

MODULE DESCRIPTOR

Module Title

Metrology and Industrial Installations

Reference	EN3106	Version	4
Created	April 2023	SCQF Level	SCQF 9
Approved	July 2018	SCQF Points	30
Amended	August 2023	ECTS Points	15

Aims of Module

To give the student the ability to understand measurement systems and techniques and design and installation of equipment for process control.

Learning Outcomes for Module

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

- 1 Demonstrate an understanding of measuring systems including its continuous quality measurements and management.
- 2 Assess principles of and installation of sensor-transmitters for process control and monitoring.
- 3 Demonstrate an understanding of analysers and its applications.
- 4 Interpret a range of valves and actuators and their operating characteristics including the design of safety and its control schematics.
- 5 Formulate continuous improvement and its quality management of analysers, actuators, and valves.

Indicative Module Content

Measurement systems, on and off line, sampling, precision, noise, calibration. Measurement techniques and process variables. Installation and commissioning of measurement systems. Analysis of process performance. Operation of sensor-transmitters. Principles of operation of analysers applied in industrial environments. Control valves and actuator operating characteristics. Calculation of flow rates and degradation of performance and operation and maintenance. Design and specifications of safety control of valves for industrial processes.

Module Delivery

The module is delivered in Blended Learning mode using structured online learning materials/activities and directed study, facilitated by regular online tutor support. Workplace Mentor support and work-based learning activities will allow students to contextualise this learning to their own workplace. Face-to-face engagement occurs through annual induction sessions, employer work-site visits, and modular on-campus workshops.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	30	N/A
Non-Contact Hours	30	N/A
Placement/Work-Based Learning Experience [Notional] Hours	240	N/A
TOTAL	300	N/A
<i>Actual Placement hours for professional, statutory or regulatory body</i>	240	

ASSESSMENT PLAN

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

Component 1

Type:	Coursework	Weighting:	40%	Outcomes Assessed:	1, 2
Description:	Case study on the evaluation of measurement systems				

Component 2

Type:	Coursework	Weighting:	60%	Outcomes Assessed:	3, 4, 5
Description:	Case study on the evaluation of analysers and control valves				

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 40% (horizontal axis) and C2 is worth 60% (vertical axis).

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

Module Requirements

Prerequisites for Module	Completion of Stage 2, SCQF Level 8, or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 CZICHOS, H., SAITO, T., SMITH, L. E., 2011, Springer Handbook of Metrology and Testing. 2nd ed. Berlin: Springer.
- 2 DUNN, W. C., 2005, Fundamentals of Industrial Instrumentation and Process Control. 1st ed. McGraw-Hill.
- 3 MCMILLAN, G. K. and CONSIDINE, D. M., 1999, Process/Industrial Instruments and Controls Handbook. 5th ed. McGraw-Hill.
- 4 ISO/TC 30/SC 2, 2007, ISO 5167-2:2003.