Advanced Topics in Mobile App Development

ITP 344x (3 Units)

USC Viterbi School of Engineering

Spring 2013

Objective

Teach advanced topics in mobile app development for iOS such as using REST (Representational State Transfer) services, security, cloud integration, wireless networking for mobile apps, monetizing apps, and the latest frameworks to create advanced apps.

Concepts

REST services, security, cloud integration, networking, app monetization, and frameworks.

Prerequisites

ITP 342

Instructor	Trina Gregory
Contacting the Instructor	trina.gregory@usc.edu OHE 412
Office Hours	Listed on Blackboard under Contacts
Lab Assistants	Listed on Blackboard under Contacts
Lecture/Lab	2 hours, twice a week, for a total of 4 hours

Required Textbooks

None.

Optional Textbooks

iOS Components and Frameworks: Understanding the Advanced Features of the iOS SDK by Kyle Richter and Joe Keeley, Addison-Wesley.

Website

All course material will be on Blackboard (http://blackboard.usc.edu).

Final Project

For the final project for this class, you will design and create a mobile app. The idea for the app can be one of your own or from a given list provided by the instructor. You will be divided into groups of 3-4 students. Your app will have to use one of the advanced topics taught.

Grading

The following percentage breakdown will be used in determining the grade for the course.

Assignments	35%
Midterm	25%
App Proposal	5%
App Prototype	10%
Final Project	25%
Total	100%

Grading Scale

The following shows the grading scale to be used to determine the letter grade.

93% and above	A
90% - 92%	A-
87% - 89%	B+
83% - 86%	B
80% - 82%	B-
77% - 79%	C+
73% - 76%	C
70% - 72%	C-
67% - 69%	D+
64% - 66%	D
63% and below	F

Policies

No make-up exams (except for documented medical or family emergencies) will be offered nor will there be any changes made to the Final Exam schedule.

It is your responsibility to submit your assignments on or before the due date. Assignments turned in one day late will have 20% of the total points deducted from the graded score. Assignments turned in two days late will have 50% of the total points deducted from the graded score. After two days, submissions will not be accepted and you will receive a 0. All assignments will be digitally submitted through Blackboard except where specifically specified. Do not email them to the lecturer or lab assistant. Always keep a backup copy of them.

Each time the class meets, a roster will be passed around the room for you to sign.

Incomplete and Missing Grades

Excerpts for this section have been taken from the University Grading Handbook, located at http://www.usc.edu/dept/ARR/grades/gradinghandbook/index.html. Please see the link for more details on this and any other grading concerns.

A grade of Missing Grade (MG) “should only be assigned in unique or unusual situations… for those cases in which a student does not complete work for the course before the semester

ends. All missing grades must be resolved by the instructor through the Correction of Grade Process. One calendar year is allowed to resolve a MG. If an MG is not resolved [within] one year the grade is changed to [Unofficial Withdrawal] UW and will be calculated into the grade point average a zero grade points.

A grade of Incomplete (IN) "is assigned when work is no completed because of documented illness or other 'emergency' **occurring after the twelfth week** of the semester (or 12th week equivalency for any course scheduled for less than 15 weeks)."

Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus,* the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://www.usc.edu/dept/publications/SCAMPUS/gov/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.

Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to your course instructor (or TA) as early in the semester as possible. DSP is located in STU 301 and is open from 8:30am to 5:00pm, Monday through Friday. Website and contact information for DSP: http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX), ability@usc.edu

Emergency Preparedness/Course Continuity in a Crisis

In case of emergency, when travel to campus is difficult, if not impossible, USC executive leadership will announce a digital way for instructors to teach students in their residence halls or homes using a combination of the Blackboard LMS (Learning Management System), teleconferencing, and other technologies. Instructors should be prepared to assign students a "Plan B" project that can be completed 'at a distance.' For additional information about maintaining your classes in an emergency, please access: http://cst.usc.edu/services/emergencyprep.html

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Course Outline

Week 1 – UIKit Dynamics

- Gravity, Collisions, Springs, Snap, Push Forces

Reading

Chapter 1

Website: http://developer.apple.com

Assignment/Lab

Assignment – Falling Object app

Week 2 – Core Location, MapKit, and Geofencing

- Geocoding and Reverse-Geocoding

Reading

Chapter 2

Assignment/Lab

Assignment – Map app

Week 3 – Leaderboards and Achievements

- Game Center

Reading

Chapters 3 and 4

Assignment/Lab

Assignment – Game app

Week 4 – Music Libraries

- Playback Engine
- Media Picker

Reading

Chapter 6

Assignment/Lab

Assignment – Game app with audio

Week 5 – Internet Services

- REST APIs
- XML & JSON Parsers

Reading

Chapter 7

Assignment/Lab

Assignment – App that uses a REST API

Week 6 – iCloud

- Interacting with iCloud
- Conflict Resolution
- Key-Value Store Syncing

Reading

Chapter 8

Assignment/Lab

Assignment – App that uses iCloud

Week 7 – Bluetooth Networking with Game Kit

- Sending and Receiving Data
- State Changes

Reading

Chapter 10

Assignment/Lab

Assignment – App that uses Bluetooth Networking

Week 8 – Core Data

- Managed Object Model
- Fetched Results Controller

Reading

Chapters 12 and 13

Assignment/Lab

Assignment – Core Data app

Week 9 – Midterm

Assignment/Lab

App Proposal – Create groups for final project, and each group creates an app definition statement for their proposed app. Your app has to use one of the advanced topics listed on Blackboard.

Week 10 – Social Framework

- Integrating Twitter and Facebook
- Posting with a Custom Interface
- Accessing User Timelines

Reading

Chapter 15

Assignment/Lab

App Prototype – Each group creates a prototype for their app using a tool such as FluidUI. Create all of the screens for your app and create hotspots to show the flow.

Week 11 – Background Tasks and GCD

- Grand Central Dispatch
- Running on Different Queues

Reading

Chapters 16 and 17

Assignment/Lab

App Prototype – Finish the app prototype.

Week 12 – Using Keychain to Secure Data

- Securing a Dictionary
- Sharing a Keychain Between Apps

Reading

Chapter 18

Assignment/Lab

Final Project – Start development of your group app. Decide who will be coding which parts of the app. Set up source code management using a tool such as GitHub.

Week 13 – Working with Images and Filters

- Core Image Filters
- Face Detection

Reading

Chapter 19

Assignment/Lab

Final Project – Continue developing your group app.

Week 14 – Passbook and PassKit

Reading

Chapter 24

Assignment/Lab

Final Project – Continue developing your group app

Week 15 – Debugging and Instruments

Reading

Chapter 25

Assignment/Lab

Final Project – Continue developing your group app

Final Project

- Development of your group app
- Each group will present their app during the final exam time

Date, Time, and Place

According to the final exam schedule

This schedule is subject to change.
All assignments with their requirements and due dates will be posted on Blackboard.