

ENGR C1501: Engineering Science I

Module Title:			Engineering Science I	
Language of Instruction:		:	English	
Credits:	5	5		
NFQ Level:	6	6		
Module Delive	red In		1 programme(s)	
Teaching & Learning Strategies:			- Lectures - Project - Laboratory practicals - Private study	
Module Aim:			This module aims to provide students with an understanding of the fundamental principles and applications of engineering science and to develop practical laboratory skills in physics.	
Learning Outc	omes			
On successful o	completion	of th	is module the learner should be able to:	
LO1 D	Demonstrate their knowledge and understanding of key principles of physics as applied to civil engineering.		ir knowledge and understanding of key principles of physics as applied to civil engineering.	
LO2 D	Demonstrate an understanding of physical quantities, units, force systems, friction, stress and strain			
LO3 D a	Define, calculate and graphically represent component forces, resultant forces, moments, simple beam reactions, shear for and bending moments.			
LO4 E	Explain the theory behind practical experiments carried out in the laboratory. Apply scientific procedures, including recording and analysing experimental data. Demonstrate an understanding of the principles behind basic laboratory instruments.			
Pre-requisite learning				
Madula Pasammandationa				

Module Recommendations This is prior learning (or a practical skill) that is recommended before enrolment in this module.

No recommendations listed

Incompatible Modules

These are modules which have learning outcomes that are too similar to the learning outcomes of this module.

No incompatible modules listed

Co-requisite Modules

No Co-requisite modules listed

Requirements

This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.

No requirements listed



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Module Content & Assessment

Indicative Content

Units and Physical Quantities

(a) The International System of Units: mass, length, time, density, relative density, force, weight and unit weight.

Forces

(a) Resultant of a system of forces, (b) Parallelogram law, (c) Equilibrium, (d) Triangle of forces, (e) Polygon of forces, (f) Resolution of forces.

Moments

(a) Moment of a force, (b) Supports (c) Beam Reactions (d) Types of Loads

Friction

(a) Laws of dry friction, (b) Limiting friction, (c) Friction on horizontal and inclined planes, (d) Angle of friction and the total reaction.

Shear and Bending Moment Diagrams

(a) Shear and bending moment diagrams (b) Point and uniform distributed force loading

Stress and Strain

(a) Direct stress and strain, (b) Hooke's law, (c) Modulus of elasticity.

Practicals

Introduction to the Physics Laboratory; Mass Weight and Density; Acceleration Due to Gravity Using a Simple Pendulum; Hooke's Law and Experiments using a Spiral Spring; Determine Youngs Modulus for a Wire; Friction Experiments; Vector Addition of Forces/Resolving Forces; Investigating Moments of Forces; Demonstrating Newton's Laws using Pullys.

Assessment Breakdown	%
Project	50.00%
Practical	50.00%

No Continuous Assessment

Project						
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date		
Project	No Description	1,2,3	50.00	n/a		

Practical					
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date	
Practical/Skills Evaluation	A two-hour practical each week	1,2,3,4	50.00	Every Week	

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment



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Module Workload

Workload: Full Time		
Workload Type	Frequency	Average Weekly Learner Workload
Lecture	12 Weeks per Stage	3.33
Laboratory	12 Weeks per Stage	1.67
Estimated Learner Hours	12 Weeks per Stage	5.42
	Total Hours	125.00

Module Delivered In				
Programme Code	Programme	Semester	Delivery	
CW_CMCIV_D	Bachelor of Engineering in Civil Engineering	1	Mandatory	