

Renewable Energy

Module Information

2022.01, Approved

Summary Information

Module Code	5513NCCG
Formal Module Title	Renewable Energy
Owning School	Engineering
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 5
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
LJMU Partner Taught

Partner Teaching Institution

Institution Name
Nelson and Colne College Group

Learning Methods

Learning Method Type	Hours
Lecture	48
Placement/Practice	12

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
APR-PAR	PAR	April	12 Weeks
JAN-PAR	PAR	January	12 Weeks

SEP-PAR	PAR	September	12 Weeks
SEP_NS-PAR	PAR	September (Non-standard start date)	12 Weeks

Aims and Outcomes

Aims	The aim of this module is to introduce students to renewable energy resources and technologies, including current storage and generation technologies, and explore their advantages and limitations. On successful completion of this module students will be able to determine the optimum combination of renewable energy technologies and evaluate their efficiencies, describe how to conduct a cost–benefit analysis to determine the most viable option between renewable and conventional energy sources, and consider the relevant political, socio-economic and legal factors that influence the selection of appropriate energy technologies.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Evaluate energy demand and the impact of renewable resources to determine the technology and methods of energy production.
MLO2	2	Discuss current energy efficiency measures, technologies and policies specific to the building and transportation sectors.
MLO3	3	Describe and analyse the main elements and control techniques for an electronically-controlled renewable energy system.
MLO4	4	Identify and specify the interface requirements between electronic, electrical and mechanical transducers and controllers, in the context of a renewable energy scenario.
MLO5	5	Apply practical, analytical and computer-based methods to design, to predict the performance of and to test a measurement system.
MLO6	6	Investigate the impacts of renewable resources to the grid and the various issues associated with integrating such resources to the grid.

Module Content

Outline Syllabus	Alternative energy sources: wind energy, ocean and tidal energy, biomass, geothermal energy, hydropower, solar and thermal energy, waste as energy Energy demand and security of supply: energy consumption changes, intensity and trends (domestic, industrial, transport, services sectors), factors affecting changes in energy consumption and demand, future demand planning, energy capacity margins analysis, alternatives for locally used energy sources Energy reduction and efficiency approaches: energy systems available for a given location, energy legislation and standards, energy saving and reduction schemes, energy saving technologies available Energy efficiency approaches for domestic energy use: grants and government schemes, impact of schemes on supply and demand Financial and environmental implications: cost–benefit analysis, socio-economic factors, financial implications of renewable and conventional energy Environmental factors of the set-up and operation of renewable technologies: legislative and commercial considerations, carbon taxes, national and international climate change legislation, evaluation planning tools.
Module Overview	
Additional Information	

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	Assignment	50	0	MLO1, MLO2, MLO3
Portfolio	Case Study Analysis	50	0	MLO4, MLO5, MLO6

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Christian Matthews	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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