



MODULE SPECIFICATION

Part 1: Information			
Module Title	Internet of Things Engineering		
Module Code	UFMFNN-15-3	Level	Level 6
For implementation from	2018-19		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Contributes towards			
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>Overview: This module considers infrastructure technologies, applications and standards used in the design and implementation of sensor networks, with a focus on their use in applications for the Internet of Things.</p> <p>Educational Aims: Students will gain practical design and implementation skills and develop their understanding of constraints associated with current technologies and potential solutions alongside investigating the challenges of data aggregation, interoperability and security that developers face as smart systems, based on intelligent monitoring of data gathered from networked embedded devices become more sophisticated and pervasive.</p> <p>In addition, the educational experience may explore, develop, and practise but not formally assess the following: Understanding of the need for high-level professional and ethical conduct.</p>

STUDENT AND ACADEMIC SERVICES

Outline Syllabus: The syllabus covers topics such as:

The IoT applications
 Constraints and issues: power management, data aggregation, interoperability, timeliness and security
 Enabling Technologies
 Networking, protocols and routing
 Deployment and practical implementation issues
 Data aggregation
 Sensors and sensors technology
 Real time, low power operating systems
 Automatic identification and data transfer (AIDC), RFID
 Trust, security and privacy
 Programming, debugging real time implementations in both software and hardware

Teaching and Learning Methods: See educational aims and assessment.

Part 3: Assessment

Your achievements in the module will be assessed in two components:

Component A:

Laboratory-based project: students will work in group to develop a practical IoT application. They will present their work and demonstrate it in the lab at the end of the term.

Component B:

Individual report: Students will be required to research an application of IoT and submit a report describing their findings.

Feedback will be provided during the lab sessions.

First Sit Components	Final Assessment	Element weighting	Description
Report - Component B		50 %	Individual report (1500 words)
Practical Skills Assessment - Component A	✓	50 %	Lab-based group presentation (10 mins) and demonstration (10-15 mins)
Resit Components	Final Assessment	Element weighting	Description
Report - Component B		50 %	Individual report (1500 words)
Practical Skills Assessment - Component A	✓	50 %	Lab-based individual presentation (10 mins) & demonstration (10-15 mins)

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Part 4: Teaching and Learning Methods		
Learning Outcomes	On successful completion of this module students will be able to:	
	Module Learning Outcomes	
	MO1	Develop and demonstrate an understanding of the use of sensor networks within the context of the Internet of Things (IoT), taking account of technological, commercial and social constraints
	MO2	Understand, critically discuss and evaluate issues related to power, timeliness, data aggregation, interoperability and security of IoT systems from a technology perspective
	MO3	Develop and demonstrate understanding of network architectures and key wireless enabling technologies used in IoT systems
	MO4	Demonstrate knowledge of underlying mathematical and networking principles, and topologies in the design and development of real time IoT applications
	MO5	Demonstrate the ability to use development tools to design, implement, deploy and test systems
	MO6	Apply research and problem-solving skills in the analysis, design and development of a system for the Internet of Things
Contact Hours	Contact Hours	
	Independent Study Hours:	
	Independent study/self-guided study	114
	Total Independent Study Hours:	114
	Scheduled Learning and Teaching Hours:	
	Face-to-face learning	36
	Total Scheduled Learning and Teaching Hours:	36
	Hours to be allocated	150
	Allocated Hours	150
Reading List	<p>The reading list for this module can be accessed via the following link:</p> <p>https://uwe.rl.talis.com/index.html</p>	