

MODULE SPECIFICATION

Name of Module		Applied programming					
Parent School/Dept		Computer Science					
Programme(s) where module is offered		BSc Computer Science with Electrical Engineering; BSc Computer Science with Economics; BSc Computer Science with Business; BSc Computer Science with International Relations; BSc Computer Science with Political Science;					
Status (core, option, free choice)		Core		Pre-Requisite Modules or Qualifications		CSIS280, CSIS270	
FHEQ Level	6	Unit Value	6 ECTS	Module Code	CS 450	Module coordinator	Faik Catibusic
Term taught		Spring		Applicable From		2016	

Educational Aims of the Module

The aim of this module is to enhance the programming skills of students. The design and development of software applications for devices such as smart phones and tablets requires understanding of the features and constraints of the platform, so as to select the appropriate tools and take advantage of the available hardware.

The module builds on previous modules in operating systems, algorithms, data structures, programming, and interface design. Students will work in small groups to develop a realistic application using state-of-the-art tools. The module will also explore ways of uploading the created applications across different electronic sales platforms/Stores and potential commercial opportunities that can arise from such actions.

Module Outline/Syllabus

- Mobile/Tablet device platform overview: processors and operating systems; memory; graphical display; sensors; touch input; networking and communication.
- Mobile/Tablet application development: characteristics of mobile applications; development tools and emulators.
- Application design: start screen; GUI design and navigation; custom icons; data storage
- Application development: creating a project; creating an application; linking; running in emulator.
- User interface and user experience: input modalities; error handling; responding to events; data manipulation and display.
- Data and network services: network connections; phone limitations; web data standards; cloud storage.
- Sensors and services: accelerometer; geographic location; map services, NFC sensors
- Getting the application to the Market Place: deploying and testing applications; submission and approval process; free and paid applications.

Student Engagement Hours

Type	Number per Term	Duration	Total Time
Lectures	15	2 hours	30 hours
Laboratory sessions	15	2 hours	30 hours
Total Guided/Independent Learning Hours			90
Total Contact Hours			60
Total Engagement Hours			150

Assessment Method Summary

Type	Number Required	Duration / Length	Weighting	Timing/Submission Deadline
Mid-term exam	1	90 minutes	20%	Mid-semester
Project (Individual)	1	2,000-3,000 words	30%	Week 14
Final Exam	1	180 minutes	50%	End of semester

Module Outcomes	
<p><u>Intended Learning Outcomes:</u></p> <ol style="list-style-type: none"> 1. Understanding and implementing advanced programming projects. 2. Comprehensive understanding of the principles of event based programming. 3. Good familiarity with user interface design for phones and tablets. 4. Demonstrable knowledge of sensors and the connectivity features of phones and tablets. 5. Ability to run mobile applications in an emulator and deploying them on real devices. 	<p><u>Teaching and Learning Strategy:</u></p> <ol style="list-style-type: none"> 1. Lectures (ILO: 1, 2, 3) 2. Laboratory sessions (ILO: 1-5) 3. Project (ILO: 1-5)
	<p><u>Assessment Strategy</u></p> <ol style="list-style-type: none"> 1. Mid-term exam (ILO:1-3) 2. Final exam (ILO: 1-4) 3. Project (ILO: 1-5)
<p><u>Practical Skills</u></p> <ol style="list-style-type: none"> 1. Ability to design and implement an application for a phone and/or tablet. 2. Ability to use an emulator to test and debug the application. 3. Ability to deploy the application to a real phone/tablet. 	<p><u>Teaching and Learning Strategy:</u></p> <ol style="list-style-type: none"> 1. Lectures, laboratory sessions (PS:1-3) 2. Project work (PS:2-3)
	<p><u>Assessment Strategy</u></p> <ol style="list-style-type: none"> 1. Project (PS:1-3)
<p><u>Transferable Skills</u></p> <ol style="list-style-type: none"> 1. Attention to detail 2. Teamwork 3. Self-management 4. Computer literacy 5. Problem solving skills 6. Critical thinking and reasoning 	<p><u>Teaching and Learning Strategy:</u></p> <ol style="list-style-type: none"> 1. Laboratory sessions (TS: 1-6) 2. Lectures (TS: 1, 4-6) 3. Project (TS: 2,3,6)
	<p><u>Assessment Strategy</u></p> <ol style="list-style-type: none"> 1. Mid-term exam (TS: 1, 3, 5, 6) 2. Final exam (TS: 1, 3, 5, 6) 3. Project (TS:1-6)

Key Texts and/or other learning materials
<p>Set Text</p> <ul style="list-style-type: none"> • Mathians, M. & Gallagher, J. (2015) Swift Programming: The Big Nerd Ranch Guide (Big Nerd Ranch Guides), 1st Edition, Big Nerd Ranch Guides. <p>Supplementary Materials</p> <ul style="list-style-type: none"> • Barney, L., (2009), Developing Hybrid Applications for the iphone: Using HTML, CSS and JavaScript to build dynamic Apps, Addison Wesley • Karlins, D., (2014), Developing Mobile Websites with HTML 5, Cengage Learning • Hellman, E., (2013) Android Programming: Pushing the Limits, Wiley • Iversen, J., Eierman, M., (2013), Learning Mobile App Development: A hands-on Guide to Building Apps with iOS and Android, Addison Wesley • Clifton, G., (2015), Android User Interface Design: Implementing material design for developers, Addison Wesley • Nudelmann, G., (2013), Android Design Patterns, Wiley • Firtmann, M., (2013), Programming the mobile web, 2nd Edition, O'Reilly Media • Android How to Program . With an introduction to Java, Harvey M. Deitel • Android App Development and Design: Learn by Video, Constantin Ehrenstein, video2brain • Android Programming: The Big Nerd Ranch Guide, Bill Phillips, Brian Hardy

- Starting Out with App Inventor for Android, Rebecca Halsey, Tony Gaddis

Additional resources and software tools will be communicated by the module leader.

Please note: This specification provides a concise summary of the main features of the module and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module and programme can be found in the departmental or programme handbook. The accuracy of the information contained in this document is reviewed annually by the University of Buckingham and may be checked by the Quality Assurance Agency.

Date of Production	Autumn 2016
Date approved by School Learning and Teaching Committee	28 th September 2016
Date approved by School Board of Study	12 th October 2016
Date approved by University Learning and Teaching Committee	2 nd November 2016
Date of Annual Review	December 2017