

Liverpool John Moores University

Title: Sustainable & Ethical Design
Status: Definitive
Code: **6164PDE** (121759)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

Team	Leader
Adam Papworth	Y

Academic Level: FHEQ6 **Credit Value:** 20 **Total Delivered Hours:** 44
Total Learning Hours: 200 **Private Study:** 156

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	11
Tutorial	33

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	ProcessBk	Design portfolio	100	

Aims

Introduces students to sustainable and ethical issues in design.

Learning Outcomes

After completing the module the student should be able to:

- 1 Identify the ethical issues when conducting primary research.

- 2 Recognise relevant social, environmental and ethical issues that constrain design.
- 3 Critically evaluate and use methodologies that ensure well-designed products and services.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Process Book	1	2	3
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Outline Syllabus

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. 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.

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 when the employers interest conflicts with the public. Regulative framework, legislation and codes. Inclusive design; design for safety and security; design against violence.

Research ethics

Brief history of research ethics; code of practice for research; guiding principles; informed consent; accuracy of scientific knowledge.

Learning Activities

This module will be delivered through an integrated series of lectures, tutorials, practical sessions, guided design activities and case studies. The learning activities are to be student focused and develop the students design knowledge through experiential learning.

Notes

This module is delivered using a variety methods including lectures, seminars, tutorials and practical sessions. The module will be delivered from a engineering and product design perspective.