

Knowledge of building methods and construction technology

Unit code: J/501/4971

QCF Level: 2

Credit value: 3

Guided learning hours: 30

Unit aim and purpose

This unit provides knowledge of building methods and construction technology, internal building work and storage of building materials.

Unit introduction

This unit consists of three learning outcomes.

The first learning outcome examines the different types of building structure, their stability, energy requirements, supporting foundations, and the completion of the external envelope of walls and roof structure.

The second learning outcome looks at the internal finishes that accompany the building structure that make it comfortable for the occupants to live and work within.

The third learning outcome starts to examine some of the processes of construction using materials, their storage, use, protection and administration.

Learning outcomes and assessment criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

Learning outcomes	Assessment criteria
1 Know the principles of building methods and construction technology	<p>1.1 describe a range of different types of building structures</p> <p>1.2 describe how different methods of construction used to build structures can impact on their energy efficiency levels</p> <p>1.3 describe why different building and construction methods require structural stability</p>

Learning outcomes	Assessment criteria
	<p>1.4 identify working drawings for a domestic dwelling and describe why they must be precise using keys and hatchings</p> <p>1.5 describe why it is important to set out foundations and walls accurately</p> <p>1.6 describe the correct methods of constructing concrete foundations</p> <p>1.7 describe the different types of floor construction and their flooring component parts</p> <p>1.8 describe the different types of materials used in external walling and the reasons for using them</p> <p>1.9 describe the different types of energy saving construction methods used in internal walling</p> <p>1.10 describe the different methods of applying decorative protective coatings to walls, floors, roof components and surfaces</p> <p>1.11 describe the importance of damp-proof membrane (DPM) and damp-proof course (DPC)</p> <p>1.12 describe the purpose of load-bearing and non-load-bearing internal walling</p> <p>1.13 describe the different types of roof structures and their roofing component parts</p> <p>1.14 describe why there is a requirement for felt and batten in a pitched roof</p>
<p>2 Know the principles of internal building work</p>	<p>2.1 describe a range of different types of materials used internally for the construction of domestic dwellings</p> <p>2.2 describe the key properties of timber, brick, blocks and insulation materials</p> <p>2.3 describe where a range of different materials are used in the construction of domestic dwellings</p>

Learning outcomes	Assessment criteria
	<p>2.4 describe the key characteristics of a range of materials used internally in a domestic dwelling</p> <p>2.5 describe the effects of water, frost and chemicals on a range of building materials</p> <p>2.6 describe the effects of heat and fire on masonry, concrete, timber and metal building components</p> <p>2.7 describe the different types of paint coverings used on internal surfaces and their advantages and disadvantages</p> <p>2.8 describe the reasons for treating a range of building materials with suitable chemicals</p> <p>2.9 describe the different methods used to rectify deterioration to masonry and concrete, timber and metal building materials</p>
3 Know about delivery and storage of building materials	<p>3.1 describe the importance of building material delivery times and stock rotation</p> <p>3.2 describe the different range of materials affected by stock rotation</p> <p>3.3 describe the potential effects of bad weather on a range of building materials</p> <p>3.4 describe different methods and equipment used to protect building materials correctly</p> <p>3.5 describe the correct process for checking deliveries of building materials to construction sites</p> <p>3.6 describe the different equipment used to transport a range of building materials safely</p>

Unit content

1 Know the principles of building methods and construction technology

Superstructure: traditional cavity walls; timber framed; solid wall; u-values of different structures; embedded energy levels; structural stability; floor wall junctions; roof wall junctions; wall thickness; drawn information; hatching patterns; keys; symbols

Substructures: importance of; setting out; accuracy; tolerances; foundation types; processes (excavation, support, concreting)

Floor construction: ground floor construction (DPM, DPC, hardcore base, blinding, insulation, concrete, floor finishes); timber floor construction (dwarf walls, DPC, bearers, floor joists, floor finishes)

Internal walls: load-bearing and non load bearing; timber stud partitions; solid block walling; lightweight block walling; metal stud partitions; energy saving construction methods; finishes

External walls: brickwork; rendered finishes on blockwork; cladding; reasons for use; other finishes

Roofing: structures; pitched; monopitch; flat; roof tiling; battens; felt; insulation; finishes

2 Know the principles of internal building work

Materials: concrete; steel; timber; brick; block; for insulation; plastic; glass; paint finishes; uses; location; function (fire resistance, heat transfer); treatments of materials

Properties: strength; characteristics; water resistance; frost resistance; chemical resistance

Deterioration: frost damage; freeze thaw; chemical corrosion; efflorescence; acid rain; rot (wet, dry); insect attack; rust

3 Know about delivery and storage of building materials

Stock: delivery times; long deliveries; off-loading facilities; stock rotation

Storage: protection required for vulnerable materials; packaging; palletising; bulk deliveries; silos; containers; storage racks; transporting; equipment

Processes: checking quantities; delivery notes; calling off; scheduling

Essential guidance for tutors

Delivery

This unit should be delivered so that it enables learners to develop their knowledge of sub- and superstructures of domestic buildings and their internal finishes.

Learners need to know:

- the principles of building methods and construction technology
- the principles of internal building work
- about delivery and storage of building materials.

Health, safety and welfare are paramount and must be strictly enforced through close supervision of all workshops and activity areas. Risk assessments must be undertaken before any practical activities take place.

Small-group discussions could be used to introduce the unit. This would give learners an opportunity to swap ideas and exchange their experiences of domestic construction. Tutors could record feedback from individual groups on a flipchart or whiteboard.

By engaging with employers and employees learners will gain more from their learning experience. It will also help demonstrate the unit's vocational relevance and currency and develop knowledge and understanding of domestic structures.

A site visit to a local house builder would give learners a valuable insight into the construction of a domestic property from the substructure right through to the finishes.

Guest speakers could deliver presentations to learners. For example, a builders merchant representative could give a presentation on materials handling. This could be supported with examples drawn from industry, perhaps in the form of a set of case studies.

Video/DVD training programmes can also be used.

The unit could be delivered through distance learning. The centre could organise occasional weekend events to ensure that learners have sufficient support to gain the required knowledge and understanding

Assessment

A variety of assessment methods can be used. Learners could produce written reports or give verbal presentations, supported by witness testimony. Alternatively, learners could produce logbooks or workbooks that they complete in the workplace or during visits to industry.

Assessment tasks and activities should enable learners to produce valid, sufficient and reliable evidence that relates directly to the assessment criteria. Centres are encouraged to emphasise the practical application of the assessment criteria.

Essential resources

Learners will need access to material suppliers' websites to identify the characteristics and properties of a range of construction materials.

A set of DVD's to illustrate the construction of a house from the foundations right through to the roof finishes would provide a valuable resource for learners.

Indicative resource materials

Textbooks

Marshall D and Worthing D – *The Construction of Houses* (Estates Gazette, 2006)
ISBN 9780728204867

Websites

<https://environment7.uwe.ac.uk/resources/constructionsample/Conweb/index.htm>
– University of West England Construction website

<http://www.tarmacbuildingproducts.co.uk> – a range of construction materials from this supplier