

**University of California Santa Cruz Extension**

**21938 Developing Applications for iPhone, iPad & iPod Touch, Introduction**

**Instructor:** Bess Ho

**Course Description:**

The iPhone and iPad have revolutionized the mobile device world. Both devices run iOS, Apple's operating system for mobile devices. This six-week introductory course gives you a hand-on approach to acquire the basic skills required to create simple iOS native applications. The course provides an overview of using the iOS SDK to develop iPhone and iPad applications. It includes discussion of Xcode, Cocoa Touch Frameworks, and Objective-C. You will learn how to customize iOS user interfaces using Libraries and Inspectors from Xcode’s Utility, build scenes within storyboard using Interface Builder, integrate iOS frameworks, and understand MVC Architecture. The App Store submission process and guidelines are also discussed.

By the end of the course, you will have a solid understanding of Xcode and iOS SDK and have the necessary skills to develop applications. The course does not cover all device features and only offers short programming projects.

Prerequisite(s):

Knowledge of an object-oriented programming language such as JavaScript, PHP, Java or C++.

Note(s):

To participate, students must have an ADC account/Apple ID – to sign up please visit: http://developer.apple.com/programs/register. Students will need access to an Intel-based Mac running Mac OS X Mountain Lion or Mavericks in order to do their homework. The school provides access to Mac computers with SDK installed. Students can bring their own laptops.

**Xcode and iOS SDK versions:**

For this course, we will use Xcode 5.x and the iOS 7 SDK. These are the versions that will be installed

on our classroom lab machines. They are also the versions that we will use for example slides and

step-by-step lab instructions.

**Course Objectives:**

At the end of the course, participants should:

* Understand the basic requirements for iOS development
* Have experience using Apple’s iOS development environment
* Have good understanding how to use iOS SDK
* Be able to build simple iOS native application

**Performance Evaluation:**

Class Participation 20%

Homework Assignments 40%

Final Project 40%

*Extra credit options may be provided by the instructor.*

Students are encouraged to work cooperatively, help one another, and study together. Students may work on teams together with the approval of the instructor. Even outside of formal teams, students are encouraged to seek help from other students and give help to other students. When students receive help on a project, they should identify the student or students who helped them and be prepared to describe the nature of the help given. Students who give or receive help may receive extra credit from the instructors, at the instructors’ discretion.

**Required Text:**

*Sams Teach Yourself iOS 6 Application Development in 24 Hours*, 4th Edition, John Ray, Sam Publishing, ISBN-10: 0672334437, ISBN-13: 978-0672334436.

**Required Readings from Apple Guides:**

Xcode User Guide

<https://developer.apple.com/library/mac/documentation/ToolsLanguages/Conceptual/Xcode_Overview/Xcode_Overview.pdf>

iOS Simulator User Guide

<http://developer.apple.com/library/ios/#documentation/IDEs/Conceptual/iOS_Simulator_Guide/Introduction/Introduction.html>

iOS Human Interface Guideline

<https://developer.apple.com/library/ios/documentation/userexperience/conceptual/mobilehig/MobileHIG.pdf>

iOS App Programming Guide

[http://developer.apple.com/library/ios/#documentation/iPhone/Conceptual/iPhoneOSProgrammingGuide/Introduction/Introduction.html#//apple\_ref/doc/uid/TP40007072](https://developer.apple.com/library/ios/documentation/iPhone/Conceptual/iPhoneOSProgrammingGuide/Introduction/Introduction.html#//apple_ref/doc/uid/TP40007072)

**Recommended Readings:**

Learning Objective-C: A Primer

https://developer.apple.com/library/ios/#referencelibrary/GettingStarted/Learning\_Objective-C\_A\_Primer/index.html#//apple\_ref/doc/uid/TP40007594

Programming with Objective-C

https://developer.apple.com/library/ios/#documentation/Cocoa/Conceptual/ProgrammingWithObjectiveC/Introduction/Introduction.html#//apple\_ref/doc/uid/TP40011210

Objective C Cheat Sheet

<http://cocoadevcentral.com/d/learn_objectivec/>

Interface Builder Help

https://developer.apple.com/library/ios/#recipes/xcode\_help-interface\_builder/\_index.html#//apple\_ref/doc/uid/TP40009971

Code Signing

<https://developer.apple.com/support/technical/code-signing/>

App Icons on iPad and iPhone

[https://developer.apple.com/library/ios/#qa/qa1686/\_index.html#//apple\_ref/doc/uid/DTS40009882](https://developer.apple.com/library/ios/qa/qa1686/_index.html#//apple_ref/doc/uid/DTS40009882)

Apple Store Review Guidelines

<https://developer.apple.com/appstore/guidelines.html>

App Distribution Guide

https://developer.apple.com/library/ios/#documentation/IDEs/Conceptual/AppDistributionGuide/Introduction/Introduction.html#//apple\_ref/doc/uid/TP40012582

iTunes Connect Developer Guide

https://developer.apple.com/library/ios/#documentation/LanguagesUtilities/Conceptual/iTunesConnect\_Guide/1\_Introduction/Introduction.html#//apple\_ref/doc/uid/TP40011225

*iPhone and iPad Apps for Absolute Beginners*, 3rd Edition, Rory Lewis, et al., Apress, 2013, ISBN-10: 1430246170, ISBN-13: 978-1430246176.

*Beginning iOS 6 Development: Exploring the iOS SDK*, David Mark, et al., Apress, 2013, ISBN-10: 1430245123, ISBN-13: 978-1430245124.

**Resources:**

Stack Overflow: <http://stackoverflow.com/>

Apple Developer Forum: <https://developer.apple.com/devforums/>

Apple’s iOS Developer Library: <http://developer.apple.com/library/ios/navigation/>

Pixelmator (30 Day Trial): <http://www.pixelmator.com/> *(Tutorial Videos available on website)*

Pixlr (Free): <http://pixlr.com/editor/>

Adobe TV (Free): <http://tv.adobe.com/>

**Course Outline:**

**Class 1: Getting Started**

Topics:

* Introductions & Course Overview
* Grading & Final Project
* Getting started with the Apple Developer’s program
* Helloworld using Interface Builder and Objective-C
* Xcode IDE
* Xcode Templates & Frameworks
* Xcode Utility’s Inspectors and Libraries
* Managing App Icons & Launch Images
* Model-View-Controller (MVC)
* ViewController
* Header & Implementation Files
* Interface Builder & Storyboard

Homework Assignment (due by 2nd class)

* Do Week 1 Quiz Homework

Administrative Assignment

* Register for the Apple Developer’s Program if you haven’t done so already.
* Submit your preferred name and e-mail via the course website so that we can add you to the UC Santa Cruz developer team.
* Upgrade your Mac OSX, software and iTunes to the latest version. Download the latest Xcode from Mac’s App Store & install it on your personal mac after software updates.

Reading Assignment

* Read Xcode User Guide
* Read iOS Simulator User Guide

**Class 2: Using Objective-C and Customizing User Interface Objects**

Topics:

* Understanding Object-Oriented Programming
* Basic Objective-C
* Variables & Objects
* IBOutlet vs IBAction
* Class method vs Instance method
* Memory Management: ARC vs Manual
* Single View Controller
* Label, Button, Image
* Alert View
* Action Sheet

Homework Assignment (due by 3rd class)

* Do Week 2 Quiz Homework

Reading Assignment

* Read iOS Human Interface Guidelines
* Platform Characteristics
* Human Interface Principles
* App Design Strategies

**Class 3: Creating Scenes in Storyboard**

Topics:

* Review of Material from Previous Classes
* Picker & Date Picker
* Two View Controller
* Segmented Control
* Navigation Bar
* Optional Framework

Homework Assignment (due by 4th class)

* Do Week 3 Quiz Homework

Reading Assignment

* Read iOS App Programming Guidelines
* App Design Basics
* App-Related Resources
* Read iOS Human Interface Guidelines
* iOS UI Element Usage Guidelines
* Custom Icon and Image Creation Guidelines
* User Experience Guidelines

**Class 4: Multiple View Controllers**

Topics:

* Review of Material from Previous Classes
* Final Project Checklist
* Project Judging Criteria
* Tab Bar Controller
* Tool Bar
* Slider, Stepper, Switch
* Text View

Homework Assignment (due by 5th class)

* Do Week 4 Quiz Homework
* Start your Final Project

Reading Assignment

* Read iOS App Programming Guidelines
* App Design Basics
* App-Related Resources
* Read iOS Human Interface Guidelines
* iOS UI Element Usage Guidelines
* Custom Icon and Image Creation Guidelines
* User Experience Guidelines

**Class 5: Table View Controller & Navigation Controller**

Topics:

* Review of Material from Previous Classes
* Presentation Format
* Demo Details
* Table View & Table View Cell
* Single Table View Controller
* Navigation Controller + Table View Controller + View Controller

**Class 6: Final Project**

Topics:

* Project Presentation & Demo
* Code Review
* Judging

**UCSC Extension Policies:**

**Academic Integrity Policy:**

UCSC Extension, as a unit of the University of California Santa Cruz, takes academic integrity very seriously. All forms of academic misconduct, including but not limited to, cheating, fabrication, plagiarism, or facilitating academic dishonesty are grounds for student discipline. Unless otherwise indicated by the course instructor, assignments must be individual efforts. It is not acceptable to copy (verbatim or even with minor changes) sections of a book, article or Internet resource, and submit them as one's own work. Regardless of the source, all references must be properly cited and include full bibliographic information. Direct quotes must be indicated as such. Any questions about acceptable collaboration or uses of resources should be directed to the course instructor.

**Examination and Homework Return Policy:**

If you wish to have your homework, projects, and/or examinations returned to you, provide your instructor with a self-addressed stamped envelope or submit one with your project or exam. Note: Not all examinations are eligible for return.

**Grading Policies:**

*Grading Options:*The default option for courses offered for academic credit (indicated by an X400-499 below the title) is a letter grade. Students may instead elect to take courses either Pass/No Pass (P/NP) or Not for Credit (NC). Requests for P/NP or NC grades must be submitted before the last scheduled day of the course. Please note that a passing letter grade is required in order for a course to be applicable to a certificate. See [www.ucsc-extension.edu/student-services/grading](http://www.ucsc-extension.edu/student-services/grading) for more details on grading options.

*Withdrawing from a Course:*

If a student does not intend to, or for any reason cannot, complete a course s/he enrolled in, it is the student’s responsibility to formally notify the instructor and UCSC Extension of this change in standing before the last day of class. All withdrawal requests must be submitted using the online form available at [www.ucsc-extension.edu/student-services/forms/withdrawal](http://www.ucsc-extension.edu/student-services/forms/withdrawal). Failure to follow this policy and associated guidelines will result in the entry of a default grade of “F” on the student’s permanent academic record.

*Incompletes:*

Under certain circumstances, an “incomplete” may be authorized for students who are unable to complete a course within the prescribed time. Students must have completed a minimum of 70 percent of the course work and be in good academic standing to qualify for an Incomplete grade.

To be considered for an incomplete, the student must send a formal request by e-mail to [extensionprogram@ucsc.edu](mailto:extensionprogram@ucsc.edu) before the last class meeting. If approved, the instructor, student and Extension staff member will agree upon the terms of the incomplete, including the specific work requirements and the deadline for clearing the incomplete. Once the necessary work has been completed, the “I” will be changed to the appropriate grade. Incomplete grades must be cleared by the agreed upon deadline or the “I” will convert to “F.” Courses paid for under a contract may be subject to additional restrictions.

*Grade Changes:*  
Per policy, changes to a course grade can be made by the instructor only on the basis of clerical or procedural error and never on the basis of reexamination or completion of additional work. For more information, contact [extensionprogram@ucsc.edu](mailto:extensionprogram@ucsc.edu).

**Access for Students with Disabilities:**

In keeping with the provisions and guidelines of the Americans with Disabilities Act, UCSC Extension makes every effort to make reasonable accommodation for those students with disability-related needs. If you require accommodation, please contact our Student Services Office at least 2 weeks prior to the event or course. The phone number to call is (408) 861-3749. If you need to use the California Relay Service, that number is (800) 735-2922. For more information, visit: [www.ucsc-extension.edu/student-services/ada](http://www.ucsc-extension.edu/student-services/ada).