

Summary Information

Module Code	6264PDE
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
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	Introduces students to sustainable and ethical issues in design.
------	--

After completing the module the student should be able to:

Learning Outcomes

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

Module Content

Outline Syllabus	<p>Sustainable design: The Circular Economy. 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. Right to repair initiative. The growth of ethical consumerism. 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. Research ethics: Brief history of research ethics; code of practice for research; guiding principles; informed consent; accuracy of scientific knowledge.</p>
Module Overview	<p>Aims Introduces students to sustainable and ethical issues in design.</p> <p>Learning Outcomes After completing the module the student should be able to:</p> <p>1 Evaluate ethical issues when conducting primary research. 2 Analyse social, environmental and ethical issues that constrain design. 3 Critically evaluate and apply methodologies that ensure well-designed products and services.</p>
Additional Information	<p>UN Sustainable Development Goals This module includes content, which relates to most of the UN Sustainable Development Goals. But with particular reference to: SDG01: No Poverty SDG03: Good Health and Well-being SDG05: Gender Equality SDG06: Clean Water and Sanitation SDG07: Affordable and Clean Energy SDG08: Decent Work and Economic Growth SDG09: Industry, Innovation and Infrastructure SDG10: Reduced Inequality SDG11: Sustainable Cities and Communities SDG12: Responsible Consumption and Production SDG13: Climate Action SDG14: Life Below Water SDG15: Life on Land SDG16: Peace and Justice Strong Institutions SDG17: Partnerships to achieve the Goal</p>

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Portfolio	Design 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
--------------	--------------------------	-----------