



Certificate in Apple iOS App Development

M115: iOS Programming in Swift

Module Description

This module serves as an introduction to creating iOS apps by learning the basics of the Swift Programming Language.

At the end of the module the participant will gain the following competencies using Swift Playgrounds:

- Constants, Variables, Basic operators, Data Types, Strings, Tuples and Optionals
- Arrays, Dictionaries, Loops, IF / SWITCH statements and Functions
- Classes, Objects, inheritance and initialisers
- Enumerations and Structures
- Extensions, Delegates and Protocols

It is recommended that you complete the iOS Mobile Hardware Architecture Module - M108 before attempting this Module.

Duration:

- 4 weeks – blended/flipped classroom mode using iTunes U
- iTunes U Link - <https://itunes.apple.com/ae/course/id982166108>

Eligibility and Pre-Requisites

- Anyone around the world but only HCT full time staff qualify for the certificate if they complete all the assessment tasks.
- Has programmed before in any Object Oriented programming (OOP) language (such as Java, Visual Basic or C++ /Objective C)
- Has basic user skills in Mac OS X (Mavericks or Yosemite)

Course Outline

1. Lesson 1 - Getting started with Swift

- 1.1. Introduction to Swift
- 1.2. Installing XCode
- 1.3. 3 ways to run a Swift Program
- 1.4. RAM Memory Organisation

2. Lesson 2 - Swift Basics

- 2.1. Declarations, Variables, Constants, Data Types, Casting.
- 2.2. Type inference, strings, characters, boolean
- 2.3. Mathematical expressions and type aliases
- 2.4. Tuples and Optionals

3. Lesson 3 - Collections and Loops

- 3.1. Arrays
- 3.2. Dictionaries
- 3.3. For Loops
- 3.4. While loops

4. Lesson 4 - Decision Making

- 4.1. IF Statements
- 4.2. SWITCH Statements

5. Lesson 5 - Functions

- 5.1. Simple Functions
- 5.2. Functions with multiple return values
- 5.3. Variadic parameters
- 5.4. Functions that return functions
- 5.5. Nested Functions
- 5.6. Default parameters
- 5.7. Variable and inout parameters



6. Lesson 6 - Object Oriented Programming

- 6.1. Classes, properties and methods
- 6.2. Instantiating objects
- 6.3. Creating initialiser methods
- 6.4. Convenience initialisers
- 6.5. Inheritance
- 6.6. Over-riding methods
- 6.7. Optional External Method Parameters

7. Lesson 7- User - defined data types

- 7.1. Enumerations
- 7.2. Structures
- 7.3. Comparison between Classes and Structures
- 7.4. Difference between Value Types and Reference Types

8. Lesson 8 - Other OOP Features

- 8.1. Protocols
- 8.2. Delegation
- 8.3. Extensions



Assessment

Programming tasks using Swift Playgrounds (25% of Final Grade)