

This Module Version is not active until 01/Sep/2024

MODULE DESCRIPTOR

Module Title

Introduction to Renewable Energy Systems

Reference	EN1200	Version	1
Created	October 2023	SCQF Level	SCQF 7
Approved	February 2024	SCQF Points	15
Amended		ECTS Points	7.5

Aims of Module

This module aims to impart awareness and understanding of the technologies implemented in the utilisation of renewable energy. This module also aims to demonstrate the economics of renewable-based energy systems.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Acquire knowledge of ways to assess the potential of alternative energy sources.
- 2 Describe the prospects, challenges, and fundamentals of technological factors affecting the design of various renewable energy systems.
- 3 Summarise the role of renewable energy technologies in the ongoing energy transition.
- 4 Recognize the environmental impacts of renewable energy sources and allied supply systems.

Indicative Module Content

Renewable energy introduction: resources, environmental impacts, energy consumption. Wind power: energy and power in the wind, commercial development. Biomass and biofuels: extracting the energy; energy from refuse; environmental benefits and impact. Wave power: generation and factors affecting generation. Tidal power: generation and factors affecting generation. Solar power principles, economics and environmental impact. Challenges with implementing Renewable energy solutions: energy storage; distributed generation. Introduction to the Electricity Grid; Availability and Cost of Renewables; Demand Management for Electricity Grid.

Module Delivery

This module is delivered by means of lectures, tutorials and guided self-study.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	44	44
Non-Contact Hours	106	106
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type:	Practical Exam	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	A group presentation outlining key aspects of the subject material. Individual contribution and understanding will be assessed.				

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

This module is assessed on a pass/unsuccessful basis. The module grade is based on performance in Component 1.

Module Grade	Minimum Requirements to achieve Module Grade:
Pass	Pass in Component 1
Fail	Fail in Component 1
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	None.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 Twidell, J. and Weir, T. 2015. Renewable Energy Resources, 3rd ed. Taylor & Francis.
- 2 Narbel, P. A. and Hansen, J. P. 2014. Estimating the cost of future global energy supply. Renewable and Sustainable Energy Reviews Vol. 34. Elsevier.
- 3 Kathiresh M., Subahani, A. M. and Kanagachidambaresan, G. R. 2021. Integration of Renewable Energy Sources with Smart Grid. Newark: Wiley.