STRU: Structures I

Module Title:	Structures I
Credits:	5
NFQ Level:	7
Module Delivered In	1 programme(s)
Teaching & Learning Strategies:	Lectures Projects Private study
Module Aim:	The aim of the module is to develop a knowledge and understanding of the design and or detailing of: - (1) Statically determinate beams (2) section properties (3) analyses of pinned 2d trusses/frames (4) Timber floor design (EC5) (5) Simply supported Beam/Slab design (EC2) (6) Load paths in single/multi-storey structures (7) To have an understanding of the the long and short term implications of material section and construction type and method

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	1. To understand the concept of Global stability, shear force and bending moments acting on statically determinate beams
LO2	2. To understand section properties of symmetrical and asymmetrical structural section , and how this impacts on the internal moment resisting capacity of such section
LO3	3 . To carry out analyses of pinned 2-d trusses and frames and to identify the nature of the axial forces in each member (Tension/compression)
LO4	4. Carry out full (bending, shear and deflection) RC simply supported design of Beams/slabs to EC2
LO5	5. Understand how load paths travel through structures
LO6	6. Understand how and carry out full timber joist floor design to EC5 (bending, shear and deflection)
LO7	To understand the implications of long and short term sustainability (construction and long term carbon footprint) when selecting a particular material and construction type and method, and the long term implications of construction maintenance

Pre-requisite learning
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
(1) Foundations (20 hours) (a) Pad Foundations (b) Combined foundations (c) Types of piled foundations (d) Pile and pile cap design
(2) Earth Retaining Structures (20 hours) (a) Reinforced concrete retaining walls; (b) Design of R.C. retaining walls; (c) Detailing of R.C. retaining walls; (d) Design of Mass Concrete/Gravity Retaining Walls; (e) Sheet pile retaining walls; (f) Detailing cantilever sheet pile walls.
(3) Highway Structures (10 hours) (a) Types of highway structures (b) Bridge abutments and piers (c) Bridge decks
(4) Underground Structures (10 hours) (a) Underground water tanks. (b) Detailing of underground water tanks.
(5) Continuous Reinforced Concrete Members (30 hours lectures) (a) Analysis of continuous reinforced concrete members. (b) Analysis and design of R.C. using computer packages.
(6) Structural Steel (20 hours) (a) Design of Steel Beams. (b) Design of Steel Column with combined axial load & bending. (c) Connections in structural steelwork
(7) Prestressed Concrete (10 hours) (a) Introduction to prestressed concrete

Assessment Breakdown	%
Continuous Assessment	100.00%

Continuous Assessment

Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Other	n/a	1,2,3,4,5,6,7	100.00	n/a

No Project

No Practical

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	4.00
Estimated Learner Hours	12 Weeks per Stage	6.42
	Total Hours	125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMCIV_D	Bachelor of Engineering in Civil Engineering	5	Mandatory