

## Liverpool John Moores University

Title: SUSTAINABLE DESIGN  
Status: Definitive  
Code: **6014TECH** (105331)  
Version Start Date: 01-08-2016

Owning School/Faculty: Electronics and Electrical Engineering  
Teaching School/Faculty: Electronics and Electrical Engineering

Team	Leader
Adam Papworth	Y

**Academic Level:** FHEQ6      **Credit Value:** 24      **Total Delivered Hours:** 112  
**Total Learning Hours:** 240      **Private Study:** 128

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	24
Practical	88

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Sustainable Design Analysis Report	30	
Portfolio	AS2	Sustainable Group Design Project	70	

### Aims

*The aim of this module is to raise the student's awareness of the social and environmental implications of poor design. It goes on to cover methodologies that ensure a more sustainable product design.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Demonstrate a knowledge and understanding of the environmental and social impact of poor design.
- 2 Define the approach to sustainable development
- 3 Recognise legislation that drives sustainable design.
- 4 Critically evaluate a design on its sustainability and apply sustainable design methodologies.

## Learning Outcomes of Assessments

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

Sustainable Design Analysis	1	2	3
Sustainable Group Design Proj	3	4	

## Outline Syllabus

*Environmental and Social Impact:*

*Pollution of land, sea and air, global warming and its consequences, regional and global impact. The global economy and its impact on society.*

*Sustainable Development:*

*History of sustainable development; elements of sustainable development systems approach, product life cycle and life cycle assessment.*

*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.*

*Eco-Design:*

*Taguchi's 'Total Loss to Society Function'; simplification, multi-functional designs; source reduction; longevity; avoiding harmful substances; design for manufacture, distribution and use; design for energy conservation; 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; checklists; matrices; life cycle assessment; eco-design software tools. The DfE Environmental Design Tool.*

## Learning Activities

This module will be delivered with a series of lectures and practical group design activities to consolidate the theory. Case studies will be employed to place subject into context and inspire students. This module will culminate in a structured design week, in both semesters, where students will focus on the development of their

design project.

## **Notes**

This module covers the theory and industrial practice of sustainable design. It comprises of the history and development of eco-design and then through practical work, explores the possibilities open to designers to create products that optimise their sustainability. This will culminate in a structured design week, in both semesters, where students will focus on the development of their design project.