

Montgomery County Community College
CIS 251
Advanced Mobile Development
3-2-2

COURSE DESCRIPTION:

This course will build on the basic iOS and Android app courses and focus on key advanced topics relevant across implementation platforms. Students will be introduced to advanced Android development concepts such as advanced user interfaces, app designing techniques, real time app development and location services; and iOS development to include advanced objective-C and Swift programming skills, geo positioning, and rich gesture based UI handling. Security of the mobile environment and business models will also be discussed.

REQUISITES:

Previous Course Requirements

- CIS 238 iPhone Application Development
- CIS 240 Android Application Development

Concurrent Course Requirements

None

LEARNING OUTCOMES Upon successful completion of this course, the student will be able to:	LEARNING ACTIVITIES	EVALUATION METHODS
1. Explain advanced Android features and communication systems.	Lecture/Discussion AV/Multimedia Materials Hands on Labs Homework Assignments Assigned readings Research	Student Programming Discussion/Questions Research presentations Examinations
2. Apply the Objective-C and Swift programming languages to develop original artifacts and applications.	Lecture/Discussion AV/Multimedia Materials Hands on Labs Homework Assignments Assigned readings Research	Student Programming Discussion/Questions Research presentations Examinations
3. Develop applications that use Geo Location for mobile devices.	Lecture/Discussion AV/Multimedia Materials Hands on Labs Homework Assignments Assigned readings Research	Student Programming Discussion/Questions Research presentations Examinations

LEARNING OUTCOMES	LEARNING ACTIVITIES	EVALUATION METHODS
4. Manage mobile security solutions.	Lecture/Discussion AV/Multimedia Materials Hands on Labs Homework Assignments Assigned readings Research	Student Programming Discussion/Questions Research presentations Examinations
5. Apply application business models and mobile advertising.	Lecture/Discussion AV/Multimedia Materials Hands on Labs Homework Assignments Assigned readings Research	Student Programming Discussion/Questions Research presentations Examinations Final Project

At the conclusion of each semester/session, assessment of the learning outcomes will be completed by course faculty using the listed evaluation method(s). Aggregated results will be submitted to the Associate Vice President of Academic Affairs. The benchmark for each learning outcome is that *70% of students will meet or exceed outcome criteria*.

SEQUENCE OF TOPICS:

1. Advanced Android Apps

- a) Advanced user interfaces
- b) Android App designing techniques
- c) Android Structure
- d) Database connectivity
- e) Real Time Experience
- f) Real time application development
- g) Location Based Services and Google Maps
- h) Gestures and styles
- i) Supporting multiple screens

2. Advanced iOS Apps

- a) Programming in Objective-C
- b) Programming in Swift
- c) Mobile Application Design for iOS
- d) Handling Data on iOS
- e) Programming with Device APIs such as Image and Accelerometers
- f) Multitasking on mobile platforms
- g) Differences between Cell Tower Location and GPS Location
- h) Programming with Location APIs
- i) Using Maps APIs to build location aware application

3. Securing the Mobile Environment

- a) Encrypting data
- b) Revealing the top mobile risks
- c) Protecting user interface data
- d) Storing data in the Android and iOS Keychain
- e) Enforcing user authentication
- f) Handling sessions properly
- g) Defining trust boundaries
- h) Addressing identified exploits promptly
- i) Working with cloud and web services

4. Business Model

- a) Application business models and basics of mobile advertising
- b) Choosing your business model
- c) Customer discovery
- d) Working with in-app advertising
- e) Putting your app on the app stores

LEARNING MATERIALS:

Annuzzi, Darcey, Conder et al. (2014) Advanced Android Application Development (4th ed) Addison-Wesley Professional: ISBN 0133892387

Costa, Cecil. (2015) Swift Cookbook - 50 Recipes to Help You Harness Swift, (1st ed) Packt Publishing: ISBN 1784391379

Adamson, Clayton et al (2015) iOS 9 SDK Development. (1st ed) Pragmatic Bookshelf ISBN 9781680501322

Other learning materials may be required and made available directly to the student and/or via the College's Libraries and/or course management system.

COURSE APPROVAL:

Prepared by: Anil Datta

Date: 11/7/2015

VPAA/Provost or designee Compliance Verification:

Victoria L. Bastecki-Perez, Ed.D.

Date: 02/2016

This course is consistent with Montgomery County Community College's mission. It was developed, approved and will be delivered in full compliance with the policies and procedures established by the College.