STRU: Structures II

Module Title:	Structures II
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, (with a view of long and short term sustainability) of the design and or detailing of: - (1) continuous reinforced concrete members; (2) highway structures; (3) prestressed concrete. (4) Sheet pile/foundation design (EC0 , EC1, EC2, EC7) (5) Statically indeterminate beams and load combinations (6) Design of axially loaded universal columns with bi-axial bending (EC3) (7) Design of Fully restrained universal beams (EC3)

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Design and detail: - (a) isolated pad foundations, combined pad foundations and pile caps; (b) earth retaining structures; (c) structural elements using MasterSeries or equivalent structural software package.
LO2	Describe and understand: - (a) highway structures; (b) underground water tanks; (c) the concept of prestressed concrete.
LO3	Design a structural steel: - (a) beam without lateral torsional restraint. (b) column with combined axial load and bending.
LO4	4. Design sheet piling permanent or temporary retaining wall with static water table or with flow nets
LO5	5. Design concrete gravity and vertical cantilever retaining wall
LO6	6. Understand degree of structural indeterminacy and design indeterminate structural beams with the use of load combination to establish shear force and bending moment envelopes
LO7	7 . To understand load transmission and load path through structures and frames
LO8	8. 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	1,2,3,4,5,6,7,8	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	6	Mandatory