
MIS 224-01 Mobile Application Development

Fall 2014 · Syllabus

Class Information

Instructor: Dr. Lauren Williams

Class Meeting: Advanced Lab, MW 5:15 - 6:55 AM

Office: Old Main 401 (Tower)

Office Phone: (814) 824-2226

Office Hours: M 10:45 - 12 and M 4 - 5, T 9:15 - 12, W 10:45 - 12, F 10:45 - 12, and by appointment

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Topics and Course Objectives

As more people use mobile devices on a regular basis, applications are being developed to fill an increasing number of needs. There are games, social networking apps, productivity tools, and many other categories of applications that you might be interested in working on. Perhaps you already have an idea for a mobile application. If so, this course is your opportunity to get started. Even if you don't have a goal in mind, you'll be introduced to all the basic ingredients you'll need if you ever decide to create your own mobile application.

You will be introduced to the process of developing mobile applications using the Corona Software Development Kit. Topics that will be covered during the course include:

- conceptualizing a mobile application using storyboards
- programming in Lua, a scripting language used by Corona SDK
- creating on screen text, graphics, and animations
- using the Corona physics engine to simulate object interactions on screen
- working with audio and visual files, including graphic sprites
- working with data files
- interacting with the device hardware
- handling various screen sizes, resolutions, and screen orientation
- writing efficient programs with regard to memory usage and debugging
- integrating native widgets such as buttons, controls, and tables
- distributing mobile applications to the public

Throughout the course, you will be required to demonstrate the ability to:

- create a user interface that is appropriate for your intended audience
- design and implement programs in Lua
- write a program that solves a specific problem in an efficient manner
- acknowledge the aesthetic aspects of application development

Assignments

This will be a project based course. Throughout the semester, you'll be given a variety of assignments to complete. If you choose to work on a single application during the course, you might choose to integrate these assignments into your application. Otherwise, each assignment can be completed as a demo - a one-page application that satisfies the requirements of the assignment. The goal and rubric for each assignment will be provided in class, and posted here. Additional instructions for submitting your assignment will be given, but you will be submitting your program electronically.

Assignments will typically be due by midnight of their given due date. A 10 percent deduction will be taken for any assignments turned in up to 24 hours late (yes, even a few minutes after midnight means a 10 percent loss). A 20 percent deduction will be taken for any assignments turned in between 24 and 48 hours late. No assignments will be accepted over two days past their due date.

Software

We will be using Anscas Mobile's Corona SDK. Corona has several advantages over other SDKs available for mobile development:

- Corona can build apps for Apple's iTunes App Store, Google's Play Store, Amazon's Kindle App Store, among others. Rather than being confined to developing for a single platform, you can choose to design an app for a single device, or all of them, without having to port or rewrite your code.
- Corona is free. There are multiple subscription tiers, some of which do have a charge, but the Starter Plan allows you to develop and publish for all platforms without any charge. If you should choose to publish your app, you might consider upgrading your plan.
- Corona can be used on any machine running Windows or a Mac (note: publishing an app in the Apple App Store will require access to a Mac, but building and testing your app can be done on a Windows machine).
- Corona uses Lua, an easy to learn and flexible scripting language. While not one of the most well-known languages, Lua outperforms many languages in a variety of benchmarks. It is currently the leading scripting language for games, and has been used for other major applications including Adobe Photoshop.
- Corona is popular and well supported. There are many instructional resources, samples, tutorials, and forums to help you learn.

Other Materials

You are not required to have any hardware outside of the computer lab for this course. You may use your own computer to work on projects, but you are not required to. In addition, you are not required to own a mobile device. If you are serious about developing mobile applications, it is highly recommended that you invest in the appropriate hardware. However, the simulator built into Corona is sufficient for our class.

Due to the ever changing nature of mobile technology, textbooks for mobile development quickly become obsolete. No textbook will be required for the course; instead, we will make use of Coronas online resources which are regularly updated. In addition, I will provide you with course notes as we cover each topic.

You will be required to respond to an invitation to a shared Dropbox folder. This invitation will arrive in your Mercyhurst email account. If you do not already have a Dropbox account associated with this email address, you will need to create one (free of charge). All assignments will be submitted via this shared folder.

Attendance

Attendance is not required. However, it can be very difficult to learn this material on your own, so it is in your best interest to attend all class meetings. You will be responsible for any class material or announcements, even if you are absent.

Exams

We will have a midterm and a final exam. The midterm is scheduled for **Wednesday, October 8**. The final exam will be **Wednesday, December 10th, 6 - 8**.

Final Grades

Grades will be calculated as follows:

70% - Assignments
10% - Midterm Exam
20% - Final Exam

Grading scale:

F	D	D+	C	C+	B	B+	A
0-59	60-64	65-69	70-77	78-83	84-89	90-93	94-100

Additional Resources

The following links may be useful throughout the class:

- Corona SDK Webpage, <http://www.coronalabs.com/products/corona-sdk/>
- Lua Webpage, <http://www.lua.org>
- iOS Developer Center, <https://developer.apple.com/devcenter/ios/>
Here, you'll find documentation, sample code, and forums that are only available to developers. This is also where you'll go when you're ready to try your app on an iPhone or iPad, and to publish your app.
- Android Developer Page, <http://developer.android.com/index.html>
Sign up for your Android developer's license here, and browse the site for additional resources. If you want to build an app for Android phones or tablets, this is the place to go.
- Corona Lessons, <http://learningcorona.com>
A collection of tutorials, videos, sample code and more, arranged into categories.
- The Lua Reference Manual, <http://www.lua.org/manual/5.1/>
The official manual for Lua, available free online.
- Stack Overflow, <http://stackoverflow.com>
A question and answer site for programming. There are many Corona users on here.

Other Course Information

The following links may be useful throughout the class:

- I will attempt to return emails as thoroughly and promptly as possible. However, it is generally better to ask complicated questions during class or in office hours. If you run into a problem with an assignment, please put your current work in our shared Dropbox folder where I'll be able to see your code.
- Class notes (which I will attempt to keep updated as Corona evolves) will be maintained on the course website. The notes will be broken into sections, and include related exercises. These are a very good way to prepare for exams.

Learning Differences

In keeping with college policy, any student with a disability who needs academic accommodations must call Learning Differences Program secretary at 824-3017, to arrange a confidential appointment with the director of the Learning Differences Program during the first week of classes.

Course Schedule

Below is a rough schedule of the topics we'll be covering.

Aug 27	Topic: Intro/Installation	
Sep 1	Topic: Lua Basics	Homework 1 Due
Sep 3	Topic: Display Objects	
Sep 8	Topic: Display Objects	Homework 2 Due
Sep 10	Topic: Groups and Containers	
Sep 15	Topic: Events	Homework 3 Due
Sep 17	Topic: Events	
Sep 22	Topic: Transitions	Homework 4 Due
Sep 24	Topic: Sample Apps	
Sep 29	Topic: Sprites	Homework 5 Due
Oct 1	Topic: Sample Apps	
Oct 6	Topic: Widgets	Homework 6 Due
Oct 8	<i>NO CLASS</i>	
Oct 13	Topic: Audio, Review for Midterm	Homework 7 Due
Oct 15		Midterm Exam
Oct 20	Topic: Physics	
Oct 22	Topic: Physics	
Oct 27	Topic: Physics	Homework 8 Due
Oct 29	Topic: Read/Write to File	
Nov 3	Topic: Config and Build Settings	Homework 9 Due
Nov 5	Topic: Composer	
Nov 10	Topic: Additional Features	Homework 10 Due
Nov 12	Topic: Additional Features	
Nov 17	Topic: Sample Apps	Homework 11 Due
Nov 19	Topic: Sample Apps	
Nov 24 - 28		<i>NO CLASS</i>
Dec 1	Topic: Final Project Workshop	
Dec 3	Topic: Final Project Showcase	Homework 12 Due
Dec 10	FINAL EXAM, Final Exam 6 - 8 pm	