

Liverpool John Moores University

Title: Conventional and Alternative Energy Systems
Status: Definitive
Code: **7108MECH** (121496)
Version Start Date: 01-08-2021

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

Team	Leader
Ava Shahrokhi	Y
Martin Jones	
Geraint Phylip-Jones	
Glynn Rothwell	

Academic Level: FHEQ7 **Credit Value:** 20 **Total Delivered Hours:** 33
Total Learning Hours: 200 **Private Study:** 167

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	22
Tutorial	11

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	Port	Portfolio	100	

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.

Learning Outcomes

After completing the module the student should be able to:

- 1 Discuss the need for renewable energy power generation methods in terms of process, potential, environmental need and legislative fulfilment.
- 2 Discuss conventional energy generation systems in terms of process, environmental compliance and legislative requirements.
- 3 Evaluate the performance of energy generation system by simulation and modelling.
- 4 Analyse global energy markets focusing on security of energy supply

Learning Outcomes of Assessments

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

Portfolio	1	2	3	4
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Outline Syllabus

General discussion surrounding global warming.

Review and question the UK's renewable energy policy.

Wind turbine - types, design, wind data collection/analysis, energy yield prediction.

Design of P-V power systems and evaluate performance characteristics by simulation.

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 (CCGT)

Benefits and application of CHP

Pollution abatement techniques

Energy storage

Security of energy supplies

Learning Activities

A combination of lectures and tutorials.

Notes

This module principally aims to provide a relatively detailed insight into the spectrum alternative and conventional methods of power generation including associated issues such as global warming and connecting to the national grid system.