MODULE DESCRIPTOR

Module Title

Plant Performance

Reference	EN4700	Version	6
Created	March 2024	SCQF Level	SCQF 10
Approved	March 2004	SCQF Points	15
Amended	March 2024	ECTS Points	7.5

Aims of Module

To provide the student with the ability to apply the heat, mass and momentum transfer mechanisms to plant performance.

Learning Outcomes for Module

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

1	Execute comprehensive knowledge of flow principles to solve complex aerodynamics flow system.
2	Analysis complex problems related to high-speed aerodynamics of compressible flows.
3	Evaluate complex problems related to heat transfer from extended surfaces.
4	Evaluate the environmental and societal impact of solution to complex engineering problems, its life cycle analysis and adverse mitigation strategies.

Indicative Module Content

Thin aerofoils theory, finite wing theory, compressible flow in nozzles, choked flows, shocked flow and external flows, aerodynamics theory and practise related to wind turbine plant, definition of fins, fin efficiency, different types of fin surfaces, different cases of heat transfer in fins. Social values, economic theory, direct cost and inflection, net present value, break-even prices, life-cycle analysis, techno-economic analysis, environmental mitigation.

Module Delivery

The module will be delivered by means of lectures and tutorials and student-centred learning.

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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:	Examination	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	Closed book 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:
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	Industrial Plant (EN3700) or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1	KAYS, W.M. AND CRAWFORD, M., 1993. Convective Heat and Mass Transfer. 3rd ed. New York: McGraw Hill.
2	TREYBAL, R., 1980. Mass Transfer Operations. 3rd ed. New York: McGraw Hill.
3	CENGEL, Y.A., 2004. Heat Transfer: A Practical Approach. 2nd ed. New York: McGraw-Hill.
4	KAUSHIK, M., 2019, Theoretical and Experimental Aerodynamics. Springer Nature Singapore.