



Module Specification

Physical Computing

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Part 1: Information

Module title: Physical Computing

Module code: UBLF9A-15-2

Level: Level 5

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Architecture & Built Environ

Partner institutions: None

Delivery locations: Not in use for Modules

Field: Architecture and the Built Environment

Module type: Module

Pre-requisites: Product Design Studio 1 2023-24

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview:

Pre-requisites: students must take UBLFEA-30-1 Product Design Studio 1 and UBLFC8-30-1 Design Sketching, Modelling and CAD

Features: Not applicable

Educational aims: See Learning Outcomes.

Outline syllabus: This module is an introduction to the integration of robotics- “smart technology” into product design. The subject matter will cover a range as follows:

Embedded intelligence in society:

Socio-cultural impact from technology-embedded products.

Basic Electronic Engineering:

Principles and communication practices – operational rules for hardware.

Basic Programming:

Principles and operational practices – reading and understanding code, and operational rules for linking, hacking and tweaking code.

Basic Robotic Engineering:

Principles and communication practices – motors, sensors, actuators.

Introduction to Open Source platforms:

Arduinio community.

Project development methodology:

Bring all of the elements together to solve a defined design brief.

Note: all elements are not weighted equally in study or assessment time.

The structure of this module is to apply the gained skills and knowledge throughout Level 2 in applied contextual themes.

Part 3: Teaching and learning methods

Teaching and learning methods: Teaching and Learning Strategy for this module is applied exercise and project based learning in which a topic lecture will introduce the students to the assigned or up coming up contextual information which supports

and frames their acquisition of topic specific knowledge, skills and supports their project work in other modules, principally Product Design Technology Design Studio 2 and Mechanical Engineering Design.

The exercises and projects are designed to facilitate competency acquisition through applied and indirect learning, building knowledge through the introduction of new subject matter and reinvestment of gained knowledge and skills. The tutorial portion of the studio time is designed for the learner to have access to tutorial support, work in the close proximity of classmates and to self-assess his/her progress through the exercises and/or projects.

Exercise and Project work outside of scheduled hours is an essential component to the successful completion of the assigned work with an average time investment of 6+ hours per week. Students will be expected to come prepared for the module sessions with in-process or completed work and supplies.

Course work is assessed through in class and/or digital BlackBoard submissions.

Feedback will be in the form of direct verbal and/or written. Marking criteria and assessment format will be clearly indicated on the Project Brief made accessible to the students at the beginning of each project.

Knowledge and Skills reinvestment from parallel running modules are formative and essential for progression through the curriculum.

Additional tutorial support is offered through individual appointments with the module tutors and through PAL.

Activity Approx. Time in Hours

Contact 36

Prep for lecture 12

Assimilation 24

Project 78

Total 150

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

MO1 Employ Critical Analysis

MO2 Apply creative and logical thinking processes as well as design methodologies to the creation of design solutions

MO3 Communicate one's design development process

MO4 Integrate principles of Design Thinking into one's own work

MO5 Consideration and apply the appropriate mathematical and engineering principles to a particular design problem

MO6 Select and use various 2D, 3D and CAD techniques to design intent and detail

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ublf9a-15-2.html) via the following link <https://uwe.rl.talis.com/modules/ublf9a-15-2.html>

Part 4: Assessment

Assessment strategy: The assessment strategy in this standard module is based upon evaluations of the exercises, quizzes, projects and examination.

To best mimic professional practice the following assessment strategy has been adopted.

Summative Assessment: Coursework is evaluated on subject specific criteria clearly

stated on each project brief at the outset of each exercise or project:

Project Presentations - Assessment Task Final Project.

Exercises and/or projects are evaluated in direct submissions - Assessment Task Final Project.

Submission of a process log that demonstrates the iterative process of developing a solution - Assessment Task Project.

Group/Team work is based on an overall group score and an individual mark - Assessment Final Project.

An overall mark percentage of professionalism is allotted to assess aspects of participation and engagement - Assessment Final Project.

Formative Assessment: Coursework is given direct assessment during tutorials.

Feedback: Tutor feedback is provided during tutorials as formative feedback and on submitted exercises and/or projects.

Assessment components:

Final Project (First Sit)

Description: Project, presentation, exhibition and logbook

Weighting: 75 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

Project (First Sit)

Description: Mini project

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

Final Project (Resit)

Description: Project, presentation, exhibition and logbook

Weighting: 75 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

Project (Resit)

Description: Mini project

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO6

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Product Design Technology [Frenchay] BSc (Hons) 2022-23

Product Design Technology {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons)
2021-22

Product Design Technology {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons)
2021-22