

MODULE DESCRIPTOR

Module Title

Computer Aided Engineering 1

Reference	EN2103	Version	5
Created	April 2023	SCQF Level	SCQF 8
Approved	July 2018	SCQF Points	30
Amended	August 2023	ECTS Points	15

Aims of Module

To provide the student with an introduction to CAD tools and their application to component and system design and how to apply a programming environment to solve significant engineering design problems.

Learning Outcomes for Module

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

- 1 Use core features of an industry standard technical computer programming environment to assist in the solution of a variety of engineering analysis, security and design problems.
- 2 Apply industry standard CAD software to a basic level of competence in the communication of engineering design.
- 3 Apply industry standard CAM software to a basic level of competence in the manufacturing of engineering design.

Indicative Module Content

MATLAB: Solve significant engineering design problems. Typically, gas turbine, driveline components, pressure vessels, heat conduction, electrical networks and structures have been used. Introductory security/encryption awareness. An industry standard CAD package will be used in the communication of design solutions. The elementary application of such packages to the production of parts, drawings and assemblies will be covered. More advanced features will be explored e.g. equations, advanced drawing, visualisation, routing, multibody parts, etc. These techniques will be applied to real world components and systems e.g. drivetrains or other machinery. An industry standard CAM package will be used in the manufacturing of design solutions. Project planning tools, work flow simulation tools and product processing tools.

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
Actual Placement hours for professional, statutory or regulatory body	240	

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:	1
Description:	Individual programming exercise.				

Component 2

Type:	Coursework	Weighting:	70%	Outcomes Assessed:	2, 3
Description:	Group and individual assignment covering basic and more advanced features and applications of CAD and CAM.				

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 (x-axis) is worth 30% and C2 (y-axis) is worth 70%.

		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	F	F	F	F	F	F	
	NS	Non-submission of work by published deadline or non-attendance for examination						

Module Requirements

Prerequisites for Module	Completion of EN1100, EN1106, EN1102, EN1103 or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- | | |
|---|--|
| 1 | British Standard BS 8888:2011 - Technical product documentation and specification |
| 2 | RHODES, R.S. and COOK, L.B., 1990. Basic Engineering Drawing. 2nd ed. London: Pearson Higher Education. |
| 3 | DIETER, G, E. and SHHMIDT, L, C; 2009. Engineering Design. 4th ed. New York: McGraw-Hill. |
| 4 | MCMAHON, C. and BROWNE, J., 1998, CAD/CAM: Principles, Practice, and Manufacturing Management. 2nd ed. Harlow: Addison Wesley. |
| 5 | MATLAB Getting Started Guide, Mathworks |
| 6 | WONG, D., 2021. Real-world cryptography. Shelter Island, NY : Manning Publications Co. |
| 7 | Manuals and other literature will be made available as appropriate. |