



MODULE SPECIFICATION

Part 1: Information			
Module Title	Internet of Things		
Module Code	UFCFVK-15-2	Level	Level 5
For implementation from	2019-20		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Computer Science and Creative Technologies
Department	FET Dept of Computer Sci & Creative Tech		
Module type:	Standard		
Pre-requisites	Computer and Network Systems 2019-20		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Overview: Pre-requisites: Students must take one of UFCFGL-30-1 Programming in C++, UFCFF6-30-1 Programming in C, or UFCF93-30-1 Computer and Network Systems.</p> <p>Educational Aims: See Learning Outcomes.</p> <p>Outline Syllabus: The syllabus includes: Introduction to the Internet of Things (IoT) IoT Architectures IoT Security IoT Network protocols (MAC layer) Wireless technologies for IoT (Layer 1 & 2) IoT hardware and software development Data analytics for IoT</p> <p>Teaching and Learning Methods: Laboratory exercises will allow the student to gain familiarization with the tools and techniques required for the implementation and verification of applications for Internet of Things.</p> <p>Students will be expected to demonstrate self-direction and originality in their learning which will be facilitated through student directed tutorials.</p>

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Scheduled learning: in the form of tutorials, demonstrations and practical classes will comprise 1/3 of the total study time for this module.

Independent learning: will constitute the remaining study time with an expectation that approximately 46 hours will be spent on self-directed study, a further 40 hours in support of the coursework and 16 hours preparation for the presentation.

Contact Hours:

Activity:

Contact: 48 hours

Assimilation and skill development: 46 hours

Undertaking coursework: 40 hours

Research and presentation: 16 hours

Total: 150 hours

Part 3: Assessment

Summative assessment is achieved through the demonstration of an innovative solution to a design problem along with submission of a log book.

Formative assessment will be provided as oral feedback throughout the laboratory sessions particularly with respect to the design development and the log-book entries.

Final summative assessment will be by oral presentation of software developed for an Internet of Things application.

Students will also be assessed against the quality of their program design and documentation.

First Sit Components	Final Assessment	Element weighting	Description
Practical Skills Assessment - Component B	✓	75 %	Logbook and demonstration of final product
Presentation - Component A		25 %	Oral presentation
Resit Components	Final Assessment	Element weighting	Description
Practical Skills Assessment - Component B	✓	75 %	Logbook and video demonstration of final product
Presentation - Component A		25 %	Video presentation

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Part 4: Teaching and Learning Methods																			
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th style="text-align: left;">Module Learning Outcomes</th> <th style="text-align: left;">Reference</th> </tr> </thead> <tbody> <tr> <td>Explain in a concise manner how the general Internet as well as Internet of Things work</td> <td>MO1</td> </tr> <tr> <td>Understand, demonstrating with examples, constraints and opportunities of wireless and mobile networks for Internet of Things</td> <td>MO2</td> </tr> <tr> <td>Understand and demonstrate via comparison and critical evaluation issues with security within the domain of Internet of Things</td> <td>MO3</td> </tr> <tr> <td>Compare the various network protocols used in IoT</td> <td>MO4</td> </tr> <tr> <td>Be familiar with the key wireless technologies used in IoT systems, such as WiFi, LoRaWAN, and Bluetooth LE</td> <td>MO5</td> </tr> <tr> <td>Apply object-oriented approaches in C++, to embedded systems with application to Internet of Things</td> <td>MO6</td> </tr> <tr> <td>Design an embedded system for the Internet of Things, using the above skills</td> <td>MO7</td> </tr> <tr> <td>Develop and use test plans</td> <td>MO8</td> </tr> </tbody> </table>	Module Learning Outcomes	Reference	Explain in a concise manner how the general Internet as well as Internet of Things work	MO1	Understand, demonstrating with examples, constraints and opportunities of wireless and mobile networks for Internet of Things	MO2	Understand and demonstrate via comparison and critical evaluation issues with security within the domain of Internet of Things	MO3	Compare the various network protocols used in IoT	MO4	Be familiar with the key wireless technologies used in IoT systems, such as WiFi, LoRaWAN, and Bluetooth LE	MO5	Apply object-oriented approaches in C++, to embedded systems with application to Internet of Things	MO6	Design an embedded system for the Internet of Things, using the above skills	MO7	Develop and use test plans	MO8
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Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p>https://uwe.rl.talis.com/modules/ufcfvk-15-2.html</p>																		

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Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Computing [Sep][SW][Frenchay][4yrs] BSc (Hons) 2018-19

Computing [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19

Computer Science [Sep][SW][Frenchay][4yrs] BSc (Hons) 2018-19

Forensic Computing and Security [Sep][SW][Frenchay][4yrs] BSc (Hons) 2018-19

Computer Science [May][FT][Villa][3yrs] BSc (Hons) 2018-19

Computer Science [Jan][FT][Villa][3yrs] BSc (Hons) 2018-19

Computer Science [Sep][FT][Villa][3yrs] BSc (Hons) 2018-19

Computer Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2018-19

Forensic Computing and Security {Dual} [Mar][FT][Taylors][3yrs] BSc (Hons) 2018-19

Forensic Computing and Security {Dual} [Aug][FT][Taylors][3yrs] BSc (Hons) 2018-19

Forensic Computing and Security [Sep][SW][Frenchay][4yrs] BSc (Hons) 2018-19