

# CIS 3515

## Mobile Application Development

### Instructor:

Karl Morris  
Email: [karl.morris@temple.edu](mailto:karl.morris@temple.edu)  
Location: SERC 327  
Office hours: T R 2:30 - 3:30 PM or by appointment

### Textbook:

None

### Online Resources

**Android Resources:** <http://developer.android.com/>  
**Discussion and help:** <http://stackoverflow.com/questions/tagged/android>  
**GitHub:** <https://github.com>  
**Tutorial videos:** <http://lynda.com> (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

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

## FINAL GRADES

Final grades will be assigned as follows:

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

Week	Lecture	Labs
1 - 2	<b>Review of Object Oriented Development</b> <b>An introduction to mobile computing and Android</b> <b>The Android SDK and IDEs</b>	
3 - 5	<b>App development basics</b> <ul style="list-style-type: none"><li>- Look and feel<ul style="list-style-type: none"><li>o Layouts and Views</li></ul></li><li>- Behavior<ul style="list-style-type: none"><li>o Activities and View binding</li><li>o Event handling</li><li>o Creating runtime views</li></ul></li><li>- Meta data<ul style="list-style-type: none"><li>o The app manifest in detail</li></ul></li><li>- Debugging Android applications</li><li>- Context</li><li>-</li></ul>	

	<b>Quiz 1 and 2</b>	
6 – 9.5	<b>Responsive Apps</b> <ul style="list-style-type: none"> <li>- Alternative layouts</li> <li>- Resources</li> <li>- Fragments</li> </ul> <b>Quiz 3 and 4</b>	
9.5 – 10.5	<b>Network communication</b> <ul style="list-style-type: none"> <li>- Android permissions</li> <li>- Multithreaded applications <ul style="list-style-type: none"> <li>○ Inter-thread communication <ul style="list-style-type: none"> <li>▪ Handlers</li> </ul> </li> </ul> </li> </ul> <b>Quiz 5</b>	
10.5 - 11	<b>System communication</b> <ul style="list-style-type: none"> <li>- Inter-component communication <ul style="list-style-type: none"> <li>○ Intents</li> <li>○ Function delegation</li> </ul> </li> <li>- Services</li> <li>- Intro to Broadcasts and Receivers</li> </ul> <b>Quiz 6</b>	
12	<b>Storage</b> <ul style="list-style-type: none"> <li>- Android permissions</li> <li>- File system and access rights</li> <li>- Shared preferences</li> </ul>	
13	<b>Resource management</b> <ul style="list-style-type: none"> <li>- Maintaining instance state</li> </ul> <b>Quiz 7</b>	
14	<b>App maintenance</b> <ul style="list-style-type: none"> <li>- Managing fragmentation</li> <li>- Signing and distributing</li> </ul> <b>Quiz 8</b>	
15	<b>Additional topics</b>	

## **Student Responsibilities**

Students are responsible for reading all assigned text materials, handouts, and referenced sources. Students are responsible for participating in classroom discussions and discussions carried out electronically through Blackboard 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 of the laboratory exercises. 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 is Mandatory.

Students who miss the final exam and do not make alternative arrangements with me before I turn in grades, will receive a grade of F.

## **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](mailto: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.