Fall 2012

CS 4900/6900-01: iOS Programming

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Learning Objectives
Competency developing software for iOS devices including any of iPhone, iPod Touch, or iPad
Understanding of the C and Objective-C programming languages
Understanding of typical embedded software constraints including resource management
Understanding of iOS development tools and software development life cycles
Developing 3D Graphics for iOS devices
Understanding iOS support for multi-threaded programming
Understanding robust network communication
Understanding sensors with tradeoffs for accuracy, speed, and user privacy

Schedule and Contact
Fall 2012
12:30 to 1:50 TR in Dunbar Library 058
Office Hours: 2:00 to 3:00 TR in Dunbar Library 058 (or by appointment)
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Evaluation and Policy
60% Project Assignments (6)
30% Homework Assignments (15) (Start homework assignments with Internet search: most questions can be answered with one sentence and a URL)
10% Final examination
A/90%, B/80%, C/70%, D/60%, F/50% (70% average on the programming projects to pass the class)
All Assignments must be submitted via Pilot drop box.

Extra Challenge & Credit
Up to 60% Challenge Assignments (2)
Complete these more advanced projects as alternatives to the 6 small projects if you are up for the challenge. Project proposals must be approved by instructor to receive credit.
Up to 30% Impress me (On any assignment, provide relevant information or references that instructor hasn’t seen and/or make instructor laugh)

Importance of “Why”
Learning software development means learning “how” to accomplish tasks.
• "How" can almost always be answered via google search.
• This course provides a tour through iOS technology to arm you with the right terms for searches. Don’t hesitate to ask "how" questions. I’ll at least guide your search. Knowing "why" tasks are accomplished one way and not another makes you a professional.
• It’s difficult to answer "why" via search
• This course focuses on answering "why" and comparing alternatives.

Course Outline
Module 1: Native iOS Application Components
Module 2: Cocoa Touch Application Architecture
Module 3: ANSI C and Objective-C
Module 4: Loose Coupling & Alternatives to Inheritance
Module 5: Reference Counting Resource Management
Module 6: Objective-C Blocks
Module 7: iOS User Interface Survey
Module 8: Event Driven Programming
Module 9: Custom Drawing & Animation
Module 10: Multi-touch Input & Gestures
Module 11: Introduction to 3D graphics with iOS
Module 12: Animation and sound
Module 13: Introduction to multi-threaded programming; Concepts of thread safety
Module 14: Tool, framework, language, and system support for multi-threading; Best practices and guidelines
Module 15: Network programming and "cloud" based data storage
Module 16: Apple’s Game Kit; Template for other forms of networked collaboration
Module 17: Available hardware sensors (capabilities, limitations, restrictions user privacy)
Module 18: iOS support for image processing
Module 19: Augmented reality