DSGN C2501: Structural Design I

Module Title:	Structural Design I
Language of Instruction:	English

Credits:	5

NFQ Level:	6

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	Lectures Project work Private study

Module Aim:	The aims of the module are: (1) to develop a knowledge of the elastic design of timber and steel beams. (2) to develop a knowledge of the design and detailing of structural elements in reinforced concrete. 3) 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	to calculate the elastic bending stresses and the deflection of simply supported timber and steel members.
LO2	to calculate the characteristic dead and imposed loads on structural members.
LO3	to design a simply supported reinforced concrete beam and slab in accordance with Eurocode 2.
LO4	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
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	50.00%
End of Module Formal Examination	50.00%

Continuous Assessment				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Other	n/a	2,3,4	50.00	n/a

No Project

No Practical

End of Module Formal Examination				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	n/a	1,2,3	50.00	End-of-Semester

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	5.00
Estimated Learner Hours	12 Weeks per Stage	7.50
	Total Hours	150.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering	4	Mandatory
CW_CMCIV_D	Bachelor of Engineering in Civil Engineering	4	Mandatory