

254471 Computer Languages

Mobile application development for iOS

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Purpose

The aim of this course is to apply your existing knowledge of programming to learn a new language. Therefore, the course will explore mobile application development for the iOS (iPhone/iPad) platform.

The course will cover:

- Designing applications for mobile technologies
- Programming in Objective C and the Cocoa Touch framework
- Creating projects in Xcode
- Building applications with views and view controllers (including navigation, tabs and tables)
- Responding to user interaction (with Cocoa Touch components such as buttons, text fields, images, sliders, scrollers, web content).
- Using location services, maps, and web services
- Testing and debugging applications in Xcode

By the end of this course students should be able to write iPhone applications with the full set of standard user interface components.

Students should be confident programming in at least one object-oriented language (e.g. Java, C#, C++), plus familiarity with C is beneficial. This course will be taught in English.

Schedule

Week	Topic	Outcomes
1	Orientation	Awareness of the different types of programming languages.
2	Objective C basics	Understand how to use data types, objects, and methods in Objective C
3	More Objective C	Understand how to create classes, subclasses, and protocols
4	Designing iPhone apps	Knowledge of design considerations for mobile applications
5	UIViews and UIViewController	Create a simple app with a view controller and a view
6	Using Interface Builder	Create a user interface with IB and connect it to a view controller with IBOutlets and properties

Week	Topic	Outcomes
7	Buttons and IBActions	Introduce IBActions and show how they are used with buttons, sliders, switches, etc
8	Midterm project	
9	Table Views	Protocols, delegates, datasources and how to use the tableview component
10	Navigation controllers and Tab bar controllers	Learn about the building blocks of iOS apps
11	Introducing animation	Move components and switching views
12	Maps and location	MapKit and CoreLocation
13	Connecting to the web	Downloading data from a URL and using a UIWebView component
14	Final project	
15	When things go wrong	Practice testing and debugging programs in Xcode
16	Final exam	

Assessment

30% mid-term assignment
30% final assignment
40% final exam

Each week there will be a 4 hour workshop, which will consist of a 2 hour lecture followed by 2 hours of practical exercises.

The assignment will be a real-world programming project. Working in pairs (pair programming), you will build an iPhone application using all the skills developed during the course. The assignment will be in 2 parts, the first part will be due after the midterm, and the second part will be due at the end of term. In the first part of the assignment, all students will write a standard iPhone application to perform a task. In the second part, students will be given the creative freedom to develop the application with their own ideas.

The final exam will test your knowledge of object-oriented programming, Objective C and mobile development using iOS.