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|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Title:</b>                       | Civil Engineering Economics and Management                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Credits:</b>                            | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>NFQ Level:</b>                          | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Module Delivered In</b>                 | <a href="#">2 programme(s)</a>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Teaching &amp; Learning Strategies:</b> | Lectures, Practicals, Projects, Independent Learning                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Module Aim:</b>                         | The aims of the module are: 1. to develop a knowledge of the measurement and economics of more advanced civil engineering work; 2. to teach measurement and estimating skills in relation to civil engineering work 3. to develop a knowledge of the principles and practice of project management; 4. to teach project management skills and the use of appropriate software 5. to develop an awareness and understanding of ethics and professional development. |

| Learning Outcomes                                                             |                                                                                                                                             |
|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <i>On successful completion of this module the learner should be able to:</i> |                                                                                                                                             |
| LO1                                                                           | Use standard methods for measurement and estimating of more advanced civil engineering work                                                 |
| LO2                                                                           | Apply basic project management techniques to the management of Scope, Time and Cost on projects;                                            |
| LO3                                                                           | Prepare a Health and Safety Risk Assessment for standard civil engineering work situations.                                                 |
| LO4                                                                           | Show an awareness and understanding of Ethics, Ethical decision making and professional development.                                        |
| LO5                                                                           | Demonstrate an understanding of the parties to a contract and the key issues with the standard forms of contracts used in civil engineering |

| Pre-requisite learning                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Module Recommendations</b><br><i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>         |
| No recommendations listed                                                                                                                          |
| <b>Incompatible Modules</b><br><i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i> |
| No incompatible modules listed                                                                                                                     |
| <b>Co-requisite Modules</b>                                                                                                                        |
| No Co-requisite modules listed                                                                                                                     |
| <b>Requirements</b><br><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

#### Measurement and Estimating Cost of Civil Engineering Work

(a) Measurement of Piling, Drainage, and Steel using current Civil Engineering Standard Method of Measurement for inclusion in tender documents. (b) Preparation of contractor's unit rates for civil engineering work for inclusion in pricing documents. (c) Understanding the role of measurement and estimating data during the construction period.

#### Project Management

(a) Characteristics of a Project (b) Project Mgt Triangle (c) Project Lifecycle, Highway Project, TII Project Phases (d) Project Procurement and Parties to Civil Engineering Contracts (i) DBB – Admeasurement, GCC (ii) D&B, DBO, PPP (e) Scope Management (f) WBS, Scheduling, Network Diagram, Gantt Charts, Use of Microsoft Project (g) Duration Estimating (h) Resource Management (i) Earned Value Analysis (j) Project Risk Management (k) HRM – Personality, Perception & Attribution, Motivation, Working in Teams

#### Ethics and Professional Development

(a) Moral Standards, Value Judgements, Ethical Principles (b) Engineers Ireland Code of Ethics (c) Law and Ethics (d) Resolving Ethical Dilemmas, Paradigm Cases

#### Safety Management

(a) Health & Safety at Work Act 2005 + Certain Regs (i) Duties of Employers (ii) Duties of Employees (iii) Safety Statement (iv) Role of HSA (v) H&S Risk Assessment and Method Statements (vi) Example of particular General Regulations (b) Safety, Health & Welfare at Work (Construction) Regulations (i) Client Duties (ii) PSDP (iii) Duties of Designers (iv) Prelim S&H Plan (v) PSCS (vi) Contractor Duties (vii) S&H Plan (viii) Safety File (ix) Examples of particular Construction Regulations

| 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         | Econ P1 Submission of Measurement Tasks 1 Econ P2 Submission of Measurement Task 2 Econ P3 Submission of Estimating Unit Rate Econ P4 Measurement Class Test                                                                                                                                                                                                  | 1                 | 14.00      | n/a             |
| Project         | Mgt P1 Report on a Highways Project based on ICE meeting presentation. Mgt P2 Network diagram & Gantt chart – by hand Mgt P3 Resource Levelling Mgt P4 WBS, Duration Estimates, Schedule using Excel and MS Project Mgt P5 Research on WBS for drainage pipe installation + Spreadsheet for Excavation Production Rate Mgt P6 Health & Safety Risk Assessment | 2,3,4,5           | 26.00      | n/a             |

No Practical

### End of Module Formal Examination

| Assessment Type | Assessment Description | Outcome addressed | % of total | Assessment Date |
|-----------------|------------------------|-------------------|------------|-----------------|
| Formal Exam     | n/a                    | 1,2,3,4,5         | 60.00      | End-of-Semester |

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

**Module Workload**

| <b>Workload: Full Time</b> |                  |                                        |
|----------------------------|------------------|----------------------------------------|
| <i>Workload Type</i>       | <i>Frequency</i> | <i>Average Weekly Learner Workload</i> |
| Lecture                    | Every Week       | 6.00                                   |
| Independent Learning       | Every Week       | 6.00                                   |
| Total Hours                |                  | 12.00                                  |

**Module Delivered In**

| Programme Code | Programme                                                              | Semester | Delivery  |
|----------------|------------------------------------------------------------------------|----------|-----------|
| CW_CMHCE_B     | <a href="#">Bachelor of Engineering (Honours) in Civil Engineering</a> | 3        | Mandatory |
| CW_CMCIV_D     | <a href="#">Bachelor of Engineering in Civil Engineering</a>           | 5        | Mandatory |