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MODULE DESCRIPTOR

Module Title

Exploring Computing Devices

Reference	CM1109	Version	2
Created	May 2022	SCQF Level	SCQF 7
Approved	March 2021	SCQF Points	15
Amended	July 2022	ECTS Points	7.5

Aims of Module

To enable students to develop interactive physical systems using software development tools and single-board computers that are capable of processing data captured from physical sensors and controlling actuators for output.

Learning Outcomes for Module

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

1	Demonstrate knowledge of the structure and organisation of computer operating systems, and identify the purpose of typical hardware and software components.
2	Describe the main components of a computer system, how software executes on a computer.
3	Explain the theories and issues involved in the control of a computer system.
4	Develop interactive programs for single-board computer systems that use inputs from sensors and control a variety of physical outputs.

Indicative Module Content

Main hardware and software components of physical computer systems; Arduino IoT hardware platform; Javascript software development using robotic and IoT libraries for interfacing with various sensors and actuators with appropriate variables, data types, and interactive control.

Module Delivery

Key concepts are introduced through the lectures. The main emphasis of the course will be focused on the lab sessions, which will create a flexible teaching session where individual lab assignments and group development will be interspersed with demonstrations of current techniques and practices allowing students to develop their understanding of the material and software development skills.

Indicative Student Workload

		Full Time	Part Time
Contact Hours		40	N/A
Non-Contact Hours		110	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

Description:	A practical coursework that explores the use of electronics, IOT prototyping boards and software development to design and implement a solution to a given problem.

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

This module is assessed on a pass/unsuccessful basis. The Module Grade is based on performance in Component 1 (coursework) as detailed below.

Module Grade	Minimum Requirements to achieve Module Grade:
Pass	Pass in C1.
Fail	Fail, i.e. unsuccessful, 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	WALDRON, R. and Backstop Media. 2015.JavaScript Robotics: Building NodeBots with Johnny-Five, Raspberry Pi, Arduino, and BeagleBone
2	Rinehart, M., 2015. Javascript object programming
3	Stallings, W., 2012. Computer Organization and Architecture. 9th ed. Pearson Education.
4	Dunbar, N., 2020. Arduino Software Internals: A Complete Guide to How Your Arduino Language and Hardware Work Together
5	Seneviratne, P., 2017. Building Arduino PLCs: The Essential Techniques You Need to Develop Arduino-Based PLCs