

## MODULE DESCRIPTOR

### Module Title

Mechanical Engineering Design 2

Reference	EN2700	Version	8
Created	August 2021	SCQF Level	SCQF 8
Approved	March 2004	SCQF Points	15
Amended	August 2021	ECTS Points	7.5

### Aims of Module

To provide the student with an understanding of the significance of materials, manufacturing needs, environmental constraints and design of the mechanical components and assembly.

### Learning Outcomes for Module

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

- 1 Design mechanical components and assemblies using knowledge of materials, manufacturing and operating environment.
- 2 Explain the importance of the legal, environmental and social aspects of engineering design.
- 3 Identify the possible causes of failure in specific components or products.
- 4 Apply effective integrated design methods to the production of technical solutions to specific problems.

### Indicative Module Content

The student will develop an understanding of the engineering design and related management decisions in a global context. The environmental impacts implicit in sourcing of raw materials, and the alternatives available to the designer will be highlighted against a basic corporate social responsibility background. The selection of fabrication techniques, material, and eventual product disposal are examined as a part of designing process. The student, either individually or as part of a group, will be required to research and design from a range of potential solutions to a mechanical problem.

### Module Delivery

The theoretical aspects of the module are delivered by lectures, seminars and case studies. The approach will be principally student centred. Relevant criteria-based and decision-making strategies for failure analysis and prevention will be covered in lectures and tutorials and also within the laboratory/workshop areas. Case studies will be selected as appropriate to the level of the students' expected understanding. Students may also be taken on industrial visits or receive talks from guest speakers.

<b>Indicative Student Workload</b>	Full Time	Part Time
Contact Hours	66	66
Non-Contact Hours	84	84
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
<b>TOTAL</b>	<b>150</b>	<b>150</b>
<i>Actual Placement hours for professional, statutory or regulatory body</i>		

## ASSESSMENT PLAN

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

### Component 1

Type: Coursework Weighting: 50% Outcomes Assessed: 1, 3

Description: A problem-based assignment.

### Component 2

Type: Coursework Weighting: 50% Outcomes Assessed: 2, 4

Description: An investigative coursework report including experimental or workshop activities or reverse engineering.

## 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 50% and C2 is worth 50%.

		Coursework:						NS
		A	B	C	D	E	F	
Coursework:	A	A	A	B	B	E	E	
	B	A	B	B	C	E	E	
	C	B	B	C	C	E	E	
	D	B	C	C	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	EN1701 Introduction to Design, Materials and Manufacture or its equivalent.
Corequisites for module	None.
Precluded Modules	None.

## ADDITIONAL NOTES

Students will be expected to observe all necessary safety regulations when using laboratory and workshop facilities.

**INDICATIVE BIBLIOGRAPHY**

- 1 ASHBY, M., SHERCLIFF, H. and CEBON, D., 2013. Materials. 3rd ed. Oxford: Butterworth-Heinemann.
- 2 BUDYNAS, R. and NISBETT, K., 2015. Shigley's Mechanical Engineering Design. 10 ed. New York: McGraw-Hill.
- 3 ASBURY, S. and BALL, R., 2009. Do the right thing: Jargon free guide to Corporate Social Responsibility. IOSH Services Ltd.
- 4 KLEBANOV, B.M., 2009. Machine Elements, Life and Design. Boca Raton, FL: CRC Press.