

## MODULE DESCRIPTOR

### Module Title

Statics and Dynamics

Reference	EN1700	Version	8
Created	March 2023	SCQF Level	SCQF 7
Approved	March 2004	SCQF Points	15
Amended	August 2023	ECTS Points	7.5

### Aims of Module

To enable the student to understand the basic concepts and theories of applied mechanics.

### Learning Outcomes for Module

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

- 1 Apply the concept of equilibrium of forces and moments, tensile and compressive loading, on materials and simple experimental systems.
- 2 Determine the forces on beams and pin-jointed structures.
- 3 Process the kinematics of simple translation and rotational systems, kinetics of rigid bodies involving the concepts of work, power and energy.
- 4 Obtain friction force and mass moment of inertia applied to the dynamics of simple experimental systems.

### Indicative Module Content

Statics: Forces, moments and equilibrium. Load analysis of plane, pinned frames (trusses). Shear forces and bending moments in beams. Simple tensile, compressive and linear-elastic material behaviour. Dynamics: Rectilinear and curved path motion of particles including non-constant acceleration case. Newton's Laws applied to rigid body kinetics of linear and circular motion systems including the effect of friction. Mass moment of Inertia. Impulse and momentum.

### Module Delivery

The module is delivered by means of lectures, tutorials and guided self-study and is integrated with applications within 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:	Closed book examination				

**MODULE PERFORMANCE DESCRIPTOR****Explanatory Text**

The assessment of this module comprises 100% on an Examination. To pass this module, a minimum D grade 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	None.
Corequisites for module	None.
Precluded Modules	None.

**INDICATIVE BIBLIOGRAPHY**

- HEARN, E.J., 1997. Mechanics of Materials: Volume 1. 3rd ed. Oxford: Butterworth-Heinemann.
- MERIAM, J.L. and KRAIGE, L.G., 2016. Engineering Mechanics (Statics and Dynamics). 8th ed. New York: Wiley.
- CLIFFORD, M., 2009. Introduction to Mechanical Engineering Part 1. London: Hodder Education.