

Module Title Statics and Dynamics	Reference EN1700
Keywords Free-body diagrams, Equilibrium, Stress and Strain. Kinematics, Kinetics, Friction, Work, Power & Energy.	SCQF SCQF Level 7 SCQF Points 15 ECTS Points 7.5 Created December 2003 Approved March 2004 Amended August 2011 Version No. 3

This Version is No Longer Current

The latest version of this module is available [here](#)

Prerequisites for Module

None in addition to the course entry requirements.

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.

Corequisite Modules

None.

Precluded Modules

None.

Indicative Student Workload

Aims of Module

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

Learning Outcomes for Module

	Full Time	Part Time
<i>Contact Hours</i>		
Assessment	3	3
Lecture	24	24
Supervised Practical Work	6	6
Tutorials	16	16
<i>Directed Study</i>		
Group and Individual work	20	20
<i>Private Study</i>		

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

1. Investigate the actions of forces and moments and the concept of equilibrium; identify and explain tensile and compressive loading and the associated linear stress-strain relationship.
2. Analyse forces and moments on beams and pin-jointed structures.
3. Analyse the kinematics of simple translation and rotational systems, kinetics of rigid bodies and apply the concepts of work, power and energy.
4. Investigate friction, mass moment of inertia and the dynamics of simple systems.

Indicative Module Content

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.

Private study 81 81

Mode of Delivery

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

Assessment Plan

	Learning Outcomes Assessed
Component 1	1,4
Component 2	1,2,3,4

Component 2 involves an in-class assessment (20% weighting) and a closed book examination (30% weighting)

Component 1 involves two laboratory based courseworks. One covers statics and the other covers dynamics. (50% weighting)

Indicative Bibliography

1. HEARN, E.J., 1997. Mechanics of Materials: Volume 1. 3rd ed. Oxford: Butterworth-Heinemann.
2. MERIAM, J.L. and KRAIGE, L.G., 2016. Engineering Mechanics (Statics and Dynamics). 8th ed. New York: Wiley.

3. CLIFFORD, M., 2009.
Introduction to Mechanical
Engineering Part 1. London:
Hodder Education.