Advanced Topics in Mobile App Development
ITP 344x (3 Units)

USC Viterbi School of Engineering

Fall 2015

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 (may be waived if you have publishied iOS apps on Apple's App Store)

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. The University determines the Final Exam schedule. No changes can be made to it. The final project is due during the final exam time for this class, and attendance is required.

The labs will be posted on Blackboard under the "Assignments" section. Each lab will include instructions, a due date, and a link for electronic submission. Labs must be submitted using this link. Do not email them to the lecturer or lab assistant. Always keep a backup copy of them.

It is your responsibility to submit your assignments on or before the due date. Assignments turned in one day late will have 10% of the total points deducted from the graded score. Assignments turned in two days late will have 20% of the total points deducted from the graded score. Assignments turned in three days late will have 50% of the total points deducted from the graded score. After three days, submissions will not be accepted and you will receive a 0.

Each time the class meets, a roster will be passed around the room. Please initial by your name for the appropriate week. A tool may be used in place of a paper roster. Do not sign in for another student. Doing so is an academic integrity violation.

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** is USC's Student Guide to Policies and Conduct Code and can be found at: http://scampus.usc.edu. Section 11 contains the Behavior Violating University Standards and Appropriate Sanctions and can be found at: http://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/. Students will be referred to the Office of Student Judicial Affairs and Community Standards (SJACS) 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/. An academic integrity tutorial can be found at: http://www.usc.edu/libraries/about/reference/tutorials/academic_integrity/index.php.

Examples of behavior violating University standards:
- The submission of material authored by another person but represented as the student's own work, whether that material is paraphrased or copied in verbatim or near-verbatim form.
- Acquisition of term papers or other assignments from any source and the subsequent presentation of those materials as the student's own work, or providing term papers or assignments that another student submits as his/her own work.
- Obtaining for oneself or providing for another person a solution to homework, a project or other assignments, or a copy of an exam or exam key without the knowledge and expressed consent of the instructor.
- Unauthorized collaboration on a project, homework or other assignment. Collaboration between students will be considered unauthorized unless expressly part of the assignment in question or

expressly permitted by the instructor.
- Fabrication: Submitting material for lab assignments, class projects or other assignments which is wholly or partially falsified, invented or otherwise does not represent work accomplished or undertaken by the student.
- Forgery, unauthorized alteration or unauthorized use of any university document, records, keys or instruments of identification, or of documents or records related to functions of the university.

If the instructor, a grader, or a lab assistant suspects you of academic dishonesty, it has to be reported to SJACS. Do not share lab assignments with another student. Do not submit another student's work as your own. Do not look at other students' papers during exams. Do not leave the room during an exam. Do not cheat! As Trojans, we are faithful, scholarly, skillful, courageous, and ambitious.

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. If you need accommodations for an exam, the form needs to be given to the instructor at least two weeks before the exam.

DSP is located in STU 301 and is open from 8:30am to 5:00pm, Monday through Friday. Contact info: 213-740-0776 (Phone), 213-740-6948 (TDD only), 213-740-8216 (FAX), ability@usc.edu, http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html.

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.' Additional information about Campus Safety and Emergency Preparedness can be found at: http://preparedness.usc.edu.

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Course Outline

Week 1 – UIKit Dynamics
- Gravity, Collisions, Springs, Snap, Push Forces

Reading
> Chapter 1
> Website: http://developer.apple.com

Week 2 – Core Location, MapKit, and Geofencing
- Geocoding and Reverse-Geocoding

Reading
> Chapter 2

Week 3 – Leaderboards and Achievements
- Game Center

Reading
> Chapters 3 and 4

Week 4 – Music Libraries
- Playback Engine
- Media Picker

Reading
> Chapter 6

Week 5 – Internet Services
- REST APIs
- XML & JSON Parsers

Reading
> Chapter 7

Week 6 – iCloud
- Interacting with iCloud
- Conflict Resolution
- Key-Value Store Syncing

Reading
> Chapter 8

Week 7 – Bluetooth Networking with Game Kit
- Sending and Receiving Data
- State Changes

Reading
Chapter 10

Week 8 – Core Data
- Managed Object Model
- Fetched Results Controller

Reading
Chapters 12 and 13

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

Week 11 – Background Tasks and GCD
- Grand Central Dispatch
- Running on Different Queues

Reading
Chapters 16 and 17

Week 12 – Using Keychain to Secure Data
- Securing a Dictionary
- Sharing a Keychain Between Apps

Reading
Chapter 18

Week 13 – Working with Images and Filters
- Core Image Filters
- Face Detection

Reading
Chapter 19

Week 14 – Passbook and PassKit
 Reading
  Chapter 24

Week 15 – Debugging and Instruments
 Reading
  Chapter 25

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.