

Scheme of work

Guided learning hours (GLH): 30

Number of lessons: 30

Duration of lessons: 1 hour

This scheme of work is provided to help you make the most of your planning time. Customise it by adding your own activities/lesson ideas to the 'Activities' column.

Lesson	Unit content*	Activities	Links to other units
1	Unit introduction	<p>Teacher/tutor presentation: outline the nature of the learning aims and the external assessment.</p> <p>Teacher/tutor input: introduce learners to drawing conventions.</p> <p>Learner activity: practise drawing simple sketches showing elevations and sections.</p>	Unit 5: Construction Drawing Techniques (Topics A.1, B.1)
Learning aim A Understand the structural performance required for low-rise construction			
2	<p>Topic A.1 Performance requirements</p> <p>How buildings are designed and constructed, considering the following requirements:</p> <ul style="list-style-type: none"> ● strength ● stability ● fire resistance ● thermal insulation ● sound insulation ● weather resistance ● sustainability. 	<p>Teacher/tutor input: explain the:</p> <ul style="list-style-type: none"> ● performance requirements of a building ● characteristics, properties, location, features and applications ● elements and components ● sub-structure and superstructure. <p>Show learners examples of construction drawings so learners can see what 'sketches' look like. Explain drawing symbols.</p> <p>Learner activity: produce basic sketch (front elevation) of a simple low-rise structure and annotate sketch with labels to highlight the achievement of performance requirements.</p>	

Lesson	Unit content*	Activities	Links to other units
3	<p>Strength and stability</p> <ul style="list-style-type: none"> ● Buildings are designed to resist live, dead and dynamic loads. ● The testing of materials. ● Specifications for the quality of materials. ● The construction of cavity walls. ● Lateral and vertical restraint. ● Transfer of loads to foundations: roof to walls, floors to walls. 	<p>Teacher/tutor input: explain what is meant by live, dead and dynamic loads. Explain the testing of construction materials. Outline the specifications for the quality of materials. Explain the history of cavity walls (i.e. the rise in the use of cavity walls because of their advantages). Explain the uses of cavity walls and technical details, including lateral and vertical restraints and transfer of loads to foundations.</p> <p>Learner activity: sketch the spacing of wall ties, annotating their sketch to show the vertical and horizontal spacing of wall ties, as well as the requirements for wall ties at openings.</p>	Unit 3: Scientific and Mathematical Applications for Construction
4	<p>Fire resistance</p> <ul style="list-style-type: none"> ● Fire-resistant materials. ● Fire resistance techniques. 	<p>Teacher/tutor input: explain fire resistance testing and the importance of fire resistance. You could use videos of fire resistance testing available on an online video sharing website. Group discussion to explore the suitability of materials in a range of scenarios. For example straw bale versus concrete block construction in a densely populated area.</p> <p>Learner activity: sketch a plan of an area of school/college and identify on it the locations of fire doors, refuge areas, fire alarms, sprinklers, etc.</p>	
5	<p>Thermal insulation</p> <ul style="list-style-type: none"> ● The purpose of insulation, including the calculation of U-values. ● Types of insulation and the advantages of one over another. ● Types of thermally resistant materials. ● Location of insulation. 	<p>Teacher/tutor input: explain the thermal insulation of buildings. Group discussion to explore the purpose and types of insulation and their suitability in a range of scenarios. For example, retrofitting external wall insulation versus interior insulated cladding for a barn renovation.</p> <p>Learner activity: sketch and label a simple low-rise structure and indicate where materials with insulating properties could be located.</p>	Unit 3: Scientific and Mathematical Applications for Construction Unit 11: Sustainability in Construction (Topic B.1)

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6	<p>Sound insulation</p> <ul style="list-style-type: none"> • The purposes of sound insulation. • Types of sound insulation. • The location of sound insulation. • How sound insulation can be provided. 	<p>Teacher/tutor input: explain the principles of sound insulation in buildings.</p> <p>Group discussion to explore the purpose, types, location, provision and suitability of materials in a range of scenarios.</p> <p>Learner activity: sketch and label a simple low-rise structure, indicating where materials with sound insulating properties could be located. Provide a scenario for learners to work with – for example, multiple occupancy homes (i.e. flats) in the same building due to a conversion project.</p>	
7	<p>Weather resistance</p> <ul style="list-style-type: none"> • The purpose of weather resistance. • Types and selection of waterproof and impervious materials. • The location of weather-resistant materials. 	<p>Teacher/tutor input: explain what is meant by weather resistance.</p> <p>Group discussion to explore the suitability of materials in a range of scenarios (e.g. reinforced concrete in a hurricane shelter, damp-proof tanking for flood zones, etc.).</p> <p>Learner activity: sketch and label a simple low-rise structure, indicating where weather-resistant materials could be located.</p>	
8	<p>Sustainability</p> <ul style="list-style-type: none"> • Preserving resources for future generations and minimising the impact of construction activities on the natural environment. • The purpose of sustainability. • Methods of ensuring sustainability. • Sustainable materials. 	<p>Teacher/tutor input: explain the principles of sustainability in buildings.</p> <p>Group discussion to explore the suitability of different materials and methods in a range of scenarios. For example, grey water harvesting or solar panels for domestic use.</p> <p>Learner activity: sketch and label a simple low-rise structure, indicating where materials with sustainable properties could be located.</p>	Unit 11: Sustainability in Construction

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9	Topic A.2 Common structural forms for low-rise construction <ul style="list-style-type: none"> Traditional cavity wall construction. Cross-wall construction. Panel and cladding construction. Timber-framed construction. 	Teacher/tutor input: explain the following structural forms: <ul style="list-style-type: none"> traditional cavity wall construction cross-wall construction panel and cladding systems timber-framed construction. Provide images or drawings of the structural forms listed above for learners to copy and sketch. Learner activity: sketch and label the above structural forms, providing brief descriptions of materials, elements and components.	
10	Revision of Learning aim A		
Learning aim B: Explore how sub-structures are constructed			
11	Topic B.1 Preconstruction work <ul style="list-style-type: none"> Desk-based preconstruction. Planning the site (using a scaled site layout plan). 	Teacher/tutor input: explain the legal requirements of preconstruction. Give examples of construction health and safety plans, method statements, risk assessments and notifications to the Health and Safety Executive (HSE). Learner activity: complete a risk assessment. Teacher/tutor input: explain the requirements of the planning phase. Learner activity: produce a proportioned site layout sketch plan indicating site accommodation, welfare facilities, storage accommodation, compounds, temporary roads and hard standing, fixed plant, fire precaution measures.	

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12	<ul style="list-style-type: none"> • Planning the project. • Site-based preconstruction. • Demolition and clearance of existing structures. • Enabling work. • Site set-up. 	<p>Teacher/tutor input: explain what is meant by a 'programme of work'. Show learners examples of Gantt charts and explain how they work.</p> <p>Learner activity: in groups, learners discuss the prioritisation of the following preconstruction tasks:</p> <ul style="list-style-type: none"> • purchasing of resources • organising safety signs • statutory notices • road crossings • traffic management. 	Unit 4: Construction Processes and Operations (Topic A.2)
13	<p>Topic B.2 Sub-structure groundworks</p> <ul style="list-style-type: none"> • Hazards associated with groundworks. • The control of water. • Methods of earthwork support (including steel trench sheets, timbering, hydraulic trench supports and aluminium walling). 	<p>Teacher/tutor input: group discussion on the hazards associated with groundworks.</p> <p>Explain why the control of water is important and explain the difference between simple sump pumping and land drainage.</p> <p>Explain each of the different earthwork support methods.</p> <p>Learner activity: sketch the different types of earthwork support.</p>	Unit 4: Construction Processes and Operations (Topic A.1)
14	<ul style="list-style-type: none"> • The function and requirements of a foundation. • The different types of foundations and the terminology used. • Detailing foundations. 	<p>Teacher/tutor input: explain the different types of foundation. Focus on the selection of appropriate foundation types for a variety of ground conditions. Explain the advantages and disadvantages of each foundation type.</p> <p>Learner activity: sketch a simple low-rise building and indicate the transmission of loads through the foundations.</p> <p>Learner activity: sketch the different types of foundations:</p> <ul style="list-style-type: none"> • strip and deep strip • trench/mass fill • raft • short bored piles and ground beam. 	Unit 4: Construction Processes and Operations (Topic A.1)

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15	<ul style="list-style-type: none"> The design and construction of ground floors. Different types of ground floor and their advantages and disadvantages (including solid, suspended and beam and block). Materials used. Detailing. 	<p>Teacher/tutor input: explain how ground floors are detailed and describe the design and construction of ground floors, including the advantages and disadvantages of each floor type.</p> <p>Learner activity: sketch and label a solid floor. Learners should also practise sketching suspended and beam and block ground floors.</p>	
Learning aim C: Explore how superstructures are constructed			
16	<p>Topic C.1 Superstructures – walls</p> <ul style="list-style-type: none"> The functions of a wall. Understand how walls are detailed. Different types of construction and their advantages and disadvantages. Wall-tie spacing. Internal partitions (timber, metal stud, solid blockwork). 	<p>Teacher/tutor input: group discussion about the functions of a wall. Once the five functions have been listed, explain these functions.</p> <p>Learner activity: sketch and label a simple low-rise building, describing how the walls fulfil their functions.</p> <p>Teacher/tutor input: explain the terminology used when detailing superstructures (walls), showing examples of drawings. Explain how walls are detailed, including the advantages and disadvantages of different types of wall.</p> <p>Learner activity: sketch and label:</p> <ul style="list-style-type: none"> cavity masonry timber frame structural insulated panels (SIPs) wall-tie spacing internal partitions (timber, metal stud, solid blockwork). 	Unit 7: Exploring Brickwork and Blockwork Principles and Techniques (Topic A.2)
17	<ul style="list-style-type: none"> Types of wall finishes and their advantages and disadvantages, including rendered blockwork, facing brickwork and pointing (bucket handle/tooled, recessed, weathered, flush). 	<p>Teacher/tutor input: explain the types of the following wall finishes and their advantages and disadvantages:</p> <ul style="list-style-type: none"> rendered blockwork facing brickwork. <p>Learner activity: sketch wall panel, adding symbols to denote blockwork and brickwork. Sketch jointing/pointing profiles and state their advantages and disadvantages.</p>	

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18	<ul style="list-style-type: none"> ● Materials used in the construction of walls. 	<p>Teacher/tutor input: explain the materials used in the construction of walls, including:</p> <ul style="list-style-type: none"> ● thin joint masonry ● lightweight thermal blockwork ● the quality of facing bricks ● the types of mortar and their quality ● the part played by materials in maintaining structural integrity and load distribution. 	
19	<ul style="list-style-type: none"> ● Types of wall openings and their functions. ● The components of a wall opening and their functions. ● Detailing around wall openings, including the detailing of heads, thresholds, sills and jambs and wall-tie spacing. ● The functions of detailing. 	<p>Teacher/tutor input: provide images or drawings of wall opening components and detailing for learners to look at. Explain the creation and function of wall openings and the detailing around wall openings.</p> <p>Learner activity: sketch a section of a wall opening and explain the function of each component.</p> <p>Learner activity: sketch a section showing:</p> <ul style="list-style-type: none"> ● details of heads ● thresholds ● sills and jambs, including wall-tie spacing. <p>Learner activity: Describe how the functions of detailing contribute to prevention of:</p> <ul style="list-style-type: none"> ● damp transfer ● continuity of insulation ● maintaining structural integrity ● load distribution. 	

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20	Topic C.2: Superstructures – floors <ul style="list-style-type: none"> ● Functions of a floor. 	Learner activity: sketch a simple low-rise structure and write brief descriptions of how the detailing of floors provides: <ul style="list-style-type: none"> ● a level surface ● reduction of sound transmission ● transference of loads to walls ● accommodation of services. 	
21	<ul style="list-style-type: none"> ● Types of intermediate floor construction and their advantages and disadvantages. ● The materials used in floor construction. 	Teacher/tutor input: explain the terminology used in the detailing of superstructures (floors), using images of examples. Explain how types of intermediate floors are detailed and the advantages and disadvantages of each type, including: <ul style="list-style-type: none"> ● solid ● timber ● engineered timber. Learner activity: sketch and label typical arrangements for: <ul style="list-style-type: none"> ● a stress-graded timber joist floor ● a beam and block floor. 	
22	(Cont.) <ul style="list-style-type: none"> ● Types of intermediate floor construction and their advantages and disadvantages. ● The materials used in floor construction. 	Learner activity: sketch typical arrangements for floors using: <ul style="list-style-type: none"> ● eco-joists ● engineered timber joists ● precast concrete planks. 	
23	Types of floor finishes, including: <ul style="list-style-type: none"> ● screeded ● chipboard ● moisture-resistant chipboard ● tongue and groove softwood floorboards ● skirtings. 	Teacher/tutor input: group discussion about the different types of floor finish. Learner activity: sketch and label typical arrangements for the different types of floor finishes.	

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24	Components of a floor and their functions: <ul style="list-style-type: none"> ● supporting joists ● structure ● floor covering ● wall support ● skirtings. 	<p>Teacher/tutor input: provide learners with images or drawings of floor components.</p> <p>Learner activity: sketch an elevation view showing the components of a floor.</p> <p>Group discussion of the function of each component.</p>	
25	<p>Topic C.3 Superstructures – roofs</p> <ul style="list-style-type: none"> ● Types of roof, their maintenance and their advantages and disadvantages. ● The terminology used to label a roof detail. ● The functions of a roof. 	<p>Teacher/tutor input: explain the terminology used in detailing superstructures (roofs). Show learners examples of drawings and images of different kinds of roof.</p> <p>Explain how the different types of roofs are detailed, including their advantages and disadvantages.</p> <p>Learner activity: sketch and label the different types of roof.</p> <p>Teacher/tutor input: group discussion about the functions of a roof. Once you have collected all five functions of a roof, explain the functions.</p> <p>Learner activity: learners sketch and label a simple low-rise building, describing how the roof fulfils its functions.</p>	
26	<ul style="list-style-type: none"> ● The materials used in the construction of roofs. 	<p>Teacher/tutor input: provide learners with examples of drawings and images of different kinds of materials used in the construction of roofs, including:</p> <ul style="list-style-type: none"> ● trussed rafters ● traditional timber roof with purlins ● breather membrane ● tile felt, tile battens, roof tiles, bitumen felt. <p>Learner activity: sketch and label the above materials used in the construction of roofs.</p> <p>Teacher/tutor input: follow with Q&As to check learning.</p>	

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27	<ul style="list-style-type: none"> Types of roof finishes, according to each type of roof, and fixings of finishes. The stages involved in the application of the roof finishes. 	<p>Teacher/tutor input: explain the different types of roof finish employed for each type of roof and the way that these are fixed. Explain the stages involved in the application of the roof finishes. Group discussion on the advantages and disadvantages of each type of fixing.</p> <p>Learner activity: sketch and label a simple roof showing:</p> <ul style="list-style-type: none"> felt and tile battens with rain water goods and downpipes and a simple flat roof showing: three-layer felt construction with rain water goods and downpipes. 	
28	<ul style="list-style-type: none"> The components of a roof and their functions. 	<p>Teacher/tutor input: explain the components of roofs. Explain the function of each component.</p> <p>Learner activity: sketch a typical roof and label the components.</p>	
29	<ul style="list-style-type: none"> Revision of Learning aims B and C and contingency for outstanding work 	<p>Teacher/tutor input: supervise filing of sketches, etc., and support revision with Q&As.</p> <p>Learner activity: revise Learning aims B and C and complete outstanding work.</p>	
30	<ul style="list-style-type: none"> Revision of entire unit. 	Collation of learner work and course materials to aid revision of unit in preparation for assessment.	
TOTAL: 30 hours			

*See the specification for full details of unit content.