National Unit Specification: general information

UNIT Construction Materials: an Introduction (SCQF level 5)

CODE F3JB 11

SUMMARY

This Unit is designed to provide candidates with an introduction to construction materials commonly used in the construction industry. This Unit is suitable for candidates with no prior experience of construction materials. It gives candidates an introduction to the production processes for construction materials, together with an introduction to the properties of materials and their identification by physical inspection. The Unit will provide a good basis for further study in Civil Engineering and the Built Environment.

OUTCOMES

1 Identify materials that can be used in the construction industry.
2 Describe the production of construction materials.
3 Describe the properties of materials.

RECOMMENDED ENTRY

Entry is at the discretion of the centre.

CREDIT VALUE

1 credit at Intermediate 2 (6 SCQF credit points at SCQF level 5*).

**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

Publication date: April 2008

Source: Scottish Qualifications Authority

Version: 01

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

Identify materials that can be used in the construction industry.

Performance Criteria

(a) Construction materials are correctly identified by inspection.
(b) Construction materials are correctly selected for use in specific situations.

OUTCOME 2

Describe the production of construction materials.

Performance Criteria

(a) Production processes are correctly described.
(b) Sources of raw materials are correctly identified.
(c) Quality control procedures are correctly described.

OUTCOME 3

Describe the properties of materials.

Performance Criteria

(a) Mechanical properties of construction materials are correctly described.
(b) Physical properties of the construction materials are correctly described.

EVIDENCE REQUIREMENTS FOR THIS UNIT

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

Written and/or oral evidence is required to show that the candidate can correctly identify construction materials selected by the centre. Candidates should demonstrate their knowledge of materials by selecting the appropriate materials for a given task.

Candidates will also be required to demonstrate their knowledge and understanding of the production of material and their properties through an assessment paper.

Assessment will be closed-book supervised control conditions.

National Unit Specification: statement of standards (cont)

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1 Outcome 1: Candidates should correctly identify by inspection 10 construction materials from a range of 12 construction materials selected by the centre. Candidates should also correctly select a specific location/use for each material in construction project.
2 Outcome 2: Written and/or oral evidence of knowledge and understanding of the production processes and sustainability issues for six construction materials from a range of eight selected by the centre.
3 Outcome 3: Written and/or oral evidence of knowledge and understanding of four mechanical properties and four physical properties from a range of eight materials, including soils, selected by the centre.

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

The Unit has been developed as a mandatory Unit within the National Certificate in Civil Engineering and Built Environment at SCQF level 6 and can also be delivered as a freestanding Unit.

This Unit covers the manufacturing processes associated with a range of common materials used in construction; such as Portland cement, building lime, various materials used in bricks and blocks, concrete, aggregates, mortar, timber and timber products, glass, and plaster. Quality control procedures should be emphasised. Material properties should include: strength, durability, density, appearance, moisture movement; permeability and porosity, absorption; fire resistance; frost resistance, chemicals, thermal properties and acoustic properties. Identification by physical inspection of a range of common materials used in construction should be undertaken. Specific applications of the materials in construction should be identified.

Health and Safety and Sustainability are integral and key to Civil Engineering and Building and throughout the Unit emphasis will be placed where appropriate on the application of Health and Safety and Sustainability. Sustainability should include reference to criteria affecting sustainability and the impact of not implementing sustainability on the environment

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The Unit should be presented as a series of lectures and practical sessions designed to introduce the basic properties of materials, production or manufacturing processes, applications, test methods and specifications, and to identify the wide range of materials used in construction. It would be advantageous to have appropriate guest lectures and undertake appropriate visits to manufacturing facilities.

Outcomes should not be precluded from integration during teaching, learning and assessment. Site visits to examine the manufacture of materials would help candidates to acquire underpinning knowledge. Still or moving images of modern materials manufacture will be useful and these may be used for consolidation and to broaden candidates' knowledge of the range of materials available.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

Although skills in Communication are not formally assessed candidates could be encouraged to undertake background reading to support underpinning knowledge, exploring and evaluating information on production processes and sustainability issues. Written responses should be formally expressed, accurate and coherent. Formative work for the Unit could include visits and group discussion which could help to develop oral communication skills in a work related context.

National Unit Specification: support notes (cont)

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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)*.

Evidence will be gathered at appropriate points throughout the delivery of the Unit. Assessments must be manageable and practicable for centres and candidates.

Matching Exercise

In Outcome 1, candidates should be presented with samples of 12 common construction materials. Candidates should be asked to correctly identify 10 of the materials and correctly select the specific location for each material in a construction project.

Question paper

In Outcome 2 candidates may be asked to describe the production processes, raw materials used, sustainability issues, and quality control procedures for six materials from a choice of eight. Centres may decide which eight materials to present to the candidate in the assignment.

Question paper

In Outcome 3 candidates must describe four mechanical and four physical properties from a range of eight materials. Centres may decide which materials to present to the candidate in the assignment.

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)**.