

Special Topics in Information Technology

Purpose

The aim of this course is to introduce an advanced topic relating to IT such that the student is able to undertake research in that topic. The chosen topic is mobile technology.

The course will cover:

- Reviewing the current state-of-the-art mobile technologies
- Designing mobile applications, including user interface design
- Implementing native applications on iOS using Objective C
- Implementing web applications using HTML, CSS & Javascript
- Programming locations services, maps, and other mobile-specific features

By the end of this course, students should be able to design applications for mobile devices and they should be able to implement basic applications (iOS and web-based).

Students should be familiar with object-oriented programming, experience with C is beneficial. Students should be confident in HTML and CSS.

Schedule

Week	Topic	Outcomes
1	Introduction to research on mobile technologies	Awareness of the current mobile platforms and issues surrounding application development for mobiles.
2	Mobile user experience	Understand the differences between designing for mobile and other software design.
3	Objective C basics	Introduce basic features of the Objective C language, e.g. data types, objects, and methods
4	More Objective C	Cover strings, arrays, memory management, etc
5	Views and view controllers	Create a user interface with IB and connect it to a view controller with IBOutlets and properties
6	Buttons and actions	Introduce IBActions and show how they are used with buttons, sliders, switches, etc
7	Tables and lists	Protocols, delegates, datasources and how to use the tableview component
8	Mid-term project	Develop a simple app
9	More advanced iOS interfaces	Learn about navigation controllers and tab bar controllers, and how to handle multiple views
10	Maps and location	MapKit and CoreLocation

Week	Topic	Outcomes
11	Native vs web-based mobile applications	Why might you want to create a web-based mobile application?
12	Using HTML and CSS in mobile apps	Develop an app using HTML 5 and CSS
13	Using Javascript in mobile apps	Add Javascript to a web app for interactivity and to enable mobile-specific features (e.g. location)
14	Final project	
15	Doing research with mobile technologies	Project ideas for research on mobile technologies
16	Final exam	

Assessment

Each week there will be a 4 hour workshop which will consist of a 1-2 hour lecture followed by practical exercises. Active participation in the workshop is 10% of the assessment.

The mid-term project will be released in week 6, to be completed by week 8, and will consist of a small programming exercise to write an iPhone application. The mid-term project is 25% of the overall assessment.

The final project will be released in week 11, to be completed by week 14, and will involve designing and implementing a mobile application of your choice. The final project is 30% of the overall assessment.

The final exam is worth 35% and will test your knowledge of designing and implementing mobile technologies.

10% active workshop participation
25% mid-term project
30% final project
35% final exam