FIU FLORIDA INTERNATIONAL UNIVERSITY

Syllabus

Mobile Application Development

1198-FIU01-COP-4655-SECRH1-88684

GENERAL INFORMATION | IMPORTANT INFORMATION | COURSE DETAIL | COURSE CALENDAR

GENERAL INFORMATION

Professor Information

Instructor: Steven Luis
Phone: (305) 348-6215
Office: CASE 282
Office Hours: Thursdays 6:30 - 7:15pm or by appointment Friday afternoon
E-mail: Canvas Only
Website: www.cis.fiu.edu/~luiss

CEC Exec. Directory of Technology. Interests: Mobile computing, Disaster Informatics, and Mixed Reality.

Course Description and Purpose

This is an undergraduate information technology course listed in the application development track. The course covers mobile application development concepts and techniques applied to the Apple iOS programming framework. **Students must have access to Mac OS.** Since this course is intended to serve students with a background in computer science and/or information technology, computer programming skills in an object-oriented programming language with an understanding of design patterns and the usage of application programming interfaces (API)s are required.

This course will consist of 3 modules, six individual programming projects, and 1 team (group) project. Each module's content is open and can be completed at the student's individual pace. However, you must take the exam in order to access the next module. Programming assignments will be due approximately every 1 - 3 weeks depending on the assignment. Programming assignments will be evaluated within three weeks of submission. Communication will take place primarily via email and instructor announcements.

Course Objectives

The student will:

1. Design and implement iOS mobile applications by programming in Apple's Swift computer language and using the Cocoa Touch and Foundation frameworks;
2. Develop mobile user interfaces using Apple's Human Interface Guidelines and Xcode's Interface builder;
3. Devise application control logic by determining which design pattern (MVC, Delegation, ...) will produce the required behavior;
4. Incorporate data management techniques (Property Lists, Core Data,...) to achieve application data persistence;
5. Utilize device network and sensor related API services (CoreMotion,...) to establish Internet communications with cloud servers and iPhone/iPad device physical orientation as required.

IMPORTANT INFORMATION

Technical Requirements and Skills

One of the greatest barriers to taking an online course is a lack of basic computer literacy. By computer literacy we mean being able to manage and organize computer files efficiently, and learning to use your computer's operating system and software quickly and easily. Keep in mind that this is not a computer literacy course; but students enrolled in online courses are expected to have moderate proficiency using a computer. Please go to the "What's Required" webpage to find out more information on this subject.

This course utilizes the following tools:

- **Access to an Apple Mac computer (iMac, Mac Book laptop, etc) necessary to edit, compile and run iOS mobile applications.**
- **The computer must be running XCode 9.2 programming IDE. Requires** MacOS 10.12, 10.13, 10.14. (Sierra, High Sierra, Mojave).
- Access to an Apple iPhone or iPad. An iPad can be provided to the student with a completed equipment loan agreement. Contact instructor for details.
- The device must be running iOS 10.3. (One can be provided.)
- You will need to apply for a FREE Apple developers account using your FIU email account at: http://developer.apple.com/programs/register/

Expectations of this Course

This is an online course, which means most (if not all) of the course work will be conducted online. Expectations for performance in an online course are the same for a traditional course. In fact, online courses require a degree of self-motivation, self-discipline, and technology skills which can make these courses more demanding for some students.

Students are expected to:

- **Read the course text chapters as assigned.**
- **Watch Lecture videos carefully and review accompanying Lecture Notes. Ask questions as needed in the Course Discussion Forum or Office Hours.**
- **Watch programming Walkthru videos for a more in-depth/hands-on coding demo.**
- **Complete all programming and participation assignments.**
- **Take the practice quiz** to insure that your computer is compatible with the LMS
- **Prepare for quizzes and exams** by reviewing course materials and attending the online reviews (see below).
- **Respond to Instructor emails/posts as needed.**
- **Review** and follow the course calendar
- Log in to the course 2 **times** per week
- Respond to discussion boards within **two business days.**
- Respond to **emails within two business days.**
- Submit assignments by the corresponding deadline

The instructor will:

- Log in to the course **at least 3 times** per week
- Respond to Course Discussion Forum within **two business days**
- Respond to **emails** within **two business days.**
- Grade assignments **2 - 3 weeks** after assignment deadline

Course Prerequisites

This course has a prerequisite(s). Review the Course Catalog webpage for prerequisites information.

- IT Majors: COP 4814 Component-Based Software Development and CEN 3721 Human Computer Interaction
- CS Majors: COP 4338 Programming III and advisor permission

Policies

Please review the FIU's Policies webpage. The policies webpage contains essential information regarding guidelines relevant to all courses at FIU, as well as additional information about acceptable netiquette for online courses.

As a member of the FIU community you are expected to be knowledgeable about the behavioral expectations set forth in the FIU Student Code of Conduct.

Proctored Exam Policy

Distance Education Students: Please refer to the Office of Distance Education policies regarding proctored exams. This course will administer two proctored exams. Exam 3 will be administered online, but will not be proctored

Panthers Care & Counseling and Psychological Services (CAPS)

If you are looking for help for yourself or a fellow classmate, Panthers Care encourages you to express any concerns you may come across as it relates to any personal behavior concerns or worries you have, for the classmate's well-being or yours; you are encouraged to share your concerns with FIU's Panthers Care website.

Counseling and Psychological Services (CAPS) offers free and confidential help for anxiety, depression, stress, and other concerns that life brings. Professional counselors are available for same-day appointments. Don't wait to call 305-348-2277 to set up a time to talk or visit the online self-help portal.

Accessibility and Accommodation

The Disability Resource Center collaborates with students, faculty, staff, and community members to create diverse learning environments that are usable, equitable, inclusive and sustainable. The DRC provides FIU students with disabilities the necessary support to successfully complete their education and participate in activities available to all students. If you have a diagnosed disability and plan to utilize academic accommodations, please contact the Center at 305-348-3532 or visit them at the Graham Center GC 190.

Please visit our ADA Compliance webpage for information about accessibility involving the tools used in this course.

Please visit the LMS Accessibility webpage for more information:

- Canvas

For additional assistance please contact FIU's Disability Resource Center.

Textbook

iOS Programming: The Big Nerd Ranch Guide (6th Edition) -- REQUIRED

Christian Keur, Aaron Hillegass

Big Nerd Ranch Guides; 6 edition; 2017

ISBN-10: 0134682335

ISBN-13: 978-0134682334

You may purchase your textbook online at the FIU Bookstore.

See Publisher's Website for problem solutions, errata, and discussion groups.

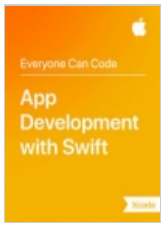
The Swift Programming Language -- RECOMMENDED

Apple Education

2017

This is a free book from Apple iTunes Store.

The book can be downloaded to the iBooks application.



App Development with Swift -- RECOMMENDED

Apple Education

2017

This is a free book from Apple iTunes Store.

The book can be downloaded to the iBooks application.

Academic Misconduct Statement

Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.

Academic Misconduct includes: **Cheating** – The unauthorized use of books, notes, aids, electronic sources; or assistance from another person with respect to examinations, course assignments, field service reports, class recitations; or the unauthorized possession of examination papers or course materials, whether originally authorized or not. **Plagiarism** – The use and appropriation of another's work without any indication of the source and the representation of such work as the student's own. Any student who fails to give credit for ideas, expressions or materials taken from another source, including internet sources, is responsible for plagiarism.

Learn more about the academic integrity policies and procedures as well as student resources that can help you prepare for a successful semester.

COURSE DETAIL

Course Communication

Please contact the instructor Steven Luis via Canvas.

Discussion Forums - Participation Assignments

Keep in mind that your discussion forum postings will likely be seen by other members of the course. Care should be taken when determining what to post.

Participation assignments are designed to help reinforce your knowledge by researching or practicing information you are exposed to in reading/lecture videos. Participation assignments will require that you post responses to a Question/Answer forum. The forum will provide a prompt for each assignment. Your complete answer will provide detailed and well conceived answer to the prompt. Students must create a thread in order to view other student posts. You will be given one week to complete your approx. 100 - 200 word answer. Answers will be graded based on their completeness of the answer to address the prompt, the demonstration of knowledge obtained by completing the prompt and the readability of the student response. Each participation assignment is worth

5 points.

Once a participation assignment is completed the student will be given an opportunity to review other students answers.

Discussion Forums

Keep in mind that your discussion forum postings will likely be seen by other members of the course. Care should be taken when determining what to post.

Assessments

In order to mitigate any issues with your computer and online assessments, it is very important that you take the "Practice Quiz" from each computer you will be using to take your graded quizzes and exams. It is your responsibility to make sure your computer meets the minimum hardware requirements.

Exam Expectations

- This course includes three exams.
- See the Proctored Exam Policy section above for availability dates and duration.
- Students will be able to see the score approximately seven days after submission.
- The expected turnaround time for feedback and grades is seven days.
- Since one of the exam grades are dropped, no make-up exams are permitted.

Quiz Expectations

- This course includes six quizzes with the lowest quiz grade being dropped for a total of five quiz grades.
- The duration for each is 15 mins.
- Students will be able to see the score approximately seven days after submission.
- Since one of the quiz grades are dropped, make-up quizzes are not permitted.
- In addition, each quiz will have an extra credit question.

Assessments in this course are not compatible with mobile devices and should not be taken through a mobile phone or a tablet. If you need further assistance please contact FIU Online Support Services.

Zoom Video Conference

We will use Zoom for online office hours.

Programming Assignments

Programming assignments will use Xcode 9.2, the interactive development environment for iOS. You must use the version noted. Assignments submitted with a version higher than 9.2 will not be graded.

Debugging

You must debug your own programs since this is an important part of your learning experience. Please refer to Xcode documentation, built-in programming debugger and assistant, Apple Developer Site, and a multitude of developer forums for information.

Submitting Assignments

Do not submit programs with warning or errors. Submit your assignment by uploading a zip file of your assignment directory on Canvas in the Week section the program is due. Assignments must be turned in by the published due dates. Assignments will not be accepted late for any reason. No make-up assignments will be offered.

Program Submission Procedure: Upload your .zip file using your FIU computer username followed by program assignment number, eg: smith01-p1.zip. Always name your Xcode projects in the same manner. When you save the project name, use: Smith01P1. Test you .zip file by unzipping it in a different directory and running the project. If a file is missing you did not add it to the file properly.

Grading procedure:

1. Does the program compile without errors or serious warnings (30%)? No, then stop.
2. Does the program behave according to the specification of the assignment (30%)? No, then stop.
3. Does the coding meet requirements and does the program display good design practice? (25%)
4. Is the program well documented and follows the Programming Style Guide? (15%)

Programing Identification: Please include the following comment at the top of each program file you submit which contains your code.

// PROGRAMMER: John Smith

// PANTHERID: 1234567

// CLASS: COP 465501 TR 5:00

// INSTRUCTOR: Steve Luis ECS 282

// ASSIGNMENT: #1 Sample Program

// DUE: Thursday 09/12/17

//

Team Project:

The Team Project requires that you work with other students in the class to develop a proof-of-concept mobile application. You and your team will identify a client to work with, agree on features for the proof-of-concept, present your concept in a presentation to the class for feedback, and submit the final app and materials on Demo Day.

Two or three person teams will be assigned by ranking each student based on their first two exam grades then pairing students from the highest to lowest scoring. You will be paired with a student who performed as well as you have in the class. Each team must make an appointment to review the final project on Demo Day.

Grading

Exams and quizzes are administered at the specified date intervals- **NO MAKEUP DATES**. However you can drop one quiz and one exam. All assignments have specific due dates and cannot be submitted late. The grading scale is final and will not be curved.

Course Requirements	Number of Items	Points for Each	Total Points Available	Weight
Quizzes (Drop lowest grade, extra credit given)	6	5	25	20%
Exams (Drop lowest grade)	3	100	200	45%
Discussion/Participation	6	5	30	2%
Programming Assignments (Drop lowest Grade)	6	100	600	25%
Team Project	1	100	100	8%
Total	**22**		**955**	**100%**

Letter	Range (%)	Letter	Range (%)	Letter	Range (%)
A	90 or above	B	80 - 83	C	65 - 69
A-	87 - 89	B-	75 - 79	D	50 - 64
B+	84 - 86	C+	70 - 74	F	49 or less

COURSE CALENDAR

Course Weekly Schedule

Dates and subject matter specifics are subject to change based on class performance.

Supported Course Objectives	Date	Tasks

MODULE 1
 	
TOPICS
 	
Build basic Xcode applications using the Swift programming language and UIKit objects
	Upon completion of Module 1, students will be able to :
	
	1. Design and implement iOS mobile applications by programming in Apple's Swift computer language and using the Cocoa Touch and Foundation frameworks;
	2. Develop mobile user interfaces using Apple's Human Interface Guidelines and Xcode's Interface builder;
	3. Devise application control logic by determining which design pattern (MVC, Delegation, ...) will produce the required behavior;
	
	Module 1
	
	Week 1:
	
	Aug 26 - 1
		Tasks:
		
		• *Read Chapter(s): 1, 2*
		• *Watch Lecture Videos/Walkthru and review accompanying Lecture notes.*
		  • *L1: Course Overview & Syllabus, XCode and First App*
		  • *First App Demo Walkthru*
		  • *L2: Swift Primer, Playgrounds and debugging*
		• *Review HelloWorld Project (Demo Code)*

TOPICS
 	
Apply design patterns to create custom classes that respond to UI events
	Module 1
	
	Week 2:
	
	Sep 2 - 8
		Tasks:
		
		• **Mon. Sept 2nd: Labor Day (University Closed)**
		• *Read Chapter(s): 3*
		• *Watch Lecture Videos/Walkthru and review accompanying Lecture notes.*
		  • *L3: Design Patterns: Delegation, MVC, Target action*
		  • *ToggleButton Demo Walkthru*
		  • *L4: Design Patterns and Outlet collections*
		  • *Let's Make A Deal Game Walkthru*
		• *Review ToggleButton Project and Let's make a Deal Project*

		• *Programming Assignment 1* • *Participation Assignment #1* • *Quiz #1*

TOPICS
 	
Identify the view hierarchy and its relationship to views and view controllers. Use Protocols and delegation pattern to control textfield operations
	Module 1
	
	Week 3:
	
	Sept 9 - 15
		Tasks:
		
		• *Read Chapter(s): 4, 5*
		• *Watch Lecture Videos/Walkthru and review accompanying Lecture notes.*
		  • *L5: Views and View Hierarchy*
		  • *L6: Text input and Protocols*
		• *Review View Switcher Project*
		• *Review TextField, Magic 8 ball and Tab Bar Controller Projects*
		• *Programming Assignment 2*
		• *Participation Assignment #2*
		• *Quiz #2*

TOPICS Organize content view controllers using tabbar controllers	Module 1 Week 4: Sept 16 - 22	*Tasks:* • *Read Chapter(s): 6, 9* • *Watch Lecture Videos/Walkthru and review accompanying Lecture notes.* • *L7: TabBar Controller* • *Participation Assignment #3 (Leads into programming assignment #3)* • *Quiz #3*
TOPICS	Module 1 Week 5: Sept 23 -29	Tasks: • *Attend Exam Review Online Meeting* • *EXAM I* • *Programming Assignment 3*
MODULE 2		*Upon completion of Module 2, students will be able to:* 1. Design and implement iOS mobile applications by programming in Apple's Swift computer language and using the Cocoa Touch and Foundation frameworks; 3. Devise application control logic by determining which design pattern (MVC, Delegation, ...) 5. Utilize device network and sensor related API services (CoreMotion,...) to establish Internet communications with cloud servers and iPhone/iPad device physical orientation as required.
TOPICS Animate views to enhance user interaction and respond to user	Module 2 Week 6:	*Tasks:* • *Read Chapter(s): 8, 18, 19* • *Watch Lecture Videos:*

input using touch and gesture events	Sept 30 - Oct 6	• *L8: Animation and Touch Events* • *L9: Core Motion and Gestures* • *Attend Team Project Prep: Identify Potential Clients*

TOPICS
 	
Design and develop table views embedded in navigation controllers to display hierarchical data in a master/detail pattern
	Module 2
	
	Week 7:
	
	Oct. 7 - Oct. 13
		Tasks:
		• Read Chapters(s): *10, 11, 12, 13*
		• *Watch Lecture Videos:*
		  • *L10: Tableview and Cells*
		  • *L11: TableView Editing, Stacks and Segues*
		• *Participation Assignment #4*
		• *Quiz #4*

TOPICS
 	
Continue learning about the Navigation Controller and Camera functionality
	Module 2
	
	Week 8:
	
	Oct 14 - 20
		Tasks:
		• *Read Chapter(s): 14, 15*
		• *Watch Lecture Videos:*
		  • *L12: Navigation Controller*
		  • *L13: Camera and Plists*

TOPICS	Module 2 Week 9: Oct 21 - 27	Tasks: • *Attend Exam Review Online Meeting* • *EXAM II* • *Programming Assignment 4*
MODULE 3	*Upon completion of Module 3, students will be able to:* 2. Develop mobile user interfaces using Apple's Human Interface Guidelines and Xcode's Interface builder; 4. Incorporate data management techniques (Property Lists, Core Data,...) to achieve application data persistence; 5. Utilize device network and sensor related API services (CoreMotion,...) to establish Internet communications with cloud servers and iPhone/iPad device physical orientation as required.	
TOPICS Build and demonstrate a proof of concept application which addresses a clients scope of work and satisfies project rubric. Integrate web browsers in a multi-view application.	Module 3 Week 11: Oct 28 - Nov 3	*Tasks:* • Monday Oct 28: Last Day to Add/Drop • *Read Apple Human Interface Guidelines* • Meet with your Team Project members (student arranged) • *Watch Lecture Videos:* • *L14: WebViews*
TOPICS		*Tasks:*

Use application persistence techniques to write data to the device sandbox and change application setting properties to be used by the settings app	Module 3 Week 12: Nov 4 - 10	• *Read Chapter(s): 16* • *Watch Lecture Videos:* • *L15: Archiving and Application Settings* • Team Project Meeting (student arranged) • *Deliverable 1: Team Presentation - PowerPoint and URL to online video recording*
TOPICS Design and develop applications to use the object based database capabilities of Core Data	Module 3 Week 13: Nov 11 - 17	*Tasks:* • Monday, Nov. 11: Veteran's Day- **University Closed** • *Read Chapter(s): 22, 23* • *L16: Core Data and TableViews I and II* • Team Project Meeting (student arranged) • *Programming Assignment 5* • *Quiz #5*
TOPICS Team Project Development	Module 3 Week 14: Nov 18 - 24	Tasks: • Team Project Meeting (student arranged)
TOPICS Team Project Development	Module 3 Week 15: Nov 25 - Dec 1	*Tasks:* • Thanksgiving Holiday Nov. 28/29 • Team Project Meeting (student arranged) •
TOPICS Prepare for Final Assessment	Module 3 Week 16: Dec 2 - 8	*Tasks:* • *Programming Assignment 6* • *Quiz #6* • *Attend Exam Review Online Meeting*
TOPICS Final Assessment Demonstrate a proof of concept application which addresses a clients scope of work and satisfies project rubric.	Module 3 Week 16: Dec 9 - 15	*Tasks:* • Deliverable 2 • *EXAM III*