Module Description

1. Construction Practice & Decision Making [D39IQ]
2. Construction Technology 5 [D39TF]
3. Procurement and Contract [D39PZ]
4. Real Estate Development [D49RD]
5. Safety Management [D39SA]
6. Site Management and Project Supervision [D39MG]
7. Collaborative Project 2 [D39XB]
8. Collaborative Project 3 [D39XB]
# Module Description

**Module Title**: Construction Practice and Decision Making  
**School**: School of the Built Environment

**Module Co-ordinator**: Dr Ibrahim Motawa  
**SCQF Level**: 9  
**Module Code**: D39IQ  
**Semester**: 2  
**Credits**: 15

### 1. Pre-requisites
None

### 2. Linked Modules (specify if synoptic)
None

### 3. Excluded Modules
None

### 4. Replacement Module
- **Code**: D39IN  
- **Date Of Replacement**:  
- **Availability as an Elective**: No

### 5. Degrees for which this is a core module
- BSc (Hons) Construction Project Management, BSc (Hons) Quantity Surveying, BSc (Hons) Building Surveying, BSc (Hons) Facilities Management

### 7. Aims
- To introduce the concept of decision theory and models.
- To provide an insight into selected analytical methods to formulate solutions for decision problems.
- To enable students to develop skills in making decision in groups.
- To help students developing practical IT skills in solving decision making problems.

### 8. Syllabus
- Decision Theory/Models,
- System thinking, introduction to System Dynamics,
- Group Decision Making,
- Decision making under uncertainty,
- Decision analysis with multiple objectives,
- Operational research methods,
- Introduction to Multi-attributed utility theory,
- Advanced techniques for Decision Making in construction,
- Computer Aided Decision Making
### 9. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

#### Understanding, Knowledge and Cognitive Skills

On completion of the module, students will be able to:
- Identify the key issues for effective decision making
- Understand different methods and techniques to resolve decision problems in construction
- Appraise the functions of Information Systems to support decision making

#### Scholarship, Enquiry and Research (Research-Informed Learning)

On completion of the module, students will be able to:
- Analyse a decision problem with multiple objectives in construction
- Formulate a strategy to solve decision problem under uncertainty

#### Industrial, Commercial & Professional Practice

The learner will develop:
- Awareness of key issues in decision analysis using information systems
- Ability to solve decision problems with different analytical methods

#### Autonomy, Accountability & Working with Others

- Ability to solve decision problems by either relevant theoretical techniques or working with peers

#### Communication, Numeracy & ICT

- Demonstrate basic competence in using MS Excel for decision making

### 10. Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Duration of Exam (if applicable)</th>
<th>Weighting (%)</th>
<th>Synoptic modules?</th>
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### 11. Re-assessment Methods

- 

### 12. Date and Version

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Form 20

Heriot-Watt University - Module Descriptor Template (RAY)


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<td>School of the Built Environment</td>
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<td>On or Off-Campus</td>
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<tr>
<td>Module Co-ordinator</td>
<td>Dr Andrew W Brown</td>
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<td>SCQF Level</td>
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1. Pre-requisites: Construction Technology 3 & 4 (D38TC, D38TD)

2. Linked Modules (specify if synoptic): None

3. Excluded Modules: None

4. Replacement Module:
   - Code:
   - Date Of Replacement:

5. Availability as an Elective: Yes [ ] No [X]

6. Degrees for which this is a core module: BSc in Quantity Surveying; BSc Hons Building Surveying; BSc in Construction Project Management; BSc in Quantity Surveying (Building Services); BSc in Construction Management (Building Services).

7. Aims

The overall aim of this module is to develop and reinforce understanding of the advanced contemporary construction methods that are associated with the substructure, superstructure, cladding and roofing in medium to large scale commercial and industrial buildings. The goal is to enable students to rationalise the various technological options available for various areas of a particular building, fully evaluate them and then articulate solutions fully in reports and in professional design drawings.

The module also aims to provide insight to the current themes that are driving developments in construction technology. Specific aims are:-
- To identify and understand the range of advanced technologies that are available and appropriate for the construction of commercial and industrial buildings.
- To facilitate an understanding of the centrality of technological decision making in the context of the wider construction process; and
- To provide the necessary skills to allow the evaluation of a range of technologies towards the adoption of an appropriate design decision and to be able to communicate a chosen technical solution in a professional manner.

8. Syllabus

The Module will comprise 7 separate Units:-

- Unit 1 Superstructure: Increasing the height of framed structures.
- Unit 2 Foundations for Framed Buildings 2: (Foundations for Framed Buildings 1 delivered in Construction Technology 3 & 4, prerequisite to this module).
- Unit 3 Basement construction for Large Buildings.
- Unit 4 Long Span Roof Construction 2: (Long Span Roof Construction 1 delivered in Construction Technology 3 & 4, prerequisite to this module).
- Unit 5 Claddings for Commercial Buildings 2: (Claddings for Commercial Buildings 1 delivered in Construction Technology 3 & 4, prerequisite to this module).
- Unit 6 Double Skin Façade Construction.
- Unit 7 Roof Coverings for Commercial Buildings 2: (Roof Coverings for Commercial Buildings 1 delivered in Construction Technology 3 & 4, prerequisite to this module).
## Module Title
Construction Technology 5

## School
School of the Built Environment

## Module Co-ordinator
Dr Andrew W Brown

## SCQF Level
9

## Module Code
D39TF

## Semester
1

## Credits
15

### 9. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

**Subject Mastery**

**Understanding, Knowledge and Cognitive Skills**

Scholarship, Enquiry and Research (Research-Informed Learning)

On completion of these modules the student should have acquired the ability to:-

(i) Evaluate a range of available advanced technological solutions appropriate to commercial and industrial buildings based upon economic, performance, sustainability and lean criteria in line with the current construction industry needs.

(ii) Prepare professional design details and layout drawings that demonstrate designed solutions to specific, applied construction design problems.

(iii) Understand the implications of technological decisions upon the cost, construction and the performance of buildings both during construction and in-use.

**Personal Abilities**

**Industrial, Commercial & Professional Practice**

Autonomy, Accountability & Working with Others

Communication, Numeracy & ICT

The module coursework will be based on extensive tutorial work that requires students to:-

(i) Undertake significant personal (independent) research into construction materials and products using available SBE Resources. Students will have to evaluate relevance and applicability of potential solutions in relation to advanced building design scenario’s.

(ii) Meet tight submission deadlines throughout the Semester, forcing students to prioritise and manage available study time effectively.

### 10. Assessment Methods

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<tr>
<th>Method</th>
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<th>Synoptic modules?</th>
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Module Title: Procurement and Contracts

School: School of the Built Environment

On or Off-Campus: Both

Module Co-ordinator: Dr. Derek S. Thomson

SCQF Level: 9

Module Code: D39PZ

Semester: 2

Credits: 15

1. Pre-requisites: None.

2. Linked Modules (specify if synoptic): None.

3. Excluded Modules: None.

4. Replacement Module Code: None.

5. Availability as an Elective: Yes ☐ No ☑

6. Degrees for which this is a core module:
   - BSc in Building Surveying;
   - BSc in Quantity Surveying;
   - BSc in Quantity Surveying: (Building Services)
   - BSc in Facilities Management;
   - BSc in Construction Project Management;
   - BSc in Construction Management (Building Services)

7. Aims

To provide students with:
- an overview of the principles and methods of construction project procurement.
- an understanding of the principles of contract law and how they are reflected in the industry’s contracting practices
- a thorough understanding of key processes used to administer a contract during the post-contract stage of the project life cycle.
- an appreciation of the importance of appropriate standards of behaviour of the modern construction professional.

8. Syllabus

Construction project participants; Professional ethics; Traditional procurement; Principles of contract law; Contract administration: Starting and varying; Contract administration: Duration and certifying; Contract administration: Ending, subcontracting; and insurances; Contract administration: extensions of time; Contract administration: Claims for loss and expense; Non-traditional procurement routes.
## Module Title
Procurement and Contracts

## School
School of the Built Environment

## Module Co-ordinator
Dr. Derek S. Thomson

## SCQF Level
9

## Module Code
D39PZ

## Semester
2

## Credits
15

### 9. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

**Subject Mastery**

- **Understanding, Knowledge and Cognitive Skills**
  - Describe the features of procurement routes current in industry practice.
  - Understand how to determine the suitability of a procurement route to a given client’s characteristics and project requirements.
  - Understand key aspects of contract administration using a typical JCT05 standard form of contract.

- **Scholarship, Enquiry and Research (Research-Informed Learning)**
  - Self-directed research required to complete coursework.
  - Ability to research industry practice to identify trends and current issues in procurement practice.
  - Ability to research construction industry case law to provide evidence of principles in practice.

**Personal Abilities**

- **Industrial, Commercial & Professional Practice**
  - Recognition of the importance of professional ethics to ensuring the standing of the professional in society and meeting governing professional institutions’ expectations.
  - Ability to select an appropriate procurement route.
  - Ability to interpret and apply the conditions of a standard form of construction contract.

- **Autonomy, Accountability & Working with Others**
  - Ability to research and prepare coursework assignments working autonomously.

- **Communication, Numeracy & ICT**
  - Ability to express recommendations to a business audience clearly and concisely.

### 10. Assessment Methods

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<tr>
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### 11. Re-assessment Methods

- Exam (100%)
  - 2 hours

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## Module Title
Real Estate Development

## School
Built Environment

## Module Co-ordinator
Derek Kerr

## SCQF Level
9

## Module Code
D49RD

## Semester
1

## Credits
15

### 1. Pre-requisites
None

### 2. Linked Modules (specify if synoptic)
None

### 3. Excluded Modules
Real Estate Development and Finance – D49RE

### 4. Replacement Module Code:

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<tr>
<td>BSc Urban and Regional Planning with a Sandwich Year</td>
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<tr>
<td>BSc Quantity Surveying</td>
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<td>BSc Quantity Surveying (Building Services)</td>
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<tr>
<td>BSc Construction Project Management</td>
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<tr>
<td>BSc Facilities Management</td>
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### 5. Availability as an Elective
Yes [ ] No [x]

### 6. Degrees for which this is a core module

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<td>BSc Urban and Regional Planning with a Sandwich Year</td>
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</table>

### 7. Aims

**General**
To achieve an understanding of the structure and functioning of the contemporary real estate market and of the factors influencing the development decision.

**Specific**
- To achieve an understanding of different techniques of development appraisal and the ability to address particular development appraisal problems within a wider urban and planning context.
- To achieve an understanding of cash-flow generation over the real estate development period.
- To achieve an understanding of real estate development finance and the ability to construct appropriate financing packages.

### 8. Syllabus

The real estate market and the property development industry
The factors influencing the development decision
The techniques of development appraisal, including cash-flow methods, simple sensitivity analysis and the impact of planning agreements
The general form and content of real estate development finance
<table>
<thead>
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<th>Built Environment</th>
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<td>Derek Kerr</td>
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<td>D49RD</td>
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9. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

<table>
<thead>
<tr>
<th>Subject Mastery</th>
<th>Understanding, Knowledge and Cognitive Skills</th>
<th>Scholarship, Enquiry and Research (Research-Informed Learning)</th>
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<tbody>
<tr>
<td></td>
<td>• Understanding and knowledge of the structure and functioning of the real estate and relevant financial markets, of the economics of real estate development, and of the relationship between real estate development and the planning system.</td>
<td>• The ability to analyse the real estate market, research appropriate values for development variables and relate this to the planning framework. This will entail critical appraisal of market reports, cost information and planning policy documents.</td>
</tr>
<tr>
<td></td>
<td>• The ability to think through the logic of the development process and to inter-relate development variables.</td>
<td>• The ability to prepare a programme for a specific development project.</td>
</tr>
<tr>
<td></td>
<td>• Understanding of the nature of development costs and development finance and how this may impact on the development decision.</td>
<td>• The ability to prepare and defend a development proposal.</td>
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<tr>
<td></td>
<td>• The ability to use spreadsheets as a tool within the appraisal process.</td>
<td>• The ability to address specific development appraisal problems, including appropriate cost, financial and risk appraisals. This will add to the student’s ability to exercise initiative and their analytical and numerical skills.</td>
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<table>
<thead>
<tr>
<th>Personal Abilities</th>
<th>Industrial, Commercial &amp; Professional Practice</th>
<th>Autonomy, Accountability &amp; Working with Others</th>
<th>Communication, Numeracy &amp; ICT</th>
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<tbody>
<tr>
<td></td>
<td>• This will add to a student’s knowledge and understanding of professional practice, commercial awareness and ethical issues within the functioning of the real estate markets and the wider planning policy framework.</td>
<td>• The module will contribute towards encouraging independent and self-managed learning as well as working effectively within a group in addressing particular real estate problems.</td>
<td>• Development of effective communication though written and oral media.</td>
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<td>• Development of numeracy and ICT skills through the employment of valuation techniques and excel spreadsheets.</td>
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10. Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Duration of Exam (if applicable)</th>
<th>Weighting (%)</th>
<th>Synoptic modules?</th>
<th>Method</th>
<th>Duration of Exam (if applicable)</th>
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Module Title: Safety Management
School: School of the Built Environment

Module Co-ordinator: Dr Fiona Grant

SCQF Level: 9
Module Code: D39SA
Semester: 1
Credits: 15

1. Pre-requisites: None
2. Linked Modules: None
3. Excluded Modules: None
4. Replacement Module: Code: D39SA
   Date Of Replacement: 
5. Availability as an Elective: Yes

6. Degrees for which this is a core module:
   - BSc Construction Project Management
   - BSc Construction Management (Building Services)
   - BSc Quantity Surveying
   - BSc Quantity Surveying (Building Services)
   - BSc Building Surveying
   - BSc Facilities Management
   - MEng / BEng / BSc Architectural Engineering

7. Aims:
   To provide an understanding of:-
   - the health & safety problems associated with the construction industry
   - the safety law in the UK relevant to construction operations and the office environment
   - the theory and practice of safety management in the construction industry

8. Syllabus:
   - the safety problem - review of the major health and safety problems within the construction industry
   - construction safety law - the main laws that are applicable to the site situation
   - managing health and safety in construction
   - creating a safer construction site - training & site practice
   - Office safety – legislation and practice
   - The way ahead – new thoughts and government initiatives
## Module Title
Safety Management

## School
School of the Built Environment

## Module Co-ordinator
Dr Fiona Grant

## SCQF Level
9

## Module Code
D39SA

## Semester
1

## Credits
15

### 9. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

#### Subject Mastery
**Understanding, Knowledge and Cognitive Skills**
Scholarship, Enquiry and Research (Research-Informed Learning)

On completion of the module the student should be able to play an active and positive supportive role in promoting and managing safety in the construction situation.

#### Personal Abilities
**Industrial, Commercial & Professional Practice**
Autonomy, Accountability & Working with Others
Communication, Numeracy & ICT

Students should be able to demonstrate an understanding of the complexity, both in technical and managerial terms, of the construction process and show how the theory of safety can be applied.

### 10. Assessment Methods

<table>
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<th>Synoptic modules?</th>
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### 11. Re-assessment Methods

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Form 20
Heriot-Watt University - Module Descriptor Template (RAY)

Module Title: Site Management and Project Supervision
School: School of the Built Environment

Module Co-ordinator: Dr Fiona Grant
SCQF Level: 9
Module Code: D39MG
Semester: 2
Credits: 15

1. Pre-requisites: None
2. Linked Modules (specify if synoptic): None
3. Excluded Modules: None

4. Replacement Module: Code: None
   Date Of Replacement: None

5. Availability as an Elective: Yes [ ] No [✓]

6. Degrees for which this is a core module: BSc Construction Project Management, BSc Construction Management (Building Services)

7. Aims

   The aim of this module is to give an understanding of the factors involved in providing the temporary facilities on site, the detailed provision for access and the selection and management of plant and to provide an understanding of the processes of supervision of construction operations

8. Syllabus

   - Control theory related to cost, progress and quality.
   - Project managing bids and pretender planning
   - Key contract knowledge
   - Procedures for the control of information, labour, plant, materials and sub-contractors.
   - Short-term planning and programming, cost control systems, incentives, quality management (QA and TQM), purchasing procedures, materials management, work study, site safety.
   - Site establishment – layout, site procedures, organisation, approvals, initial works.
   - Temporary works – scaffolding, formwork, falsework, excavation support, road works.
   - Plant management – inc planned preventative maintenance, plant utilisation, selection safety.
   - Plant – hoists, transport, cranes, excavators, material handling.
### Module Title
Site Management and Project Supervision

### School
School of the Built Environment

### On or Off-Campus
Both

### Module Co-ordinator
Dr Fiona Grant

### SCQF Level
9

### Module Code
D39MG

### Semester
2

### Credits
15

### 9. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

#### Subject Mastery
- Understanding, Knowledge and Cognitive Skills
  - Scholarship, Enquiry and Research (Research-Informed Learning)
  - An understanding and knowledge of cost, progress and quality control.
  - An understanding and application of control and supervision of resources.
  - Preparation of resource schedules from CPM networks.
  - Analyse the requirement of specific sites and plan the action to set up the temporary facilities (inc temporary works).

#### Personal Abilities
- Industrial, Commercial & Professional Practice
  - Autonomy, Accountability & Working with Others
  - Communication, Numeracy & ICT
  - Analysis of technical data and the ability to systematically plan complex situations.
  - Use of Project Management computer software.
  - To understand technical information from various sources.
  - To communicate technical information.
  - Report writing.
  - Word processing (computer skills).

### 10. Assessment Methods

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<th>Method</th>
<th>Duration of Exam (if applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination</td>
<td>2 hours</td>
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### 12. Date and Version

<table>
<thead>
<tr>
<th>Date of Proposal</th>
<th>Date of Approval by School Committee</th>
<th>Date of Implementation</th>
<th>Version Number</th>
</tr>
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<tbody>
<tr>
<td>January 2008</td>
<td></td>
<td>September 2008</td>
<td>1.00</td>
</tr>
</tbody>
</table>
### 1. Pre-requisites
Collaborative Project 1 (D38XA)

### 2. Linked Modules (specify if synoptic)
None

### 3. Excluded Modules
None

### 4. Replacement Module
**Code:**

**Date Of Replacement:**

### 5. Availability as an Elective
Yes [ ] No [✓]

### 6. Degrees for which this is a core module
All courses in the Construction Management and Surveying Undergraduate Programme

### 7. Aims

The key aims of this module are:

To facilitate collaborative teamwork between students of the various construction professions (represented in the courses) towards the production of building specifications and design solutions, together with facilitating a better understanding of how the various topics studied within other course modules become integrated in the true construction environment.

To observe (and document) contemporary commercial building technologies as used in a selected European city (Linked to 3rd yr field trip) and apply these to a given building design scenario.

To enable students to work individually (on completion of teamwork) towards the production of complex construction details, costs, maintenance schedules and construction programmes, focused specifically on the cladding elements of commercial buildings.

### 8. Syllabus

No taught material in module.

Module is based upon the practical application of material presented in Construction Technology 5; Safety Management; Site Management and Project Supervision; Building Refurbishment and Maintenance; and, Measurement and Value Studies 2.
## Module Title
Collaborative Project 2 & 3

## School
School of the Built Environment

## Module Co-ordinator
Dr Andrew W Brown

## SCQF Level
9

## Module Code
D39XB

## Semester
1 & 2

## Credits
30

### 9. Learning Outcomes (HWU Core Skills: Employability and Professional Career Readiness)

<table>
<thead>
<tr>
<th>Subject Mastery</th>
<th>Understanding, Knowledge and Cognitive Skills</th>
<th>Scholarship, Enquiry and Research (Research-Informed Learning)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students completing the module should have:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• A developed understanding of the application of construction technology solutions to a given project scenario.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• The ability to work with other construction professionals towards the generation and production of a design solution.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• A detailed understanding of the interrelationships between the subjects studied in a variety of different course modules relating to Construction Technology 5; Safety Management; Site Management and Project Supervision; Building Refurbishment and Maintenance; and, Measurement and Value Studies 2.</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Personal Abilities</th>
<th>Industrial, Commercial &amp; Professional Practice</th>
<th>Autonomy, Accountability &amp; Working with Others</th>
<th>Communication, Numeracy &amp; ICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students completing the module will be able to:-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participate in and contribute to a professional group presentation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manage time efficiently towards the production of complex technical, cost, safety and management information.</td>
<td></td>
<td></td>
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</table>

### 10. Assessment Methods

<table>
<thead>
<tr>
<th>Method</th>
<th>Duration of Exam (if applicable)</th>
<th>Weighting (%)</th>
<th>Synoptic modules?</th>
<th>Method</th>
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<tbody>
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<td>Coursework</td>
<td>-</td>
<td>100%</td>
<td>No</td>
<td>Coursework</td>
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### 11. Re-assessment Methods

<table>
<thead>
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<th>Method</th>
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</thead>
<tbody>
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<td>Coursework</td>
<td>-</td>
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<td>23 January 2008</td>
<td>September 2008</td>
<td>1.00</td>
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