Unit Title: Lights, Code, Making

FHEQ Level: Level 4
Unit Code: USE18105
Credit Value: 15
Unit Type: Subject

<table>
<thead>
<tr>
<th>Learning Hours</th>
<th>Independent Study Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff – Student Contact Hours</td>
<td></td>
</tr>
<tr>
<td>Classes</td>
<td>45</td>
</tr>
<tr>
<td>Supervised access to resources</td>
<td>Preparation for Assessment</td>
</tr>
<tr>
<td>Independent Study</td>
<td>Unsupervised Access to Resources</td>
</tr>
<tr>
<td>Total</td>
<td>150</td>
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Unit Description

This unit provides basic skills in the programming and construction of interactive microprocessor-based product prototypes. The basic understanding of programming gained from *Coding, Figures, and Visuals* is expanded on in this unit.

You will be introduced to programming techniques for a popular physical computing platform as well as physical prototyping techniques, product usability testing and introductory electronics and make use of LED lighting, displays, motors, sensors, and/or other input output mechanisms. (Integrate Principle)

The unit leads to practical work on a microprocessor-based product which demonstrates the creative software, electronic and physical design skills that form the basis of a modern interactive design process. (Originate Principle)

You will learn how to source, organise and manage digital assets and sources required for the entirety of the design process (Collaborate Principle)

The Five Principles underpin the Mindsets and Skillsets Manifesto and are the foundation upon which all course curriculum frameworks and unit specifications are based. The relevant Principles as stated below have been mapped against the Learning Outcomes relevant to each course unit and at each level (see Programme Specifications for full description of the Five Principles):

1. Cultivate / Where the individual thrives.
2. Collaborate / Where disciplines evolve.
3. Integrate / Where education engages industry.
5. Originate / Creativity meets technology.

Unit Indicative Content

- Using computer editors and IDEs to develop software programs
- Basic electronics theory and practice
- Mathematics and logic for programming and computer graphics
● 3D prototyping with physical materials and software
● Independent working and task/project management
● Using graphic and visual design tools, including both software and pen and paper

**Unit Aims**

Develop a basic proficiency with physical computing and electronics
Understand basic mathematics and logic for computing
Gain experience with fast physical prototyping methods
Gain a basic working knowledge of media editing tools

**Unit Learning Outcomes**

**LO 3 Development/Prototyping**

Demonstrate a range of tests and solutions, informed by knowledge of the principles of the creative process.

*Related Principle: INTEGRATE*

**LO 4 (Pre) Production**

Identify, select and apply an appropriate selection of processes, materials and methods that inform creative and academic practice.

*Related Principle: COLLABORATE*

**LO 6 Critical and creative mindsets**

Demonstrate enquiry into what makes good practice - both creatively and academically.

*Related Principle: ORIGINATE*

**Learning and Teaching Methods**

Briefings
Lectures
Project work
Seminars
Workshops
Group work
Online activity
Individual Presentations and critiques
Self-directed independent study
Assessment methods and tasks

More detailed assessment tasks will be specified in the brief.

<table>
<thead>
<tr>
<th>Assessment tasks</th>
<th>Weighting (%) (one grade or multi-grade unit)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio of work with supporting physical and digital material detailing project research, process and development.</td>
<td>Unit assessed holistically (100% of unit)</td>
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Indicative Assessment Criteria

Assessment criteria are the basis on which the judgment of the adequacy of the work is made. A more detailed assessment criteria will be specified in the brief.

- Demonstrate a basic proficiency with physical computing and electronics (L03, L04)
- Provide evidence of understanding of mathematics and logic as they apply to physical computing (L04)
- Show skills applied to the development of display and interaction interfaces (L06)
- Demonstrate experience with fast physical prototyping tools (L03, L04)
- Evidence a creative working process using 3D design tools (L03, L06)

Essential Reading list