

MODULE DESCRIPTOR

Module Title

Manufacture and Material 3

Reference	EN3102	Version	5
Created	February 2024	SCQF Level	SCQF 9
Approved	July 2018	SCQF Points	30
Amended	April 2024	ECTS Points	15

Aims of Module

To provide the student with the fundamental understanding of joining processes and equipment, surface technology and engineering metallurgy, manufacturing systems and different support systems for manufacturing including quality control and inspection.

Learning Outcomes for Module

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

- 1 Explain the principles of welding processes, brazing, soldering and adhesive bonding as well as mechanical assembly processes.
- 2 Assess surface processing operations including treatment, coating and cleaning.
- 3 Demonstrate the principles of rapid prototyping and additive manufacturing processes.
- 4 Demonstrate the fundamentals of automation technologies for manufacturing systems including CAM and CIMS.
- 5 Interpret quality control techniques to improve manufacturing system efficiency.

Indicative Module Content

Joining processes and equipment: fusion welding process, solid-state welding process, Brazing, Soldering, Adhesive-bonding, and Mechanical Fastening Processes. Surface processing operations: Surface Roughness and Measurement; Friction, Wear, and Lubrication. Surface Treatments, Coatings, and Cleaning. Fundamentals of rapid prototyping and additive manufacturing processes. Automation of Manufacturing Processes and Operations Computer-aided Manufacturing Computer-integrated Manufacturing Systems Manufacturing in a Competitive Environment Manufacturing support systems: process planning and production control, quality control and inspection

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:	60%	Outcomes Assessed:	1, 2, 3
Description:	Case study covering manufacturing processes.				

Component 2

Type:	Coursework	Weighting:	40%	Outcomes Assessed:	4, 5
Description:	Case study covering automation technology and manufacturing systems.				

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 (y-axis) is worth 60% and C2 (x-axis) is worth 40%.

		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 EN2108, EN2101, EN2102, EN2103 or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 CALLISTER W.D., RETHWISCH, D. G., 2014. Materials Science and Engineering. 9th Edition SI Version, New York: Wiley
- 2 KALPAKJIAN, S. and SCMID, S., 2014. Manufacturing engineering & technology. 7th edition. Harlow: Pearson.
- 3 GROOVER, M.P., 2016. Principles of modern manufacturing. Global Edition SI Version. New York: Wiley.