

CONSTRUCTION AND THE BUILT ENVIRONMENT

Unit 4: Create the built environment: health, safety and environmental influences



Construction and the Built Environment

Level 3 Unit 4: Create the built environment: health, safety and environmental influences

Sample scheme of work

This is an example of a possible scheme of work. You can use it as it is, or you can adapt it to meet your own delivery needs. You may wish to consider the provision of extra learning workshop time for those learners who need additional learning time.

This unit is assessed through an externally set and marked examination of duration two hours. This will be a written examination with nine questions. The total number of marks available for the test is 60. Precise guidance on the examination specification is available in the unit specification.

This unit also contains sections entitled 'Guidance for Delivery', 'Opportunities for applied learning' and 'What activities might be involved in this unit?' This scheme of work is designed to support the information therein.

Total GLH	60
Aim	<p>This topic provides learners with the opportunity to develop their knowledge of how the natural environment can be protected and maintained during construction. Learners will explore the health, safety and environmental factors that affect, and the technical and social issues associated with, the construction process. They will also investigate renewable energy sources.</p> <p>When they have achieved this unit learners will:</p> <ul style="list-style-type: none"> • know the legislation relating to health, safety and welfare and project planning in the construction of the built environment • know about the application of Construction Design and Management (CDM) Regulations during construction • be able to analyse the causes and consequences of accidents during the construction process, and recognise trends relating to them • understand environmental issues relating to construction, and potential ways of overcoming them.

<p>Notes</p>	<p>The scheme of work presented here uses a task-based approach to teaching and learning, with applied learning being the central theme. The assessment for this unit is, however, external, and the scheme of work takes this into account.</p> <p>Key for Functional Skills (FS)</p> <p>There are, at present, no Level 3 Functional Skills. Learners following the Advanced Diploma will need to achieve Level 2 Functional Skills, if they have not already achieved these prior to commencement of the Advanced Diploma.</p> <p>There are three Level 2 FS. These are broken down as follows:</p> <p>English: speaking and listening (S&L E); reading (Read E); writing (Write E); or E (all) for all three</p> <p>Mathematics: representing situations using mathematics (RS M); analysing and processing using mathematics (A&P M); interpreting and presenting results (I&P M); or M (all) for all three</p> <p>Information and Communication Technology: use ICT systems (Use ICT); find and select information (F&S ICT); develop, present and communicate information (DPC ICT); or ICT (all) for all three</p> <p>Guided Learning Hours</p> <p>There are 60 GLH associated with this unit. For the purposes of this scheme of work it is assumed that each session will be one hour long and that there will therefore be 60 sessions. Consortia are of course free to organise the time in any way that suits the needs of their learners and of the centres that comprise the consortium.</p> <p>Evidencing PLTS and FS</p> <p>PLTS are signposted against the assessment criteria throughout the unit, and can be evidenced from the learners' assessed work.</p> <p>Where FS are signposted it is because there are opportunities for the development of FS, rather than opportunities for evidencing achievement of FS from the formative assessments and carefully thought out teaching and learning strategies for the unit.</p>
---------------------	--

Session number	Topic	Suggested activities, assignments, assessments and resources	AC	PLTS	FS	GLH	Comments
1	Legislation relating to health, safety and welfare, and project planning in the construction of the built environment	<p>The first activity should involve the teacher identifying and describing the legislation used to control HSW and project planning. This must include HASAWA and the regulations indicated in assessment criteria 1a (ii to v).</p> <p>The second activity should involve independent learner analysis of how these statutory documents are used. Learners must learn to differentiate between on-site use and off-site use, and analyse the implications of non-compliance.</p> <p>The third activity should involve small group work, with each group researching a different topic. These topics should include some or all of the following: risk assessments, method statements, permits to work, safe systems of work, on-the-job training, induction programmes, good site management practice, signage, PPE and inspections. Each group should make a short presentation of their findings to the rest of the class. The teacher should collate these presentations into a handout for circulation to the whole class.</p> <p>The fourth activity should involve learners in directed analysis of risk assessments and COSHH assessments. This should be followed by learners producing their own risk assessments for specified tasks and using these to formulate appropriate method statements for use on site. This should include specification of appropriate PPE, and learners should be given an opportunity to select and wear the PPE and assess the advantages/disadvantages of each.</p>	AC1a–e	IE4 SM4	E (all) ICT (all)	29	<p>There are clear links between this unit and Level 3 Unit 5, and there are advantages in joint delivery, but teachers should note that the two units must be assessed separately.</p> <p>Learners will need access to the documentation used in the industry, both on- and off-site, including risk assessments, method statements and permits to work.</p> <p>Visits to manufacturers' premises, builders' merchants and construction sites will, as ever, support in-class learning, as will interviews with experienced construction personnel, and attendance at on-site health & safety inductions, tool-box talks and safety inspections.</p> <p>Useful resources include: www.hse.gov.uk</p>

Session number	Topic	Suggested activities, formative assessments and resources	AC	PLTS	FS	GLH	Comments
2	The application of Construction Design and Management Regulations during construction	<p>This topic area is about roles and responsibilities as defined under the CDM Regs 2007. The assessment must focus on this, but it will be necessary to define what is meant by 'notifiable' and 'non-notifiable' projects, and to identify the possibilities of criminal liability attached to non-compliance.</p> <p>The first activity should involve teacher-led sessions, supported wherever possible by external input, concerning the roles and responsibilities of clients, designers, Principal Contractors, sub-contractors and CDM co-ordinators, and the importance and use of the CDM 2007 Health and Safety File and the Construction Phase Plan.</p> <p>The second activity should involve a role-playing activity as described in the third paragraph of 'Opportunities for applied learning'. This should be based on an existing construction project or a scenario developed by the teacher. The terminology and content must be updated in line with CDM 2007. The learners should take on the roles of client, designer, Principal Contractor, sub-contractors and users with the teacher (or preferably someone with recent practical experience of applying the CDM Regs) taking the role of CDM co-ordinator.</p> <p>Useful resources include:</p> <p>www.hse.gov.uk/construction/cdm.htm</p> <p>www.nhs-procure21.gov.uk/news/downloads/20/cdm_1_.pdf</p>	AC2a	IE4 IE6	E (all) ICT (all)	6	<p>As is always the case with statutory regulations it is critical that the latest version is used. CDM 1994 was revoked long ago and the teacher must be sure to work from CDM 2007, and use the appropriate terminology.</p> <p>It is particularly important that there is some external input from a person who has acted as a CDM co-ordinator on a notifiable project. This person should explain the practical implications of CDM 2007 for construction projects.</p>

Session number	Topic	Suggested activities, formative assessments and resources	AC	PLTS	FS	GLH	Comments
3	Accidents in the construction of the built environment	<p>The first activity should involve teacher-led sessions used to identify and describe the common causes of accidents, including trips and falls, manual handling incidents, defective machinery, falling debris and other objects, electrical incidents, vehicle incidents, collapsing trenches and so on.</p> <p>The second activity should involve small group work with each group researching and analysing a different topic. These topics should include a comparison of accident statistics in the construction industry in the UK and other European countries, the consequences and costs of accidents, the human effects on individuals and their families, and the financial costs and knock-on effects for the company. Each group should make a small presentation to the rest of the class and their findings should be collated into a handout by the teacher, for circulation to all learners.</p> <p>The third activity should involve the learners in individually interpreting official accident statistics over the last ten years. These statistics should be broken down by type of accident, fatal or non-fatal outcome, occupation, age, gender, new or experienced worker and full-time, part-time or temporary worker. This should be followed by a teacher-led class discussion about identified trends, the implications of such trends and the uses to which such statistics can be put.</p> <p>Useful resources include:</p> <p>www.hse.gov.uk/statistics/industry/construction</p> <p>www.hse.gov.uk/statistics/riddoranalysis.htm</p>	AC3a, b	IE3 IE4	E (all) M (all) ICT (all)	9	<p>Construction remains a disproportionately dangerous industry where improvements in health and safety are urgently needed. These improvements require significant and permanent changes in attitudes and behaviour. One of the ways that the importance of health and safety can be clearly articulated to the industry is by collecting and publishing accident data. Analysis of this data is the most important tool used to inform future policies and practices.</p> <p>Learners will need access to a wide range of official accident statistics. These should be as up-to-date as possible and certainly no more than two years old.</p>

Session number	Topic	Suggested activities, formative assessments and resources	AC	PLTS	FS	GLH	Comments
4	Environmental issues relating to construction	<p>The first activity should involve a teacher-led introduction to the environmental issues associated with the supply chain, sustainable resources and modern methods of construction. This should be supported by external input from someone with experience of green technology and sustainable design. This should be followed by an analysis of the benefits of MMC and sustainability in terms of efficacy and relative cost.</p> <p>The second activity should involve the learners in the production of questions to be asked during any visits that are made, especially where issues associated with construction waste are a feature. The answers should form the basis of a class discussion sometime after the visit.</p> <p>The third activity should involve learners working in small groups. Each group should be given one construction material, all of which are specified for use in a local construction project or in a realistic scenario. They should 'track the materials back to source', ie from site to suppliers, from suppliers to manufacturers and from manufacturers to the raw materials. Their findings should be used to inform a teacher-led discussion on the benefits, in terms of sustainable construction, of locally sourcing materials, the complexity of embedded energy issues and the benefits of a life-cycle approach to sustainable construction.</p> <p>Useful resources include:</p> <p>www.sustainablehomes.co.uk/case_studies/brampton1.htm</p> <p>www.peabody.org.uk/media-centre/factsheets/bedzed.aspx</p>	AC4a, b	IE3 IE4 IE6	E (all) M (all) ICT (all)	12	<p>As ever, space should be made within the delivery period for visits. This should include visits to at least two of the following: recycling centres, wind farms, architectural salvage companies and waste management centres.</p> <p>Modern methods of construction are covered in greater detail in Level 3 Unit 5. There is benefit in integrating the delivery to link H&S and environmental issues with the management processes used in the development of the built environment, but centres must note that the two units are assessed separately, and in different ways.</p> <p>Costs and cost savings, should be calculated wherever possible, using accurate, up-to-date information, but the calculated costs need only be relative and approximate.</p>

Session number	Topic	Suggested activities, formative assessments and resources	AC	PLTS	FS	GLH	Comments
5	Mock assessment	<p>It is recommended that two hours are spent in undergoing a 'mock' examination. After the teacher has marked the papers, two further hours should be dedicated to the teacher going through the paper, giving the correct answers and explaining the logic behind the selection of the correct answers.</p> <p>An exemplar external assessment and mark scheme for this unit can be downloaded from: www.diplomainfo.org.uk/CBE-External-SAMs.asp</p>	All	-	-	4	It is important that teachers use the 'Examination specification' found in the unit specification to prepare their learners for the written examination. The examinations are set very precisely against this examination specification, and learners will benefit from knowing the broad areas to be examined and how the marks are distributed across the unit.