

Module Information

2022.01, Approved

Summary Information

Module Code	7308MECH
Formal Module Title	Conventional and Alternative Energy Systems
Owning School	Engineering
Career	Undergraduate
Credits	10
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
Engineering

Learning Methods

Learning Method Type	Hours
Lecture	11
Practical	3
Tutorial	11

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

Aims and Outcomes

Aims	The aim of this module is to provide a comprehensive introduction to alternative and conventional power generation systems in the context of the UK energy distribution systems and associate energy markets. The module will review the major issues associated with power generation and look in depth at selected alternative and conventional power generation techniques. The problems of energy supply and energy security will be explored.
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After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Discuss the need for renewable energy power generation methods in terms of process, environmental compliance and legislative requirements.
MLO2	2	Discuss conventional energy generation systems in terms of process, environmental compliance and legislative requirements.
MLO3	3	Evaluate the performance of energy generation systems.
MLO4	4	Analyse global energy markets focusing on security of energy supply process, potential, environmental need, and legislative fulfilment.

Module Content

Outline Syllabus	General discussion surrounding global warming. Wind turbine - types, design, wind data collection/analysis, energy yield prediction. Design of P-V power systems and evaluate performance characteristics. UK national grid power distribution system and discussion of connection issues. UK energy market. Review of the UK nuclear energy industry. Conventional power generation plants including coal, oil, gas, Combined Cycle Gas Turbine (CCGT). Other alternative energy production technologies such as wave and tidal, fuel cells. Energy storage. Security of energy supplies.
Module Overview	
Additional Information	This module principally aims to provide a relatively detailed insight into the spectrum of alternative and conventional methods of power generation, targeting the renewable energy systems and associated issues such as global warming as well as economical aspects of energy supply. This module includes content which relates to the following UN Sustainable Development Goals: SDG07- This module considers different solutions for green energy and investigates the economic aspects of the systems SDG13 – This module provides students with knowledge regarding global warming issues and the important role of replacing current fossil fuels with clean alternative resources. SDG14 – This module will discuss the issues around sea life in the case of offshore/tidal renewable system installations.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Centralised Exam	Examination	100	2	MLO1, MLO2, MLO3, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Ava Shahrokhi	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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