

### Summary Information

Module Code	6164PDE
Formal Module Title	Sustainable and Ethical Design
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 6
Grading Schema	40

### Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

### Learning Methods

Learning Method Type	Hours
Lecture	11
Tutorial	33

### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

### Aims and Outcomes

Aims	Introduces students to sustainable and ethical issues in design.
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**After completing the module the student should be able to:**

## Learning Outcomes

Code	Number	Description
MLO1	1	Identify the ethical issues when conducting primary research.
MLO2	2	Recognise relevant social, environmental and ethical issues that constrain design.
MLO3	3	Critically evaluate and use methodologies that ensure well-designed products and services.

## Module Content

Outline Syllabus	<p>Sustainable design: Exploiting natural resources without destroying the ecological balance of an area; economic development maintained within acceptable levels of global resource depletion and environmental pollution. Understanding and appreciating the values and beliefs of others, local and regional considerations. Balancing issues: e.g. ensuring profitability and competitive costing of products whilst embracing social, environmental and sustainability issues. Triple bottom line (TBL). Product life cycle and life cycle assessment. Taguchi's 'Total Loss to Society Function'. Simplification, multi-functional designs; source reduction; longevity; design for disassembly and recycling; reduce use of consumables; design with less; light weighting; volume reduction; recycled and bio-degradable materials; energy conservation of equipment; renewable energy systems; eco-design software tools; design checklists; matrices.</p> <p>Legislative Drivers: Waste Electrical and Electronic Equipment Directive (WEEE); Restriction of Hazardous Substances Directive (ROHS); End of Life Vehicles; Eco-design of End Use Equipment Directive (EUE); environmental management system BS14001 and waste management.</p> <p>Design ethics: A design engineer's professional responsibilities: Design ethics, design codes and processes. Characteristics of design processes in relation to ethical issues. Moral responsibility and the trust relationship between engineers and society. Decision making on ethical issues. Professional integrity and the importance of engineering ethics in the career of an engineer. What an engineer should do when the employer's interest conflicts with the public. Regulative framework, legislation and codes. Inclusive design; design for safety and security; design against violence.</p> <p>Research ethics: Brief history of research ethics; code of practice for research; guiding principles; informed consent; accuracy of scientific knowledge.</p>
Module Overview	<p>This module will introduce you to sustainable and ethical issues in design. This module will be delivered through an integrated series of lectures, tutorials, practical sessions, guided design activities and case studies.</p>
Additional Information	<p>This module is delivered using a variety of methods including lectures, seminars, tutorials and practical sessions. The module will be delivered from an engineering and product design perspective.</p>

## Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Process Book	100	0	MLO1, MLO2, MLO3

## Module Contacts

### Module Leader

Contact Name	Applies to all offerings	Offerings
Fang Bin Guo	Yes	N/A

### Partner Module Team

Contact Name	Applies to all offerings	Offerings
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