USC SCHOOL OF ENGINEERING

Mobile Application Development
ITP 499 (2 Units)

Fall 2011

Objective This course is an introduction to developing applications for mobile devices such as iPhones and iPads. We will go through the process of building an mobile application from start to finish using the iOS SDK (Software Development Kit). In lecture sessions, you will learn the basics of the Objective-C programming language, how to design iPhone interfaces, how to use the libraries to build applications that have the proper look and feel, how to use table views, how to design and handle user input, and other aspects as time permits. During the lab sessions, students will create applications using the Xcode IDE (Integrated Development Environment).

Concepts Mobile development, user interface design, object-oriented programming

Prerequisites Basic Computer Knowledge

Instructor Trina Gregory

Contacting the Instructor Email: trina.gregory@usc.edu
Office: OHE 530F

Office Hours Listed on Blackboard under Contacts and at http://bcf.usc.edu/~trinagre/index.html#officehours

Lab Assistants Listed on Blackboard under Contacts

Lecture 1.5 hours/week

Lab 1.5 hours/week

Course Structure Lectures on Thursdays from 2:00 to 3:20pm.
Labs on Tuesdays from 2:00 to 3:20pm.
Labs on Thursdays from 3:20 to 4:50pm.

Recommended Textbooks One of the following iOS Development books depending on your skills:

- Head First iPhone & IPad Development by Dan Pilone & Tracey Pilone; O'Reilly
- Beginning iPhone 4 Development: Exploring the iOS SDK by Dave Mark, Jack Nutting, and Jeff LaMarche; Apress
- iOS Programming: The Big Nerd Ranch Guide, 2nd Edition by Joe Conway & Aaron Hillegass; Big Nerd Ranch
- Designing the iPhone User Experience: A User-Centered Approach to Sketching and Prototyping iPhone Apps by Suzanne Ginsburg; Addison-Wesley

Optional Books Hello, Android: Introducing Google's Mobile Development Platform, Third Edition by Ed Burnette; The Pragmatic Programmers

Web Site All information including lecture notes, assignments and references will be listed on Blackboard (http://blackboard.usc.edu).

Labs There will be approximately five lab assignments which will be given in lecture and posted on Blackboard.

Final Project There will be a final project given which will be due during the finals time of this class. For this project, students will be in groups of approximately 3 people. Each group will build a mobile application of that groups choosing. The ITP department has been approached by departments within USC, as well as outside non-profit organizations and companies, with requests for mobile apps. Each group may select one of these projects or create their own idea. This gives the students a great opportunity to develop real world applications.

Grading The following point-structure will be used in determining the grade for the course. Final grade will be based upon the total points received, the highest total in the class, and the average of the class.

Class Participation & Attendance	5%
Midterm	15%
Lab Assignments	40%
Final Project	40%
TOTAL POSSIBLE	100%

Grading scale:

A	100-93
A-	92-90
B+	89-87
B	86-83
B-	82-80
C+	79-77
C	76-73
C-	72-70
D+	69-67
D	66-65
F	64 or below

Policies Midterm Exam: The exam will cover material from the reading assignments, lectures, and lab projects. The exam is both closed book and closed notes. The exam will cover the material presented up to the date of the exam.
Make-up policy for exams: In order to make up for a missed exam, the student must provide a satisfactory reason along with proper documentation. Usually make-ups are allowed only under extraordinary circumstances.

Assignments: It is your responsibility to turn in your assignments on, or before, the deadlines as set by the instructor.
Late assignments: Late submission of assignments will lead to loss of points. No assignments will be accepted after two weeks beyond the original due date.

Before logging off a computer, students must ensure that they have emailed or saved projects created during the class or lab session. Any work saved to the computer will be erased after restarting the computer. ITP is not responsible for any work lost.

ITP offers Open Lab use for all students enrolled in ITP classes. These open labs are held beginning the second week of classes through the last week of classes. Please contact your instructor for specific times and days for the current semester.

Academic Integrity

The use of unauthorized material, communication with fellow students during an examination, attempting to benefit from the work of another student, and similar behavior that defeats the intent of an examination or other class work is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tension accompanying examinations. When the professor determines that a violation has occurred, appropriate action, as determined by the instructor, will be taken.

Although working together is encouraged, all work claimed as yours must in fact be your own effort. Students who plagiarize the work of other students will receive zero points and possibly be referred to Student Judicial Affairs and Community Standards (SJACS).

All students should read, understand, and abide by the University Student Conduct Code listed in SCampus, and available at: http://web-app.usc.edu/scampus/university-student-conduct-code/

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 me (or to your TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

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Course Outline

Week 1 – Introduction

- Course overview
- Overview of mobile development
- Specifics of mobile devices

Week 2 – Application Development Fundamentals

- Programming fundamentals including computer programs, programming languages, compilers
- iPhone Software Development Kit (SDK) and Cocoa Touch Architecture
- Using the iPhone tools – Xcode and Interface Builder to create apps
- Testing apps in the iPhone Simulator
- First iPhone app – "Hello iPhone"

Week 3 – Handling Basic Interaction

- Create connections using IBOutlets & IBActions to handle basic interaction
- User interface components – Text Field and Button
- Connections – IBOutlets & IBActions
- Protocols and delegates

Week 4 – Language Fundamentals

- Data types, methods, messaging
- Connections – IBOutlets & IBActions
- Protocols and delegates

Week 5 – User Interface Components

- Views and View Controllers
- Image View
- Slider, Segmented Control, Switch
- Action Sheet
- Alert View

Week 6 – Human Interface

- Creating a great user interface
- Designing the user interface first on paper, then wireframes, and finally in Interface Building
- System-provided buttons and icons

Reading: "iPhone Human Interface Guidelines" document in the iPhone OS Reference Library on Apple's Developer Connection website (http://developer.apple.com/iphone)

Week 7 – Collections and Utility App

- Model-View-Controller (MVC) paradigm
- Collections to hold data such as NSArray and NSMutableArray
- Utility App to display multiple views – MainView and FlipsideView

Week 8 – Tables

- Table view
- Displaying cells
- Deleting rows
- Inserting rows
- Custom cells

Week 9 – Midterm

Week 10 – Data Persistence

- Exploring your filesystem
- Reading Data from file
- Creating and deleting files and directories
- Writing data to files

Week 11 – Audio and Accelerometer

- Audio – play sounds
- Vibration – force device to vibrate
- Getting device orientation (x, y, z axes)
- Getting raw accelerometer data
- Filtering accelerometer data

Week 12 – Events, Multi Touch and Gestures

- Getting device orientation
- Getting raw accelerometer data
- Filtering accelerometer data

Week 13 – Core Location

- Using the Location Manager
- Setting the desired accuracy
- Setting the distance filter

Week 14 – Tab Bars, Pickers, iPhone Camera and Photo Library

- Tab Bar Framework
- Date Picker
- Single component picker and multi-component picker
- Image Picker
- Camera View Controller

Week 15 – App on App Store

- Using analytics
- App Store submission

Reading: **"**App Store Submission Tips" on Apple's Developer Connection website (http://developer.apple.com/iphone)

Week 16 – Final Project Due on December 8, 2011 at 2pm

This syllabus is subject to change.