

Module Title:	Civil Engineering Technology
Language of Instruction:	English
Credits:	10
NFQ Level:	6
Module Delivered In	1 programme(s)
Teaching & Learning Strategies:	Lectures 120hrs Projects 40hrs Site visits + private study 50hrs Total Student Participation 210hrs
Module Aim:	The aims of this module are: (1)to teach students the techniques and processes involved in the general area of civil engineering construction; (2)to help students appreciate the capabilities and limitations of the various types of plant and equipment that are used in the construction industry.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	to describe how foundations are constructed;
LO2	to describe how retaining walls are constructed;
LO3	to describe how steel structures are fabricated and erected;
LO4	to describe the details of in-situ and pre-cast concrete structures and how they are manufactured and erected;
LO5	to describe temporary works systems used on civil engineering sites;
LO6	to identify health and safety issues on site;
LO7	to describe how pipelines and drains are constructed and tested;
LO8	to describe the type of plant and equipment used in the industry.
LO9	to carry out research into simple civil engineering manufacturing and construction methods.
LO10	to work with others on team projects and to write reports and present the reports in a class room environment.

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

(1) Foundations (20 hours lectures)

(a) Strip and Pad (b) Pile and Raft (c) Rising walls (d) Calculations: Bearing Pressure, Foundation Quantities

(2) Retaining Walls (15 hours lectures)

(a) Gravity, Basement, Buttress and Counterfort walls. (b) Sheet Pile, Secant, Contiguous and Diaphragm walls. (c) Drainage of walls (d) Methods of Failure (e) Calculations: Quantities

(3) Steelwork Structures (10 hours lectures)

(a) Steel manufacture b.) Types of steel structure c.) Portal Frame structures d.) Bolting & Welding e.) Methods of erection f.) Shop Fabrication g.) Handling and Transportation

(4) In-situ and Precast Concrete Structures (15 hours lectures)

a.) In-situ and Precast Concrete b.) Reinforced and Prestressed Concrete c.) Steel Reinforcement – types and fixing methods d.) Placing, finishing, curing concrete e.) Prestressed concrete bridge beams f.) Manufacture of precast units, handling and erection procedures

(5) Temporary Structures (25 hours lectures)

a.) Access and support scaffolding b.) Basic formwork design procedures and construction c.) Use of proprietary formwork systems d.) Shoring e.) Calculations: Formwork Wall ties, Formwork Props, Scaffolding quantities. .

(6) Health and Safety (5 hours lectures)

(a) Hazard Identification (b) Risk Analysis and Control

(7) Pipe Laying (15 hours lectures)

a.) Types and laying of pipework b.) Excavation, bedding and backfilling c.) Manhole construction d.) Surface drain systems: yard gullies, road gullies, access and inspection chambers, oil interceptors e.) Testing procedures f.) Calculations: Pipe Gradients, Manholes quantities and buoyancy calculations.

(8) Construction Plant (15 hours lectures)

a.) Excavating and earth moving equipment b.) Transport vehicles c.) Concreting Plant d.) Compaction Equipment e.) Forklifts, Cranes and Hoists f.) Plant Selection g.) Calculations: excavation quantities and rates, concrete pour volumes and rates.

(9) Sketching of Construction Details

(a) Students will be required to submit sketches on a weekly basis. The sketches will illustrate a variety of civil engineering construction details and will require appropriate annotation. The assignments will include isometric and orthogonal sketches.

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	Various Projects	1,2,3,4,5,6,7,8,9,10	20.00	n/a
Project	Weekly Construction Detail Sketch Submissions	1,2,3,4,5,7,8	20.00	n/a

No Practical

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	Final Examination	1,2,3,4,5,6,7,8	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	3.00
Total Hours		210.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering - Ab Initio	1	Mandatory