

Liverpool John Moores University

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Title: RENEWABLE ENERGY
Status: Definitive
Code: **5513NCCG** (129446)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Nelson Campus, Nelson and Colne College

Team	Leader
Christian Matthews	Y

Academic Level: FHEQ5
Credit Value: 20
Total Delivered Hours: 48
Total Learning Hours: 200
Private Study: 164

Delivery Options

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

Component	Contact Hours
Lecture	48
Placement/Practice	12

Grading Basis: 40 %

Assessment Details

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

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.

Learning Outcomes

After completing the module the student should be able to:

- 1 Evaluate energy demand and the impact of renewable resources to determine the technology and methods of energy production.
- 2 Discuss current energy efficiency measures, technologies and policies specific to the building and transportation sectors.
- 3 Describe and analyse the main elements and control techniques for an electronically-controlled renewable energy system.
- 4 Apply practical and computer-based methods to design and test a control system suitable for a renewable energy application, including interfaces between electronic, electrical and mechanical transducers and controllers.
- 5 Apply appropriate analytical techniques to predict the performance of a given system.

Learning Outcomes of Assessments

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

Assignment	1	2	3
Case Study Analysis	4	5	

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.

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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