MODULE DESCRIPTOR

Module Title

Internet of Things

Reference	CM4111	Version	1
Created	April 2017	SCQF Level	SCQF 10
Approved	August 2017	SCQF Points	15
Amended		ECTS Points	7.5

Aims of Module

To introduce students to the fundamental concepts of the Internet of Things (IoT), its applications and architecture models.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

1	Critically analyse and explain the key concepts of the Internet of Things and its enabling technologies.
2	Identify and explain security, privacy and trust issues facing the Internet of Things.
3	Describe and discuss recent and evolving developments, protocols and technologies.
4	Design and build a simple sensor network based on Internet of Things technology, to meet business goals.
5	Demonstrate knowledge and Understanding of commercial and economic issues surrounding the Internet of Things.

Indicative Module Content

Basic concepts of the Internet of Things and its enabling technologies. Network architectures (Wireless Multi-hop (WMN), Wireless Sensor Networks (WSN), Mobile Ad-hoc Networks (MANET). Protocols used within the IoT: 6LoWPAN, CoAP, RPL Communications methods: UDP and TCP over multi-hop mesh networks. Reliability, Security, Privacy and Trust issues within the Internet of Things. Addressing the Internet of Things: IPv6, NAT64 Connecting things to the web: IFTTT, MQTT, Ubidots.

Module Delivery

Key concepts are introduced and illustrated through lectures and directed reading. The understanding of students is tested and further enhanced through interactive tutorials. In the laboratories, the student will progress through a sequence of exercises to develop sufficient knowledge and skills in Internet of Things development.

Module Ref:	CM4111 v1

Indicative Student Workload	Full Time	Part Time
Contact Hours	33	N/A
Non-Contact Hours	117	N/A
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	N/A
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4, 5
Description:	Coursework assignment.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

Graphics development assignment assessing all the module's learning outcomes.

Module Grade	Minimum Requirements to achieve Module Grade:
A	The student needs to achieve an A in C1.
B	The student needs to achieve a B in C1.
C	The student needs to achieve a C in C1.
D	The student needs to achieve a D in C1.
E	The student needs to achieve an E in C1.
F	The student needs to achieve an F in C1.
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1. Olivier Hersent, 2011. The Internet of Things: Key Applications and Protocols. 2nd Edition. Wiley.
2. Arshdeep Bahga, 2014. Internet of Things (A Hands-on-Approach). 1st Edition. VPT.
3. Subhas Chandra Mukhopadhyay (Ed.), 2014. Internet of Things: Challenges and Opportunities: 9 (Smart Sensors, Measurement and Instrumentation). 2014 Edition. Springer.
4. Adrian McEwen, 2013. Designing the Internet of Things. 1st Edition. Wiley.
5. Samarth Shah, 2015. Learning Raspberry Pi. Edition. Packt Publishing.
6. Alasdair Gilchrist, 2016. Industry 4.0: The Industrial Internet of Things. 1st ed. Edition. Apress.