Module Specification

Creative and Physical Computing

Version: 2024-25, v3.0, 10 Apr 2024

Contents

Part 1: Information

Module title: Creative and Physical Computing

Module code: UFCFLL-30-2

Level: Level 5

For implementation from: 2024-25

UWE credit rating: 30

ECTS credit rating: 15

College: College of Arts, Technology and Environment

School: CATE School of Computing and Creative Technologies

Partner institutions: None

Field: Computer Science and Creative Technologies

Module type: Module

Pre-requisites: Games in C++ 2023-24, Introduction to Creative Coding 2023-24, Introductory Audio Programming 2023-24

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: The connection between physical interaction and creative expression is critical to understanding the fundamentals of creative media. This module builds on students understanding of electronics, code and programming environments to build engaging interactive experiences.

Pre-requisites: students must take one out of UFCFWA-30-1 Games C++ or

UFCF8L-30-1 Introduction to Creative Coding or UFCFF4-30-1 Introductory Audio Programming.

Features: Not applicable

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 their developing and understanding of contemporary design paradigms and practical coursework, students 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 range from experiential installations, musical instruments or novel games based on physical and social interaction or other creative outputs.

Outline syllabus: This module will adopt suitable hardware and software technologies to enable students to achieve the learning outcomes. Content will aim to cover (but is not limited to) the following key areas of research:

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

- Design concepts indicative content (will be adapted to the most contemporary and relevant methods at the time).

- Emergence in generative and interactive art; Interaction Design in interactive art; Mapping strategies in Digital Musical Instruments (DMIs); Performer – Audience Transparency; Music Related Gestures.

- 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).

- 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.

Part 3: Teaching and learning methods

Teaching and learning methods: The syllabus will be explored through lectorials in which some information will be presented formally, with the majority of taught content being presented through workshop challenges and tasks with staff support.

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

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Research, identify and critique key concepts and ideas developed by designers, musicians and artists.

MO2 Demonstrate their critical and creative thinking through iterating on designs of physical interfaces and interactions.

MO3 Apply their understanding of salient design paradigms and approaches to create innovative design responses.

MO4 Communicate ideas and concepts effectively through rigorous design research.

Hours to be allocated: 300

Contact hours:

Independent study/self-guided study = 228 hours

Lectorials = 72 hours

Total = 300

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufcfll-30-2.html

Part 4: Assessment

Assessment strategy: Enabling students to achieve learning outcomes:

This assessment strategy facilitates students learning through two and one focused on physical computing. 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. This module is focused on making web based systems, as well as physical, tangible things that people can interact with. Students will be required to situate their work in context with other contemporary designers and artists in a design and evaluation video, whilst reflecting on the end results of their work in this video.

Referral assessment will follow the same assessment strategy as the main sit.

Assessment tasks:

Project (First Sit)
Description: Mini-project based on physical computing technologies. CW prototype with supporting documentation
Weighting: 50 %
Final assessment: No
Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4

Project (First Sit)
Description: Mini-project based on creative coding in contemporary web technologies. CW prototype with supporting documentation.
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Project (Resit)
Description: Mini-project based on physical computing technologies. CW prototype with supporting documentation
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Project (Resit)
Description: Mini-project based on creative coding in contemporary web technologies. CW prototype with supporting documentation.
Weighting: 50 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Digital Media [Frenchay] BSc (Hons) 2023-24

Digital Media {Foundation} [Frenchay] BSc (Hons) 2022-23

Audio and Music Technology [Frenchay] BSc (Hons) 2023-24

Audio and Music Technology [Frenchay] BSc (Hons) 2023-24

Creative Music Technology [Frenchay] BSc (Hons) 2023-24

Creative Music Technology [Frenchay] BSc (Hons) 2023-24

Digital Media [Frenchay] BSc (Hons) 2023-24

Creative Music Technology [Frenchay] BSc (Hons) 2023-24

Audio and Music Technology [Frenchay] BSc (Hons) 2023-24

Digital Media {Foundation} [Frenchay] BSc (Hons) 2022-23

Audio and Music Technology {Foundation} [Frenchay] - Withdrawn BSc (Hons) 2022-23