DSGN H5501: Structural Design II

Module Title:	Structural Design II
Language of Instruction:	English

Credits:	5

NFQ Level:	8

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	Lectures, Project work, Private study

Module Aim:	The aims of this module are: 1) to extend the learner's knowledge of structural design in reinforced concrete and structural steelwork; 2); to enable the learner's to apply structural principles to the design of timber structures; 3) to enable the learner's to apply structural principles to the design of masonry elements.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	describe and design structural foundation in reinforced concrete for broadly defined engineering problems to the relevant National and European design standards.
LO2	describe and design reinforced concrete retaining walls to the relevant National and European design standards.
LO3	describe and design steel portal frame type buildings to the relevant National and European design standards.
LO4	describe and design steel and concrete composite floor beams for broadly defined engineering problems to the relevant National and European design standards.
LO5	describe and design structural timber elements for broadly defined engineering problems to the relevant National and European design standards.
LO6	describe and design load bearing masonry walls for broadly defined engineering problems to the relevant National and European design standards.

Pre-requisite learning		
Module Recommendations *This is prior learning (or a practical skill) that is recommended before enrolment in this module.*		
6567	DSGN H4501	Structural Design I
6804	ANAL H4501	Structural Analysis I
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		

DSGN H5501: Structural Design II

Module Content & Assessment

Indicative Content
Design of Reinforced Concrete Foundations a. Isolated column bases b. Combined bases c. Punching shear d. Pile cap design
Design of Reinforced Concrete Retaining Walls a. Types of retaining walls b. Design of cantilever retaining wall
Frame Analysis, Stability and robustness a. Braced frames b. Unbraced frames c. Sub-frames d. Robustness requirements
Steel Portal Frame Type Buildings a. Dead, imposed and wind loads on portal frames b. Analysis of portal frames c. Restraints and member stability d. Serviceability checks e. Design of connections
Composite floor beams a. Analysis of a composite section b. Shear connectors c. Design of a composite floor beam
Design of structural timber a. Strength classes b. Types of timber structures c. Permissible span tables d. Load duration and load sharing e. Flexural strength f. Deflection g. Timber size factors and effective length h. Design for axial compression i. Design for compression and bending j. Connection
Masonry Walls a. Bricks, blocks and mortars b. Characteristic and design strengths c. Design of a vertically loaded masonry wall d. Design of a laterally loaded masonry wall

Assessment Breakdown	%
Project	40.00%
End of Module Formal Examination	60.00%

No Continuous Assessment

Project

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

DSGN H5501: Structural Design II

Module Workload

Workload: Full Time		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Lecture	30 Weeks per Stage	3.00
Estimated Learner Hours	30 Weeks per Stage	4.17
	Total Hours	215.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering - Ab Initio	7	Mandatory
CW_CMCEN_B	Bachelor of Engineering (Honours) in Civil Engineering - Add On	3	Mandatory