

MODULE DESCRIPTOR

Module Title

Mechanics of Solids

Reference	EN2701	Version	8
Created	March 2023	SCQF Level	SCQF 8
Approved	March 2004	SCQF Points	15
Amended	August 2023	ECTS Points	7.5

Aims of Module

To enable the student to extend their understanding of the basic concepts and theories of Mechanics of Solids and apply them in the areas of stress and structural analysis.

Learning Outcomes for Module

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

- 1 Calculate bending stresses and deflection of beams in the experimental investigation of statically determinate loading.
- 2 Compute complex stresses and strains in stressed materials.
- 3 Determine torsional loading in shafts and shear stresses in beams.
- 4 Compare strain energy methods applied to simple structures.

Indicative Module Content

Beam bending theory and the bending equation; properties of plane areas; beam deflection for statically determinate and indeterminate loading; stress-strain relationships in two-dimensions and Mohr's circle techniques; strain gauge rosettes; relationships between elastic constants; torsion of circular section shafts; shear stresses in beams due to bending; introduction to strain energy methods in structural analysis.

Module Delivery

The module is delivered by means of lectures, tutorials and guided self-study and is integrated with applications in the laboratory.

Indicative Student Workload

	Full Time	Part Time
Contact Hours	50	50
Non-Contact Hours	100	100
Placement/Work-Based Learning Experience [Notional] Hours	N/A	N/A
TOTAL	150	150
<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:	Examination	Weighting:	100%	Outcomes Assessed:	1, 2, 3, 4
Description:	A closed book examination				

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

The assessment of this module is 100% on an examination. To pass this module a minimum grade D is required

Module Grade	Minimum Requirements to achieve Module Grade:
A	A
B	B
C	C
D	D
E	E
F	F
NS	Non-submission of work by published deadline or non-attendance for examination

Module Requirements

Prerequisites for Module	Statics and Dynamics (EN1700) or equivalent.
Corequisites for module	None.
Precluded Modules	None.

INDICATIVE BIBLIOGRAPHY

- 1 HEARN, E.J., 1997. Mechanics of Materials Vol 1. 3rd ed. Oxford: Butterworth-Heinemann.
- 2 BENHAM, P.P., CRAWFORD, R.J. and ARMSTRONG, C.G., 1996. Mechanics of Engineering Materials. 2nd ed. London: Longman.
- 3 HIBBELER, R.C., 2017. Mechanics of Materials. 10th ed. Upper Saddle River, NJ: Prentice-Hall.