



National Unit Specification: general information

UNIT Modern Methods of Construction (SCQF level 6)

CODE F3JR 12

SUMMARY

This Unit is suitable for candidates who have limited experience of the construction industry and wish to gain knowledge in the field of technician, contracting or design. The Unit is designed to provide candidates with knowledge of modern methods of construction, and the materials, technologies and methodologies involved. Successful candidates will recognise the benefits of efficiency, quality, safety and sustainability arising from the use of modern methods of construction.

OUTCOMES

- 1 Describe the use of materials, methods and plant in modern methods of construction.
- 2 Explain how waste is generated by different methods of construction.
- 3 Explain the ways in which modern methods of construction can improve efficiency and sustainability in the construction industry.

RECOMMENDED ENTRY

Entry is at the discretion of the centre

CREDIT VALUE

1 credit at Higher (6 SCQF credit points at SCQF level 6*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Administrative Information

Superclass: TE

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National Unit Specification: general information (cont)

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CORE SKILLS

There is no automatic certification of Core Skills or Core Skill components in this Unit. Opportunities for developing aspects of Core Skills are highlighted in *Guidance on Learning and Teaching Approaches*.

National Unit Specification: statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

OUTCOME 1

Describe the use of materials, methods and plant in modern methods of construction.

Performance Criteria

- (a) Describe modern methods of construction.
- (b) Describe how materials are used in modern methods of construction.
- (c) Describe the use of plant used in modern methods of construction.

OUTCOME 2

Explain how waste is generated by different methods of construction.

Performance Criteria

- (a) Explain how waste is generated using modern methods of construction.
- (b) Explain how waste is generated using traditional build construction.

OUTCOME 3

Explain the ways in which modern methods of construction can improve efficiency and sustainability in the construction industry.

Performance Criteria

- (a) Describe the efficiencies resulting from modern methods of construction in housing sectors.
- (b) Describe the efficiencies resulting from modern methods of construction in non-housing sectors.
- (c) Explain the benefits and difficulties associated with sustainability in modern methods of construction.

EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence is required to demonstrate that the candidates have achieved all Outcomes and Performance Criteria.

Written and/or recorded oral evidence is required to demonstrate that the candidate has achieved this Unit to the standard specified in the Outcomes and Performance Criteria. In this Unit an appropriate instrument of assessment would be an assessment question paper. The evidence for this Unit should be obtained under controlled, supervised conditions. The assessment will be open-book and should last no more than two hours. Assessment activities might relate to site visits or appropriate case studies. Candidates should be permitted to take their notes and information gathered at site visits into assessment.

National Unit Specification: statement of standards (cont)

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Evidence from site visits can be used by the candidate in written answers to set short questions. Where site visits are not possible candidates can be presented with a construction case study with specific elements of modern methods of construction selected by the centre for the assessment. Evidence will be gathered at appropriate points throughout the delivery of the Unit. Assessments must be manageable and practicable for centres and candidates.

The Assessment Support Pack for this Unit provides appropriate sample assessment materials. Where centres wish to develop their own assessment materials they should refer to the Assessment Support Pack to ensure a comparable standard.

National Unit Specification: support notes

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This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit has been developed as an optional Unit in the National Certificate in Civil Engineering at SCQF level 6 and a mandatory Unit in the National Certificate in Built Environment at SCQF level 6 and can also be taken as a freestanding Unit.

The main categories of Modern Methods of Construction to be considered are:

- ◆ volumetric construction
- ◆ panellised systems
- ◆ hybrid Construction
- ◆ sub assemblies and components
- ◆ site-based methods of construction

The aim of this Unit is to provide candidates with an insight into the differences between domestic construction built using modern methods of construction and those built using more ‘traditional’ site-based techniques such as brick and block cavity construction.

Earlier manufactured systems are normally referred to as ‘non-traditional’.

The following should be covered:

- ◆ timber frames
- ◆ steel panels
- ◆ timber panels
- ◆ concrete panels
- ◆ structural insulated panels (SIPs)
- ◆ composite panels

According to the Environment Agency vast amounts of construction and demolition waste is developed in the country.

The three principal sources are earthworks and excavation, demolition and general construction. This results from both the design process and the construction.

The benefits are more than financial. Waste minimisation can lead to improvements in:

- ◆ reduced damage to critical components
- ◆ improved site appearance
- ◆ reduction in double handling
- ◆ improved site management
- ◆ reduction in time wasted

National Unit Specification: support notes (cont)

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Candidates could be referred to relevant strategy documents relating to sustainable construction which sets down themes relevant to the Scottish construction industry including design for minimum waste.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

Learning and teaching of this Unit would be amplified using site visits and case studies there are many research papers, and codes of practice which should be referred to such as the code of practice on sustainable building.

Where possible candidates should undertake a visit to a construction site where modern methods of construction are being utilised. Alternatively a visit to a prefabrication factory would be useful. Visits can be used by the candidates to record, sketch and photograph appropriate construction details, materials and waste, and use of plant.

There are active sites where internet access can provide regular updates on progress if actual site visits are not practicable. There are many prefabrication factories that can be used to highlight aspects of modern methods of construction. Following site visits, construction details can be highlighted and discussed in a classroom environment, and used as exemplars, and group sketching used to reinforce points.

The teaching approach should be related to the individual site visits, or case studies selected for use by centres. Each case study should be used to reinforce learning and teaching in relation to each Outcome. It is recommended that a minimum of one traditional build and three modern methods of construction should be covered in respect of materials, methods, plant and waste.

The selection of teaching approach will depend upon the selection and timing of site visits and case studies. At site visits and with case studies, candidates should be encouraged to sketch details and take photographic evidence and notes where permissible. Reinforcement should follow each visit with structured learning in the classroom where the study of individual learning Outcomes can be extracted from the 'holistic materials'.

Where possible candidates should be encouraged to access relevant industry websites.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

In this Unit candidates will be:

- ◆ issues which are affected by and impact on modern construction methods completing calculations to analyse building performance
- ◆ participating in site visits
- ◆ evaluating building performance

These offer opportunities to develop aspects of the Core Skills of:

- ◆ *Working with Others*
- ◆ *Communication*
- ◆ *Problem Solving*

National Unit Specification: support notes (cont)

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Candidates could be provided with opportunities to read critically a range of technical information to support their understanding of construction practices and to take notes as appropriate. During site visits tutors/lecturers could encourage candidates to communicate orally with a range of people, asking and responding to questions

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by information and communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

Assessment should be carried out at appropriate points throughout the Unit. Assessment of all Outcomes should not exceed two hours and should be supervised and open-book. Candidates should be permitted to take any notes and photograph take at site visits into the assessment.

An appropriate instrument of assessment would be a question paper consisting of short answer questions. It would be wholly appropriate to include sketches within the assessment although this would not be mandatory.

CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs (www.sqa.org.uk)*.