

## MODULE DESCRIPTOR

### Module Title

Solar Energy Systems

Reference	EN4203	Version	1
Created	September 2023	SCQF Level	SCQF 10
Approved	February 2024	SCQF Points	15
Amended		ECTS Points	7.5

### Aims of Module

To provide the student with comprehensive knowledge and skills to understand, assess, design, and critically evaluate solar energy systems for sustainable and efficient utilisation.

### Learning Outcomes for Module

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

- 1 Illustrate strong analytical skills and ability to independently size PV systems based on the design requirements.
- 2 Illustrate strong analytical skills and ability to independently size STS based on the design requirements.
- 3 Develop extensive, detailed and critical knowledge and understanding of the policies and regulations as well as financial incentives to stimulate solar technology.
- 4 Critique the current State, Limitations, and Future Developments in Solar Energy Technologies.

### Indicative Module Content

Overview of the electricity production using photovoltaic modules in off-grid, grid-connected and/or hybrid systems. Sizing and designing of components and complete PV and hybrid systems. Hot water production using solar thermal system (STS). Sizing and designing of components and complete STS systems. Policies and regulations, incentives, tax policies, financing models, etc., on the deployment of solar technology systems.

### Module Delivery

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

**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
<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:	Examination	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	Assessed by 100% Examination				

**MODULE PERFORMANCE DESCRIPTOR****Explanatory Text**

Component 1 comprises of 100% of the module grade. To pass the module, a D grade is required.

Module Grade	Minimum Requirements to achieve Module Grade:
<b>A</b>	A
<b>B</b>	B
<b>C</b>	C
<b>D</b>	D
<b>E</b>	E
<b>F</b>	F
<b>NS</b>	Non-submission of work by published deadline or non-attendance for examination

**Module Requirements**

Prerequisites for Module	EN1200 or equivalent.
Corequisites for module	None.
Precluded Modules	None.

**INDICATIVE BIBLIOGRAPHY**

- BOXWELL, M., 2017. The Solar Electricity Handbook: A Simple, Practical Guide to Solar Energy: How to Design and Install Photovoltaic Solar Electric Systems 2017. Greenstream Publishing Publication. ISBN-13: 9781907670657
- Duffie JA and Beckman., 2017. Solar Engineering of Thermal Processes. John Wiley & Sons. 2017. ISBN: 978-0-470-87366-3.
- KALOGIROU, S.A., 2014. Solar Energy Engineering: Processes and Systems. Elsevier.
- NERSESIAN, R., 2016. Energy Economics: Markets, History and Policy. Routledge