Liverpool John Moores University

Title:	Alternative Energy Systems
Status:	Definitive
Code:	**7005MSC** (121674)
Version Start Date:	01-08-2021
Owning School/Faculty:	Engineering
Teaching School/Faculty:	Engineering

Team	Leader
Geraint Phylip-Jones	Y

Academic Level:	FHEQ7	**Credit Value:**	10	**Total Delivered Hours:**	22
Total Learning Hours:	100	**Private Study:**	78		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Lecture	22

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	AS1	Portfolio	100	

Aims

The aim of this module is to provide a comprehensive introduction to alternative power generation systems. The module will review the environmental issues surrounding existing methods of power generation and concentrate alternative and renewable sources.

Learning Outcomes

After completing the module the student should be able to:

1	Critically evaluate the issue of global warming within the context of power generation.
2	Analyse wind data and determine yield capacity of various types of wind turbines.
3	Design and evaluate the performance of a domestic solar thermal system by simulation.
4	Design and evaluate the performance of a photo voltaic generation system by simulation.
5	Discuss in detail alternative designs of nuclear power stations and associated environmental and safety issues.

Learning Outcomes of Assessments

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

Portfolio	1	2	3	4	5

Outline Syllabus

Evaluate the issues and mechanism of global warming, including the UK's policy on renewable energy.
Wind turbine - types, design, wind data collection/analysis, energy yield prediction.
Solar energy quantification and data collection/analysis.
Design of solar thermal systems and evaluate performance by simulation.
Design of P-V power systems and evaluate performance characteristics by simulation.
Review UK national grid power distribution system and discuss connection issues.
Investigate UK energy pricing structure.
Review of the UK nuclear energy industry.

Learning Activities

A series of lectures.

Notes

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