

Module Title:	Structures I
Language of Instruction:	English
Credits:	10
NFQ Level:	7
Module Delivered In	1 programme(s)
Teaching & Learning Strategies:	Lectures Project work Private study
Module Aim:	The aims of the module are: (1) to develop an understanding of structural theory and analysis; (2) to develop a knowledge of the elastic design of timber and steel beams. (3) to develop a knowledge of the design and detailing of structural elements in reinforced concrete.

Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	to draw a shear force and bending moment diagram for statically determinate members.
LO2	to calculate the section properties for symmetrical and non-symmetrical sections.
LO3	to calculate the elastic bending stresses and the deflection of simply supported timber and steel members.
LO4	to analyse a simple truss using the method of sections and method of joints.
LO5	to calculate the characteristic dead and imposed loads on structural members.
LO6	to design a simply supported reinforced concrete beam and slab in accordance with Eurocode 2.

Pre-requisite learning	
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
No requirements listed	

Module Content & Assessment

Indicative Content

Theory of Structures

(a) Section properties:- area, second moment of area, elastic modulus and radius of gyration (b) Shear force and bending moment diagrams (c) Theory of simple bending (d) Tension and compression members (e) Effective length and slenderness ratio. (f) Axial capacity of compressive members. (g) Analysis of pinned jointed frames

Design of Structural Elements

a. Load on structural elements b. Design methods: permissible stress and limit state c. Elastic bending stress d. Shear stress e. Deflection f. Analysis of a reinforced concrete section. g. Cover to reinforcement h. Characteristic and ultimate loads i. Design shear force and bending moment j. Tension steel k. Shear steel l. Deflection m. Design of reinforced concrete elements to the relevant National and European Standards.

Detailing of Structural Elements

a. Bond and Anchorage b. Lap lengths c. Curtailment d. Reinforcement scheduling e. Weight of reinforcement

Assessment Breakdown	%
Continuous Assessment	20.00%
Project	20.00%
End of Module Formal Examination	60.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	Class Exam	1,2,3,4,5,6	20.00	n/a

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Design Projects	1,2,3,4,5,6	20.00	n/a

No Practical

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	Final Exam	1,2,3,4,5,6	60.00	End-of-Semester

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

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	30 Weeks per Stage	4.00
Estimated Learner Hours	30 Weeks per Stage	4.00
Total Hours		240.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering - Ab Initio	3	Mandatory