**Mobile Application Development**

**Career Studies Certificate Program**

***Northern Virginia Community College***

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## **Mobile App. Dev. Career Studies Certificate: *Purpose and Goals***

This program is designed for individuals seeking employment in either a mobile application software development firm or large organization with a mobile application development team as well as for those persons already employed who wish to update their skills in mobile application development and testing.

This curriculum will prepare students for employment as junior mobile application developers as well as quality assurance test engineers for native mobile applications.

Upon completion, graduates are prepared to study for the Google Associate Android Developer certification.

## **Mobile App. Dev. Career Studies Certificate: *Course Requirements***

**Semester 1**

ITP 100 or CSC 200 (Soft. Design) 3-4 credits

MTH 154 (Quant. Reasoning) 3 credits

**Semester 2**

ITP 226 (Android I) 4 credits  (prereq: ITP 100)

ITP 137 (iOS I) 4 credits  (prereq: ITP 100)

**Semester 3**

ITP 227 (Android II) 4 credits (prereq: ITP 226)

ITP 247 (iOS II) 4 credits

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**Total Credits 22 - 23 credits**

## **ITP 137 - Programming iOS Devices**

**Course Description**

Effective: 2013-05-01

Examines object-oriented Objective C and Swift design and programming concepts for iPhone and iPad. Introduces the tools and APIs for the latest iOS SDK, and how they fit together to build full-featured iOS applications.

Lecture 3-4 hours per week. 3-4 credits.

**General Course Purpose**

To give the student competence in designing, creating, and implementing applications in industry standard languages and frameworks, currently Objective-C and Swift.

**Course Objectives**

* Write the syntax of the Objective-C and Swift languages.
* Design, develop and explain object-oriented programming concepts.
* Use the XCode IDE to develop programs for iOS.
* Utilize the core frameworks required for iOS.
* Read and write iOS documentation.
* Create interface files, implementation files for Objective-C; create Swift files.
* Write classes using protocols.
* Understand the difference between object IDs and pointers.

**Major Topics to be Included**

* How to use the XCode IDE
* Using Interface Builder to rapidly build applications
* Source code revision control
* Objective-C and Swift syntax
* Interface and Implementation Files (Objective-C)
* Adding functionality to foreign classes with Protocols
* Object Oriented Programming
* Cocoa Touch API
* UIKit API
* Model-View-Controller design pattern

## **ITP 226 - Mobile Java Android Development**

**Course Description**

Effective: 2013-05-01

Provides the necessary design and programming skills required for developing applications on mobile devices (smartphones, tablets, etc.). Utilize the Java-based Android Development Kit to create Android applications, from concept to business model to final product.

Lecture 3-4 hours per week. 3-4 credits.

**General Course Purpose**

To give the student competence in designing, creating, and implementing mobile Java Android applications.

**Course Objectives**

* Understand the syntax of the Java Android language.
* Understand and explain object-oriented programming concepts.
* Use a Java IDE to develop programs for mobile Java platforms
* Understand the core frameworks needed in Android applications.
* Know how to read the Java Android documentation.
* Utilize the APIs, patterns, and widgets for developing applications
* Design effective user interfaces for mobile devices
* Understand how to design, develop, and deploy a mobile application.

**Major Topics to be Included**

* Introduction to Android OS
* The Android Activity Lifecycle
* How to Develop Android Applications Using Freely Available Tools
* A Survey of the Android Activities, Views and Widgets
* Using SQLite to persist Application Data
* Development of a Fully Functional Android Application of Your Own Design

## **ITP 227 - Advanced Android Application Development**

**Course Description**

Effective: 2019-01-01

Focuses on the development of the advanced Android app. Surveys tools, technologies, principles, and patterns that underpin all Android app development. Emphasizes communication protocols in the Android Platform and secure coding practices of mobile app development.

Lecture 4 hours. Total 4 hours per week. 4 credits.

**General Course Purpose**

This course is primarily for any student who has workable knowledge in Android Development or who has strong programing skill in Java. The general purpose of this course is to learn how to build a great user experience for Android devices, and apply this knowledge to their own Android App. The optional topics may be included to understand the challenges associated with developing for the mobile environment and how to overcome them.

**Course Prerequisites/Corequisites**

Prerequisite(s): [ITP 226](https://courses.vccs.edu/colleges/nova/courses/ITP226?filter=ww-er) or Instructor Permission

**Course Objectives**

* Demonstrate knowledge in Android application components and Android framework
* Build interactive user interface (UI) for Android devices
* Integrate Android API(s)
* Share and send simple data to other Apps
* Utilize common design principle for useful applications including security control
* Apply common security controls for mobile applications

**Major Topics to be Included**

* Tools, principles, and patterns that underlie Android application development
* Building a Dynamic UI with Fragments
* Interacting with other app using Android API
* Services and content Providers
* Android Concurrency and Synchronization
* Principles of building Secure Mobile Application
* Common Security controls for mobile applications

## **ITP 247 - Native Mobile Programming (Specify Platform) *[Advanced iOS]***

**Course Description**

Effective: 2013-05-01

Covers programming skills for creating native applications in (specify platform) for wireless devices. Discusses the unique constraints for programming mobile apps and introduces the student to the key business and technology skills required to work in this field.

Lecture 3-4 hours per week. 3-4 credits.

**General Course Purpose**

To introduce the student to unique constraints required for programming native mobile applications.

**Course Objectives**

* Understand what a native mobile application is and how it is constructed.
* Understand business models for selling and distributing mobile apps.
* Understand the limited resources and security constraints required for building an app.
* Understand the tools, API and process required for building a native mobile app.
* Understand the design patterns and best practices for building a mobile app.
* Develop and know the procedures for selling their own mobile applications.

**Major Topics to be Included**

* The business of creating a mobile application.
* The differences between mobile development and PC development
* The Native Mobile OS Architecture
* The Native Mobile APIs
* The Lifecycle of Mobile Apps
* Accessing special hardware and software that come with Mobile Devices (e.g. GPS, Camera, Media Frameworks, Mapping Software, Contact Lists, etc.)
* Deploying and testing on your device.
* Packaging the application for sale.