

### Summary Information

Module Code	7502UCEPG
Formal Module Title	Energy and Carbon Management
Owning School	Civil Engineering and Built Environment
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

### Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

### Partner Teaching Institution

Institution Name
Unicaf

### Learning Methods

Learning Method Type	Hours
Online	46

### Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-PAR	PAR	September	12 Weeks

### Aims and Outcomes

Aims	To provide the necessary skills for the selection and the effective management of energy in the construction industry, business environment and the energy supply sector.
------	---

**After completing the module the student should be able to:**

### Learning Outcomes

Code	Number	Description
MLO1	1	Critically appraise the existing procedures for energy management and energy source selection, and suggest improvements in accordance with the UNSDGS.
MLO2	2	Design and critically evaluate carbon neutral and low carbon construction and energy supply.
MLO3	3	Critically evaluate the existing financial framework for energy systems.
MLO4	4	Design and critically evaluate a sustainable energy system.

### Module Content

Outline Syllabus	<p>Energy use, range of electricity sources used, applications of energy Design and critical evaluation of conventional energy sources: Primary and secondary fuel sources. Fossil fuels. Design and critical evaluation of methods of control of pollution from energy supply sources.</p> <p>Electricity generation. Process efficiency, transmission losses, economic and environmental considerations.</p> <p>Renewable energy sources: Solar radiation - photovoltaics, solar collectors and passive solar heating. Biomass. Refuse use. Gasification, anaerobic digestion, landfill gas. Energy crops. Hydroelectricity and tidal power. Wave energy. Wind energy. Geothermal energy and ground source energy. OTEC. Sizing of schemes and choice of options. Design and critical assessment of the Civil Engineering works needed for each.</p> <p>Energy management; Objectives and strategies. Energy audits. Efficiency. Insulation. Energy tariff selection. Plant control optimisation, energy management systems. Transport. Carbon neutral and sustainable construction.</p> <p>Calculations of embodied energy and energy pay back period. Economic assessment of energy supply and financial risk.</p> <p>Legal and institutional framework governing energy and its use. International, EU and UK policy, law and regulation governing energy and its uses, and its impact on the environment. Targets, incentives and competition.</p> <p>Energy sustainability.</p>
Module Overview	
Additional Information	The module develops the students' ability to undertake a comprehensive review of energy supply, use and efficiency measures, to enable the student to make informed decisions on energy use in the construction industry and business.

### Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Essay	Summative Assessment 1	60	0	MLO1, MLO2, MLO3, MLO4
Portfolio	Summative Assessment 2	40	0	MLO2, MLO4

## Module Contacts

### Module Leader

Contact Name	Applies to all offerings	Offerings
Mawada Abdellatif	Yes	N/A

### Partner Module Team

Contact Name	Applies to all offerings	Offerings
--------------	--------------------------	-----------