

Liverpool John Moores University

Title: SUSTAINABILITY
Status: Definitive
Code: **5506NCCG** (129439)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Nelson Campus

Team	Leader
Christian Matthews	Y

Academic Level: FHEQ5
Credit Value: 20
Total Delivered Hours: 60
Total Learning Hours: 200
Private Study: 140

Delivery Options

Course typically offered: S1, S2, Sum, NS2 (S2 for Jan)

Component	Contact Hours
Lecture	60

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Case Study	Case Study Analysis	50	
Report	Assignment	Assignment	50	

Aims

On successful completion of this module the student will possess a wide range of knowledge and understanding of the issues and topics associated with sustainability and low carbon engineering.

Learning Outcomes

After completing the module the student should be able to:

- 1 Determine the nature and scope of the technical challenges of ensuring sustainable development.
- 2 Articulate the importance of collaborating with other disciplines in developing technical solutions to sustainability problems.
- 3 Evaluate the use of alternative energy generation techniques in relation to their contribution to a low carbon economy.
- 4 Analyse a variety of data sources to estimate the carbon footprint of a sociotechnical case study.

Learning Outcomes of Assessments

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

Case Study Analysis	3		
Assignment	1	2	4

Outline Syllabus

The scope and social context of sustainability: sustainable development Brundtland definition, global demographics, trends and predictions, population growth, standard of living, urbanisation and the balance of urban/rural space, sustainable design
Environmental issues: climate change, planetary energy balance, carbon cycle science, the climate change obligation, carbon capture and sequestration, pollution, pollution prevention and management, carbon trading
Eco-systems and habitat resources: food, water and energy
Systems thinking and socio-technical systems: the politics and economics of sustainability
Sustainable infrastructures: low carbon transport systems, sustainable cities, green building, power storage and distribution, sustainable logistics, waste and recycling
Alternative energy resources: nuclear, solar, wind, tidal and wave, biomass and bioenergy, whole life cycle costing, precautionary principle
Types of carbon footprint: organisational value chain, product carbon footprint science Calculation methodologies: direct and indirect, system boundaries, case study examples

Learning Activities

Lectures

These will not normally be traditional didactic lectures in which the student plays little active part, but will be delivered in small groups of up to 20 students in which their interaction with their tutor is a key ingredient of their learning experience. Students will receive approximately 30 hours of taught material, supported by in-class exercises and discussions designed to help student assimilate learning and to provide early informal feedback on their progress.

Independent Study

Students are expected to undertake personal reading and research into topic areas

that have been stimulated from the lectures and seminars. This reading will enhance their academic work and enable valid contribution to lectures and seminars.

VLE support

This will provide links to academic web-sites and on-line journals, facilitate group discussion outside of the classroom, access to outline lecture notes, and provide students with assessment details.

Notes

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