iPhone Application Development Class

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Class 1. iPhone Environment

- Why Offer iPod/iPhone/iPad Development Class
- Pre-requisites for the class
- HW/SW needs. Apple License categories and what will be needed for the class.
- Books
- Grading Policy
- Tour of Mac, Xcode, iPhone and iPad Simulators
- Xcode version
- Help
- Demo of SDK environment at high level. Cursory tour of Xcode and files generated by Xcode for "Hello COD" Application.
- Sample Final Projects from Previous Year's Classes.
- Programming exercise 1. Simple application to help you test your environment setup and get your feet wet.

Class 2. Objective C

- Objective C introduction
  - Interface, implementation and Program sections
  - Data types, Arithmetic Expressions, Assignments and Bit Operators
  - Loop Control with for, while, do break and continue statements
  - Decision Control with if-else, else-if, switch and conditional operators
  - Classes, methods, static and self keywords, class definition and interface files in detail
  - Example using the calculator class
- Class Exercise
- Assignment to exercise basic class knowledge and firm up familiarity with Xcode/Cocoa
- Summary

Class 3. Objective C Primer & Introduction to UI Kit

- Review Classes, Objective c specific directives
- Class inheritance
  - Point class and memory allocation
  - Classes and ownership of objects
- Exception Handling directives: @try, @catch, @throw and @finally
- Scopes of variables and initialization order
- Overriding Methods
- Extending class with categories
- Protocols & Delegates
- Introduction to the UI Kit
- Class exercise to write a simple app that responds to your touch press
- HW Problem

Class 4. Views & View Controllers

- Review Assignment Solution
- Resource Files: Files Owner, First Responder, Interface Objects
- MVC - Model View Controller Pattern
- View Controllers
- Types of View Controllers
- Class Exercise using Slider and Picker
- Temperature converter app using picker and sliders
- HW #2
- Summary

Class 5. TabBar, WebView

- Review View Controllers again
- Text Fields, Labels, Sliders, and Switches
- Introduction to TabBar Controller and building TabView
- Class Exercise to build an app with three tab views
- Introduction to WebView Controller and building WebView
- Class Exercise to build an app with WebView for basic web surfing
- HW #3
- Summary

Class 6. Tables

- Table View Controller
- Tables
  - Implementing tables
  - Grouped and Indexed sections, Table configurations
  - Navigation Control
  - Row and Column Management - add, move or delete with optional protocols
  - Memory Optimization using Reusable Queues
- Use of property list to store and get data
- Assignment

Class 7. Tables

- Review Assignment solution
- Introduction to Segues, and multi page apps
- Extending detail view of the table rows
- Communicating variables between main view and detail views
- Exchanging data between various types of view controllers and views
- Use of different types of view controllers - Table View Controller, TabBar View Controller, WebView View Controller in one app and how data can be communicated across different controllers to build hefty apps
- Editing Table Rows
- Home work Assignment #3
- Guidelines for Finals Project
- Summary

Class 8. Audio Player

- Review Finals Project one more time
- Use of Audio Player Framework
- AVAudioPlayer
- Looping Audio
- Interruptions to Audio
- Recording Audio
- Using MPMusicPlayerController
- Class Exercise to use Audio Player API

Class 9. Use of Database in your apps

- Discussion on various ways to store data for your app
- Use of Sqlite APIs in your app
- Class Exercise to use Sqlite in an app

Class 10. Video API, Application Settings and Animation

- Playing Video with Media Player
- Recording and editing video
- Using MPMusicPlayerController
- Setting and Viewing Application Preferences
- Simple Animations of image
- Class Exercise to use Video API to play Video within you app
- Class Exercise to set and read application settings in your app
- Class Exercise to animate an image

Class 11. Core Location and MapKit

- Review assignment solution
- Q & A on major assignment
- Core location using GPS Positioning, Wi-Fi Positioning and Cell Tower positioning
- Tracking speed, distance and location
- Location annotations
- Map annotations
- Assignment

Class 12. Accessing Native Apps

- General guidelines on accessing Native apps Such as Camera, Address Book
- Class Exercise on accessing address book from your app
- Class Exercise on accessing Camera from your app
- Discussion on accessing photo library
- Assignment

Class 13. Gestures, iAd

- Review assignment solution
- For iPod HW only – API for accelerometer
- Sample application

Class 14. XML Parser, HTTP Agent

- Review assignment solution
- Class Exercise to build a RSS Viewer
- Assignment

Class 15. Misc Topics

- Split View
- Device Capabilities
- Application States

Class 16. App Store

- Review guidelines for putting applications on Apple's app store
- Presentation of major projects
- Q & A
- Feedback

Books

- Most of the material from this class is from Apple's SDK website. It's most reliable and precise but may not meet needs of student who need step by step direction with detailed reasoning.
- For two classes on Objective C as well as reference guide to Objective C through out the class:
  - Programming in Objective-C 2.0 (3rd Edition) by Stephen G. Cohen
- Book on iPhone programming:
  - iOS 4 Programming Cookbook (1st Edition) by Vandad Nahavandipoor
- Recipe and Concepts - difference between language focused and application focused books. Need good mix of both.

Computer, HW and SW Needs

- Access to any Intel based apple computer:
  - MacMini basic model about $600 – user provide keyboard, mouse, and screen
  - iMac 22" about $1100
  - Mac laptops
  - Access to COD Mac resources for HW assignments. However recommend students to buy Mac if this is something they would like to do.
- No need to have iPod/iPhone/iPad for this class. Apple's simulator embedded with SDK is all that's needed. Topics such as Core Location Services and Accelerometer would not be exercised as much due to limitation of simulation. However software and API discussion will be adequate to understand. Class will be using simulator.