MODULE DESCRIPTOR

Module Title

Renewable Energy System Design

Reference	ENM272	Version	1
Created	February 2023	SCQF Level	SCQF 11
Approved	June 2023	SCQF Points	15
Amended		ECTS Points	7.5

Aims of Module

This module aims to establish knowledge base for the innovative design and analysis for a renewable energy system, informed by the available resources and their integration in wider contexts (ethical, environmental, regulatory, managerial, and social contexts)

Learning Outcomes for Module

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

1	Evaluate engineering principles in the design of renewable energy systems (Wind, Solar, tidal and Hydrogen) within the context of Sustainable Development goals.
2	Design of a relevant renewable energy technology, informed by local demand, available resources and potential forefront technology of the field.
3	Appraise renewable energy systems design based on technological, economic, social legislative and environmental factors.
4	Produce a relevant project of research within a specialist renewable energy area for a specified location.

Indicative Module Content

Application of systems analysis techniques to design, analyse, integrate, and optimise renewable energy systems which include: Solar Energy technology, (Photovoltaic and Thermal), Onshore and offshore wind energy: wind , Wave and tidal energy technologies, Hydrogen, Fuel Cells, Energy storage technologies. Siting,generation,costing, life cycle analysis, reporting.

Module Delivery

This module is delivered in both blended learning full-time and online learning part-time modes. For blended learning full-time students, the module will use in-person lectures and tutorials. For online learning part-time students, the module will use online lectures and tutorials. Both cohorts will engage in live class and forum discussions.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	35	35
Non-Contact Hours	115	115
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
Actual Placement hours for professional, statutory or regulatory body		

ASSESSMENT PLAN

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

Component 1

Type:	Coursework	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	Individual written report				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

In order to pass the module, students should achieve an overall grade of D or greater.

Module Grade	Minimum Requirements to achieve Module Grade:
A	A
B	B
C	C
D	D
E	E
F	F
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	Vanek, F.M., Albright, L.D., Angenent, L. T., Ellis, M.W., Dillard, D.A. Energy Systems Engineering: Evaluation and Implementation, 4th Edition 2022 McGraw Hill
2	Ahmad T. A Design, Analysis and Applications of Renewable Energy Systems, 1st edition 2021, Academic Press.
3	Stephen P. Renewable Energy. Power for a sustainable future 4th edition, 2018. Oxford University Press.
4	Vezzoli C, Bacchetti E. The sustainable energy for all design scenario. In: Chapman Jonathan (ed) The Routledge handbook of sustainable product design. 2017. Routledge, New York
5	Kanoglu,M., Cengel, Y.A., Cimbala, J.M. Fundamentals and Applications of Renewable Energy, 1st Edition, 2020 McGraw-Hill Education