guide>

Online Resources

Android Resources: <http://developer.android.com/>
Discussion and help: <http://stackoverflow.com/questions/tagged/android>
GitHub: <https://github.com>
Tutorial videos: <https://www.linkedin.com/learning/> (Git tutorials)

Course Description

Mobile devices are the computers that we carry with us at all times. Our mobile device becomes our news station, our compass map, our camera, and our conduit to the rest of the world. However, we use this computer in different ways than we use any other computer. Our interaction with it is frequent, frequently interrupted, and frequently taken for granted.

This course will introduce students to application development for mobile devices. Students will learn about the various constraints inherent to mobile applications as well as the new opportunities that they present. Students will learn how to address challenges in hardware and user interfaces by incorporating software design and user-interaction design principles. Additionally, students will learn about mobile-centric concerns such as software and data distribution models, leveraging third party software, and managing data locally and remotely.

Course Objectives

Introduce students to the mobile application development paradigm via innovative problem solving, entrepreneurial projects. The course will focus on implementing applications on mobile devices and highlight the considerations that such implementations require. Participants will become exposed to mobile design principles and become familiarized with the constraints of mobile application development.

Students completing this course are expected to:

- Be familiar with HCI and mobile design considerations
- Understand limitations and design methodologies for mobile applications
- Become familiar with web-centric technologies such as HTTP and database servers, and scripting languages
- Implement a mobile application for an identified problem or industry

TOPICS

- Mobile computing and Android

- Application Code and Presentation - Activities and Layouts
- The Android Application Manifest
- The Android Intent system
- The Android permission model
- Parallelism and concurrency
- Accessing local (file) and remote (web) content

Grading

Course grade will be determined by

- Projects (60%)
- Quizzes (40%)

Course Grade Considerations

- Assignments are submitted via Source Management, such as Git
- Late submissions are not accepted. Commits that take place after the deadline (hash verified) will be treated as a late submission.
- Quiz content may be taken from all topics discussed up to and including the last lecture of the previous week. Topics may show up on multiple quizzes.

FINAL GRADES

Final Grade	Percentage
A	92 - 100
A-	90 - 91
B+	88 - 89
B	82 - 87
B-	80 - 81
C+	78 - 79
C	72 - 77
C-	70 - 71
D	62 - 69
D-	60 - 61
F	0 - 59

Schedule

(Break: Week 8)

Week	Lecture
1 - 2	Review of Object Oriented Development An introduction to mobile computing and Android The Android SDK and IDE
3 - 6	Quiz 1 (Week 3)

	App development basics <ul style="list-style-type: none"> - Look and feel <ul style="list-style-type: none"> o Layouts and Views <ul style="list-style-type: none"> ▪ Event handling ▪ Displaying collections in views ▪ Runtime view creation o Styles and Themes - Behavior <ul style="list-style-type: none"> o Activities and View binding o Maintaining instance state o Understanding Context - Meta data <ul style="list-style-type: none"> o The app manifest in detail - Debugging Android applications Quiz 2 (Week 5)
7 - 10	Responsive Apps <ul style="list-style-type: none"> - Alternative layouts - Resources - Fragments Quiz 3 (Week 7) Quiz 4 (Week 9)
11	Network communication <ul style="list-style-type: none"> - Android permissions - Multithreaded applications <ul style="list-style-type: none"> o Inter-thread communication <ul style="list-style-type: none"> ▪ Handlers o Coroutines Quiz 5 (Week 11)
12 - 13.5	System communication <ul style="list-style-type: none"> - Inter-component communication <ul style="list-style-type: none"> o Intents o Operation delegation - Services - Intro to Broadcasts and Receivers Quiz 6 (Week 12)
13.5	Storage <ul style="list-style-type: none"> - Android permissions - File system and access rights - Shared preferences

	Quiz 7 (Week 13)
14	App maintenance <ul style="list-style-type: none"> - Managing fragmentation - Signing and distributing Quiz 8 (Week 14)
15	Additional topics

Student Responsibilities

Students are responsible for reading all assigned text materials, handouts, and referenced sources. Students are responsible for meeting ALL deadlines. **Late submissions will not be accepted**, and will result in receiving no grade for that assignment. There are **no exceptions** to this rule, outside of those dictated by department, college, or university policies (e.g. accommodations requested through DRS). Students are responsible for participating in classroom discussions and discussions carried out electronically through Canvas or other class facilities.

The CIS laboratory computer systems are available for use in homework and laboratory exercises. Access to the computer systems in CIS labs is through Temple University AccessNet username and password. SERC laboratories have dual boot Windows and Linux systems. You are responsible for performing and completing all projects. This includes becoming familiar with, and being able to use, all of the tools and software that are to be used in these exercises.

Students are responsible for taking all quizzes and exams in the course. All work turned in for grading or review by the instructors of the course must be the students own work. The objectives of the course can only be met by your doing all of the work and presenting only your work for grading. Presenting work that is not your own will result in disciplinary action.

Student attendance to each class and each laboratory, virtual or otherwise, is **Mandatory**.

Collaboration and Cheating Policy

You are welcome to discuss assignments and laboratory projects with other students, provided that all work turned in must be your own. If you do discuss your work on assignments with other students, please list your collaborators at the top of your assignment, underneath your name. This does not excuse you from submitting your own work! For the in-lab parts of laboratory projects completed in teams, both team members should contribute equally and will be graded individually. The write-ups and out-of-class portions of labs must be completed independently.

In summary, when you are turning in an assignment with your name on it; what you turn in must be your work, and yours alone. Cheating will not be tolerated.

Disability Disclosure Statement

Any student who has a need for accommodations based on the impact of a documented disability or medical condition should contact Disability Resources and Services (DRS) in 100 Ritter Annex (drs@temple.edu; 215-204-1280) to request accommodations and learn more about the resources available to you. If you have a DRS accommodation letter to share with me, or you would like to discuss your accommodations, please contact me as soon as practical. I will work with you and with DRS to coordinate reasonable accommodations for all students with documented disabilities. All discussions related to your accommodations will be confidential.