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MODULE DESCRIPTOR

Module Title

Industrial Plant

Reference	EN3700	Version	5
Created	August 2021	SCQF Level	SCQF 9
Approved	March 2004	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

Aims of Module

To provide the student with the ability to evaluate the application of thermofluids to the performance characteristics and design of plant equipment and energy systems.

Learning Outcomes for Module

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

1	Analyse the performance characteristics of heat transfer equipment for gas and liquid flow systems.
2	Analyse the performance of gas, vapour and combined cycles, used for power generation and process heat supply.
3	Analyse the behaviour of rotodynamic machines and their interaction with fluid system requirements.
4	Perform experiments involving themofluids systems and evaluate key findings.

Indicative Module Content

Heat transfer mechanisms, convective heat transfer coefficients, dimensional analysis, correlations for laminar and turbulent flow heat transfer. Heat exchangers. Energy systems: Plant power & heat requirements; process heat, integration of heat and power. Prime movers - gas turbines and steam turbines. CHP systems. Fluid machinery. Rotodynamic and positive displacement machines, cavitation. Dimensionless performance parameters. Interaction with external system, matching and machine performance characteristics.

Module Delivery

This module is based on lectures and tutorials supplemented with directed study and laboratory work.

Indicative Student Workload	Full Time	Part Time
Contact Hours	51	51
Non-Contact Hours	99	99
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
Actual Placement hours for professional, statutory or regulatory body		

Module Ref:	EN3700 v5

ASSESSMENT PLAN

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

Component 1

Type:	Coursework	Weighting:	30%	Outcomes Assessed:	4
Description:	Report.				

Component 2

Type:	Examination	Weighting:	70%	Outcomes Assessed:	1, 2, 3
Description:	Closed book examination.				

MODULE PERFORMANCE DESCRIPTOR

Explanatory Text

The module has 2 components and to gain an overall pass a minimum D grade must be achieved in each component. The component weighting is as follows: C1 is worth 30% and C2 is worth 70%.

		Coursework:						
		A	**B**	**C**	**D**	**E**	**F**	**NS**
Examination:	**A**	A	A	B	B	E	E	
	B	B	B	B	C	E	E	
	C	B	C	C	C	E	E	
	D	C	C	D	D	E	E	
	E	E	E	E	E	E	F	
	F	F	F	F	F	F	F	
	NS	Non-submission of work by published deadline or non-attendance for examination						

Module Requirements

Prerequisites for Module	Thermofluids 2 (EN2702) or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

1	EASTOP, T. D. and McCONKEY, A., 1993. Applied Themodynamics for Engineering Technologists. 5th ed. Harlow:Longman.
2	TURTON, R. K., 1995. Principles of Turbomachinery. 2nd ed. London:Chapman and Hall.
3	ROGERS, G. F. C. and MAYHEW, Y.R., 1992. Engineering Thermodynamics Work & Heat Transfer. 4th ed. Pearson Education Ltd.