MODULE DESCRIPTOR

Module Title

Programming for Renewable Energy Systems

Reference	EN2200	Version	1
Created	October 2023	SCQF Level	SCQF 8
Approved	February 2024	SCQF Points	15
Amended		ECTS Points	7.5

Aims of Module

To provide students with computing knowledge and skills for both computer programming and the application of specialist software for design and analysis of renewable energy systems.

Learning Outcomes for Module

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

1	Practice the core features of an industry-standard technical computer programming environment to a basic level of competence in solving problems related to renewable energy systems.
2	Show competence in applying some of the more advanced features of an industry-standard computer programming environment to assist in solving various problems in renewable energy systems.
3	Practice the core features of an industry-standard Geographic Information Systems (GIS) to a basic level of competence in solving problems related to renewable energy systems.
4	Show competence in applying some of the more advanced features of an industry-standard Geographic Information Systems (GIS) to assist in solving various problems in renewable energy systems.

Indicative Module Content

The student, individually or as part of a group, will be required to apply a programming environment and Geographic Information Systems to solve significant engineering problems in renewable energy systems. Typically, wind turbines, driveline components, solar panels, wave energy converters, electrical networks and structures have been used. The students will have an introduction to maps and spatial data, Coordinate systems and projections, GPS and other sources of spatial data, GIS, and MapInfo practical exercises.

Module Delivery

This is a studio/workshop-based module supplemented by lectures and tutorials.

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Indicative Student Workload	Full Time	Part Time
Contact Hours	50	50
Non-Contact Hours	100	100
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 analysis and design project.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The module has 1 component and to pass a minimum D grade must be achieved.

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. NAGAR, S., 2017. Introduction to MATLAB for engineers and scientists: solutions for numerical computation and modelling. Berkley, CA: Apress L.P.
2. HAHN, B.H., VALENTINE, D.T., 2017. Essential MATLAB for Engineers and Scientists. 6th ed. Saint Louis: Elsevier.
3. De Smith, M.J., Goodchild, M.F. and Longley, P., 2007. Geospatial analysis: a comprehensive guide to principles, techniques and software tools. Troubador publishing ltd.
4. Haywood, D. Ian., Cornelius, Sarah., Carver, Steve. An Introduction to Geographical Information Systems. Spain: Pearson Prentice Hall, 2006.