Las Positas College
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Course Outline for CS 16

MOBILE APPLICATION DEVELOPMENT - IPHONE

Effective: Spring 2012

I. CATALOG DESCRIPTION:
CS 16 — MOBILE APPLICATION DEVELOPMENT - IPHONE — 3.00 units

Object-oriented programming in Objective C for the iPhone and related platforms (e.g., iPad, iPod Touch) at a beginning to intermediate level. Introduction to the iOS mobile platform. Introduction to Objective C syntax and concepts and the Cocoa Touch application programming interface (API), including: classes, objects, inheritance, protocols, selectors, strings, arrays, dictionaries, sets and memory management; creating user interfaces; using graphics, audio and video. Strongly recommended: CS 1

2.50 Units Lecture 0.50 Units Lab

Strongly Recommended
CS 1 - Computing Fundamentals I

Grading Methods:
Letter or P/NP

Discipline:

	MIN
Lecture Hours:	45.00
Lab Hours:	27.00
Total Hours:	72.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering this course, it is strongly recommended that the student should be able to:

A. CS1

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. Use Xcode fluently for Objective C coding and interface creation.
B. Explain the main features of the Cocoa Touch framework.
C. Define and use Objective C classes and objects.
D. Explain and use Objective C memory management.
E. Explain and use Objective C strings.
F. Explain and use Objective C arrays.
G. Explain and use Objective C sets and dictionaries.
H. Create a complete Obective C / Cocoa Touch program of moderate complexity.
I. Explain the model-view-controller (MVC) design pattern.
J. Explain and apply different View types (e.g., Image, Scroll, Table) within an iOS program.
K. Render graphical elements within an iOS program.
L. Use touch and gesturing within an iOS program.
M. Use audio playback and/or recording within an iOS program.
N. Use video playback within an iOS program.

V. CONTENT:
A. iPhone Development Environment (Xcode)
1. iPhone Architecture
2. iOS (iPhone/iPad operating system) basic features
3. Cocoa Touch (application framework) basic features
4. Using the iPhone simulator
5. Creating a simple program
B. Objective C – Basic Language Features
1. Data types
2. Sequencing
3. Selection

4. Loops
5. Arrays
6. Methods

C. Objective C – Object Oriented Features
1. Classes and objects
2. Inheritance
3. Protocols
4. Polymorphism
5. Introspection
6. Selectors

D. Objective C – Additional Features
1. Mutable vs non-mutable data
2. Strings
3. Dictionaries
4. Sets
5. Archiving
6. Notification

E. User Interfaces
1. Outlets and actions
2. Buttons and text fields
3. Views and view contorllers
4. Table views
5. Navigation controller
6. Handling user interface events
7. Model view controller (MVC) design pattern

F. Graphics
1. Basic concepts
2. OpenGL ES

G. Multimedia
1. Audio playback
2. Audio recording
3. Video playback

H. Touch and Gestures
1. Basic concepts
2. Responding to touch events
3. Responding to gestures

I. Data storage introduction
1. Using a database – basic concepts
2. Core Data overview

J. Publishing
1. Procedures for submitting applications to the App Store.

VI. METHODS OF INSTRUCTION:

A. **Lab** - with programming assignments
B. **Demonstration** - with Interactive Activities
C. **Discussion** -
D. **Lecture** -

VII. TYPICAL ASSIGNMENTS:

A. Create an iPhone application that will maintain a list of user's friends, including names, birthdays, addresses, emails and phone numbers. It should allow the user to enter new friends, and to delete or updating existing ones. The program will alert the user three days before the birth date of each friend in the list.
B. Create an iPhone application that lets the user create and use vocabulary flash cards. The program will allow the user to enter the contents for a each card, including a word and a definition. In practice mode, the program will show the each card's word, asking the user to select showing the definition or advancing to the next card

VIII. EVALUATION:

A. **Methods**

1. Exams/Tests
2. Quizzes
3. Other:
    a. Writtenhomework assignments
    b. Assigned programming tasks (including labs)

B. **Frequency**

1. At least two in-class midterm examinations, or one in-class midterm examination and several quizzes
2. One in-class comprehensive final examination
3. Several programming assignments of sufficient size and complexity to incorporating all concepts in the course.

IX. TYPICAL TEXTS:

1. Kochan, S. *Programming in Objective-C.* 2nd ed., Addison-Wesley Professional, 2012.
2. Conway, J, and A Hillegass. *iPhone Porgramming: The Big Nerd Ranch Guide.* 1st ed., Addison-Wesley Professional, 2010.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. A portable storage device (e.g., USB drive) with at least 1GB capacity is strongly recommended
B. It is recommended, but not required, that students have access to an Intel-based Macintosh outside the class.
C. Students possessing their own iOS devices (e.g., iPhone, iPod Touch, iPad) should be advised that running programs from class on personal devices may require signing the Apple Developer University Program license agreement and/or paying an annual fee.