



<b>Unit Title</b>	Industrial Design and Sustainability
<b>FHEQ Level</b>	Level 5
<b>Unit Code</b>	DPR18202
<b>Credit Value</b>	15
<b>Unit Type</b>	Subject

<b>Learning Hours</b>			
<b>Staff – Student Contact Hours</b>		<b>Independent Study Hours</b>	
Classes	37.5	Independent Study	50
Supervised access to resources	0	Preparation for Assessment	37.5
		Unsupervised Access to Resources	25
<b>Total</b>			<b>150</b>

### Unit Description

In this unit you will be introduced to key concepts regarding ecological sustainability and how these can be integrated into an industrial design through material selection, part optimisation, design for repair and other methods. (Advocate)

You will apply these techniques to a design project, designing a mass produced 3D product and carefully specifying materials, components, and method of manufacture and assembly. (Integrate)

You will be introduced to industry standard techniques for project managing sustainability such as Life Cycle Analysis (LCA) and Cradle to Cradle (C2C).

You will work on your industrial design skills, using appropriate software such as Solidworks. This project will focus on the development and delivery areas of the double diamond design process.

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.
4. Advocate / Where purpose meets practice.
5. Originate / creativity meets technology.)

## Unit Indicative Content

- Introduction to a broad range of sustainability issues impacting product design including climate change, pollution, water and energy use, resource depletion etc.
- Classes on manufacturing methods, building on previous knowledge from level 4
- Trip to appropriate manufacturing facility, if possible
- Use of Materials library and online database for material discovery and selection
- Introduction to sustainable project management methods

## Unit Aims

Improve awareness of sustainability impacts of product design

Improve industrial design and 3d design skills

Gain an understanding of possible techniques to mitigate environmental impact of designed products

Experience designing a product to high levels of detail and specification

Develop project management skills to include complex external systems and industrial standards

## Unit Learning Outcomes

### LO 1 Research/Inspiration

Analyse and interpret information gathering techniques using a wide range of sources, providing visual, contextual and industry case-study research as appropriate.

Related Principle: ORIGINATE

### LO 3 Development/Prototyping

Analyse a range of potential pathways that result in appropriate solutions, informed by an understanding of the principles of the creative process.

Related Principle: INTEGRATE

### LO 4 (Pre) Production

Employ relevant knowledge of production skills alongside a grasp of the creative potential of a selection of processes, materials and methods that inform creative and academic practice.

Related Principle: COLLABORATE

## Learning and Teaching Methods

The unit will be delivered using a combination of:

Briefings

Lectures

Project work

Seminars

Workshops

Online activity  
Individual Presentations and critiques  
Self-directed independent study

### Assessment methods and tasks

*This unit is assessed holistically*

Assessment tasks	Weighting (%) (one grade or multi-grade unit)
Portfolio of project work which could include: Life cycle analysis and other sustainability reports, Technical documentation, Prototypes, Research reports, Images and development work	100%

### 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 detailed understanding of sustainability issues relating to design (LO1)

Demonstrate ability to develop a functioning product considering the requirements of the design brief (LO3)

Document detailed specification of materials, methods of manufacture, assembly, and any other technical information required by the brief (LO4)

### Essential Reading list

1. Ashby, M. and Johnson, K. (2014). *Materials and design*. Amsterdam: Amsterdam.
2. Kempster, M. (1984). *Engineering design III*. London: Hodder and Stoughton.
3. King, D. and Walker, G. (2012). *The Hot Topic*. New York: Douglas & McIntyre.
4. Lefteri, C. (2007). *Making it*.
5. McDonough, W. (2010). *Cradle to cradle*. [Place of publication not identified]: San Val.
6. Wenzel, H., Hauschild, M. and Alting, L. (2001). *Environmental assessment of products*. Boston: Kluwer Academic Publishers.