



MODULE SPECIFICATION

Part 1: Information			
Module Title	Creative and Physical Computing		
Module Code	UFCFLL-30-2	Level	Level 5
For implementation from	2020-21		
UWE Credit Rating	30	ECTS Credit Rating	15
Faculty	Faculty of Environment & Technology	Field	Computer Science and Creative Technologies
Department	FET Dept of Computer Sci & Creative Tech		
Contributes towards			
Module type:	Standard		
Pre-requisites	Entertainment Software Development 2019-20, Introduction to Creative Coding 2019-20, Introductory Audio Programming 2019-20		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p>The connection between physical interaction and creative expression is critical to understanding the fundamentals of Digital Media. This module builds on understanding that students have developed in Level 4 to using electronics, code and programming environments to build engaging interactive experiences.</p> <p>Pre-requisites: students must take one out of UFCFWA-30-1 Entertainment Software Development or UFCF8L-30-1 Introduction to Creative Coding or UFCFF4-30-1 Introductory Audio Programming.</p> <p>Educational Aims: Students will build on the foundations developed in Level 4 on their respective creative programming modules, to focus on physical and embedded interaction design and development. Through working in small teams whilst developing and understanding of contemporary design paradigms and practical coursework, they will learn how to creatively apply the rudiments of electronics and software to develop interactive experiences that engage the user through physical, tangible manipulation and/or full body movement. These systems may be</p>

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experiential installations, musical instruments or novel games based on physical and social interaction.

Outline Syllabus: Contemporary Artists and Designers creating novel interactive audio-visual arts.

Design paradigms and methods indicative content (will be adapted to the most contemporary and relevant methods at the time):

Speculative design; Critical making/ provocative design; human-centred design; participatory design.

Electronics indicative content (will be adapted to the most contemporary platform at the time): Microcontrollers; resistors; proximity sensors; flex sensors; pressure sensors; conductive paint and/or fabric Light Emitting Diodes (LEDs); Light Dependent Resistors (LDRs); voltage divider circuits.

Hardware/Firmware indicative content (will be adapted to the most contemporary platform at the time): x-OSC; Arduino; Teensy; Bela; Beaglebone; Raspberry Pi.

Software and libraries indicative content (will be adapted to the most contemporary platform at the time): Processing; p5.js; tone.js; MAX/MSP/Jitter;

Networking and Communication indicative content (will be adapted to the most contemporary platform at the time): Understanding TCP/IP; UDP/IP and the OpenSoundControl protocol.

Teaching and Learning Methods: The syllabus will be explored through lectorials in which some information will be presented formally and a substantial amount will be presented as workshop challenges and tasks with staff support.

The sessions will contain brief lectures, discussions, group-work tasks and project-based learning.

Part 3: Assessment

Enabling students to achieve learning outcomes:

This assessment strategy facilitates students learning through two coursework projects, one focused on physical computing and one focused on creative computing on the web. This will address the learning outcomes by facilitating them developing their skills through the lectorials and self directed study outside class. This will push them to develop their creative and critical thinking, as well as technical implementation.

Selection of Assessment Types:

These assessment types are designed to allow practical hands on knowledge and skill generation. Digital Media BSc is a practically focused programme, we make things and learn through making. This module is focused on making physical, tangible things that people can interact with, then looking at how these can connect to web based systems.

Students will be required to situate their work in context with other contemporary designers and artists in a design and evaluation report. They will be required reflect on their work in this report.

Finally, the oral examination and design and evaluation report at the end will test their ability to communicate their ideas successfully.

Plagiarism will be designed out by have an oral examination to test students' knowledge.

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Group assessment will use a partial peer weighting system to allow students to allocate marks between members of their groups.

First Sit Components	Final Assessment	Element weighting	Description
Project - Component B		75 %	CW prototype with supporting documentation (Max 1500 words)
Presentation - Component A	✓	25 %	Formal presentation of CW project (Max 15 mins)
Resit Components	Final Assessment	Element weighting	Description
Project - Component B		75 %	CW prototype with individual supporting documentation (Max 1500 words)
Presentation - Component A	✓	25 %	Formal presentation of CW project (Max 15 mins via video presentation)

Part 4: Teaching and Learning Methods

Learning Outcomes	On successful completion of this module students will be able to:	
		Module Learning Outcomes
	MO1	Demonstrate knowledge and understanding of the fundamentals of the creative applications of electronics and code.
	MO2	Research, identify and critique key concepts and ideas developed by designers, musicians and artists working in the field of Creative and Physical Computing.
	MO3	Demonstrate their critical and creative thinking through iterating on designs of physical interfaces and interactions.
	MO4	Apply their understanding of salient design paradigms and approaches to create innovative design responses.
	MO5	Communicate ideas and concepts effectively through rigorous design research.
	MO6	Manage working as part of a team; meeting project deadlines and milestones.
Contact Hours	Contact Hours	
	Independent Study Hours:	
	Independent study/self-guided study	228
	Total Independent Study Hours:	228

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	Scheduled Learning and Teaching Hours:	
	Lectorials	72
	Total Scheduled Learning and Teaching Hours:	72
	Hours to be allocated	300
	Allocated Hours	300
Reading List	<i>The reading list for this module can be accessed via the following link:</i>	