

Module Title:	Construction Technology II
Language of Instruction:	English
Credits:	10
NFQ Level:	6
Module Delivered In	1 programme(s)
Teaching & Learning Strategies:	Lectures Projects Private study
Module Aim:	The aims of the subject are: 1. To provide an advanced study and understanding of the benefits and integration of sustainable building practices. 2. To provide an awareness and understanding of the functions and requirements for substructure, & foundations systems. 3. To create an understanding of superstructure and the performance requirements of framed buildings, external envelope & elements within the internal environment. 4. To provide an understanding of materials, properties, junctions and their interaction with modern construction techniques. 5. To provide an understanding of building site planning, organisation and safety and health. 6. To create an understanding of the role and function of practical's, projects and reports that utilise the data from sustainable practice, substructure, superstructure, materials and the operation of the building site.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	To describe and explain the benefits and integration of sustainable building practices.
LO2	To describe, explain, illustrate and apply an understanding of substructure, & foundations systems.
LO3	To describe, explain, illustrate and apply an understanding of superstructure and the performance requirements of framed buildings, external envelope & elements within the internal environment.
LO4	To describe, explain, illustrate and apply an understanding of materials, properties, junctions and their interaction with modern construction techniques.
LO5	To describe and explain the concepts of building site planning, organisation and safety and health.
LO6	To prepare and demonstrate understanding of the role and function of practical's, projects and reports that utilise the data from sustainable practice, substructure, superstructure, materials and the operation of the building site.
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) Industrial and Commercial Substructure

A. FOUNDATIONS 1. Isolated bases 2. Piled and raft foundations. 3. High thermal performance foundation systems i.e. passive house. 4. Underpinning, retaining walls. Basements 5. Insulation for foundations (20 hours lectures, 5 hours practicals)

2) Industrial and Commercial Superstructure

A. FRAME BUILDING SYSTEMS. 1. R.C. frame 2. steel frames, Portal frames 3. Timber frame. 4. Hybrid systems B. EXTERNAL ENVELOPE. 1. Walls I. Insulation. II. Waterproofing. III. In-situ and precast R.C. IV. Prefabricated external wall systems. Cassette systems. V. Rainscreen Facade systems VI. Curtain walling, glazed and double skin façade systems. VII. Green Walls. VIII. Prefabricated masonry panels. IX. Prefabricated timber panels X. Prefabricated R.C., GRC, GRP XI. Metal cladding XII. Stone, brick and concrete composite facings. 2. Roofs. I. R.C. slabs. II. R.C. Flat roof. III. Insulated metal roofing systems. IV. Timber flat roofs. V. Metal decking. VI. Green roofs. VII. Waterproofing. VIII. Insulation requirements. IX. Prefabricated roof systems. Cassette systems. 3. Windows & Doors I. Commercial window systems, Timber, Steel, Aluminium & Composite. II. Window fire ratings. III. Commercial door systems, Timber, Steel, Aluminium & Composite. C. INTERNAL ENVIRONMENT. 1. Floors I. Cast in situ R.C. slabs. II. Prefabricated R.C. slabs. III. Metal deck & R.C. slabs. IV. Raised floors / Service zones. V. Prefabricated flooring systems. VI. Floor finishes – non-slip rating etc., VII. Suspended ceilings. 2. Stairs I. R.C. Cast in situ. II. R.C. Prefabricated III. Timber stairs. IV. Metal stairs. 3. Walls I. Partition systems. 4. Joinery I. Internal doors. II. Internal glazed screens. D. FIRE RATING OF SUPERSTRUCTURE. Materials and Systems. (35 hours lectures, 10 hours practicals)

3) Industrial and Commercial External works

External Works a) External paving systems, types and finishes b) External access to the building level access and ramps. c) Understanding of Sustainable Urban Drainage systems. (10 hours lectures, 2 hours practicals)

4) Materials

a) Concrete and clay products/components b) Insulating materials c) Jointing compounds, movement joints. d) Adhesives. e) Membranes, DPC, DPM, Radon barrier, Breather membrane & Vapour Barrier f) Environmental & sustainability issues. (20 hours lectures, 5 hours practicals)

5) Building Sites

a) Temporary works. b) Demolition work. (10 hours lectures, 3 hours practicals)

6) Practical Work

Sample projects (a) Foundations and sub structure project. (b) External envelope roof and wall project.

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	CA Project 1 Foundations This project involves an analysis of 5 foundation systems. You should identify the following, 1. Explain the technicalities and procedures involved in the construction process. 2. Define the positives and negatives for each type. 3. Compare and contrast the 5 different types. 4. Consider the methods used and also health and safety. 5. Consider new methods of construction and the concept of sustainability in relation to foundation construction. 6. Consider the presentation of the work.	1,2,4,5,6	20.00	n/a
Project	Project 2 External Envelope Investigate the following. 1) Investigate the options for rain screen wall cladding systems. 2) Insulated cladding systems. 3) Prefabricated / cassette roofing systems. Consider steel frame and concrete frame situations. Also consider U value and thermal performance of the products. The external wall build ups will need to be designed in order to provide accurate U values. Choose a minimum of three products for each heading and analyse the advantages and disadvantages for each product. Consider Time, Cost and Quality. Explain why you have selected each product. A high quality presentation document is required.	1,3,4,5,6	20.00	Week 27

No Practical

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	Questions taken from learning outcomes 1, 2, 3, 4, 5 & 6	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

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	30 Weeks per Stage	2.33
Practicals	30 Weeks per Stage	1.67
Estimated Learner Hours	30 Weeks per Stage	3.00
Total Hours		210.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMBSE_D	Bachelor of Science in Construction Management with Buildings Services	3	Mandatory