Unit 111: Roofing occupations

# Sample scheme of work

This sample scheme of work covers both classroom and workshop-based learning for Unit 111. It is based on approximately 3 hours per session for 46 sessions. It is an example only of a possible scheme of work, and is based on theory and practical within an FE centre, but can be amended to suit all learning facilities with the necessary adjustments to meet individual learners’ needs.

**You can use the sample scheme of work as it is, adjust it or extract content to create a scheme of work to suit your delivery needs. It can also be adjusted by adding theory and practical workshops to support learners who have/need additional learning time.**

Centres should also incorporate the following themes, where appropriate, as strands running through each of the sections within the qualification. Although they are not specifically referred to in the section content section, City & Guilds regards these as essential in the teaching of the qualification:

* health and safety considerations, in particular the need to impress upon learners the fact that they must preserve the health and safety of others as well as themselves
* Essential Skills (Application of Number, Communication, Digital Literacy and Employability)
* extension tasks and differentiation, inclusion, entitlement and equality issues
* spiritual, moral, social and cultural issues
* environmental education and related European issues
* British Values
* use of information learning technology (ILT).

Unit 111: Roofing occupations

# Sample scheme of work

**Course/qualification:** Foundation in Construction and Building Services Engineering **Tutor’s name:** Enter the tutor’s name here

**Number of sessions**:46 **Delivery hours**: 140 **Venue**:Enter the venue here **Group**: Enter the group here

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| **Learning outcomes**   1. Know the underlying principles used in roofing occupations 2. Know the requirements to install slating and tiling tasks 3. Install roof coverings 4. Understand performance criteria and methods of evaluating performance |

| Session | Objectives/learning outcomes **The learner will:** | Activities and resources | Skills check |
| --- | --- | --- | --- |
| Session 1 | 1. **Install roof coverings**   3.1 Ensure a safe working environment. | Activities:   * Ice breakers to establish group. * Learners introduced to the unit. * Workshop tour. * Emergency procedures and policies. * Rules and regulations. * Access equipment and PPE. * Pair discussion: what is water suppression and RPE? Should either or both be used? Why? Is it only the person cutting who needs to wear RPE?   Resources:   * Induction checklist * **PowerPoint 1: Safe working** * **Worksheet 1: Hazards** * **Worksheet 2: Safe working recap** * Tutor to have dust masks for the learners to try on * [disc cutting roof tile cutting - nfrc.pdf (citb.co.uk)](https://www.citb.co.uk/documents/topics/health-safety/hs%20cdp%20control%20resources/disc%20cutting%20roof%20tile%20cutting%20-%20nfrc.pdf) | Direct and open questions to check learner understanding of the unit.  **Worksheets 1 and 2** |
| Session 2 | 1. **Know the requirements to install slating and tiling tasks**   2.2 Safety requirements for working at height | Activities:   * Discuss the safe use of basic working platforms and access equipment. * Discuss the differences between collective and personal protection. * Explain good practice methods in the use of working platforms and access equipment. * Discuss the dangers of working at height when using basic working platforms and access equipment. * Group discussion: how can taking on new employees create additional hazards? * Activity: in groups explain how rain, wind, heat and snow can affect your role in construction. * In groups, design a poster outlining ladder safety. Ideas to include: * safe working practices * dos and don’ts * diagrams/pictures * slogans * rules * advice. * Practical activity: erect a ladder as directed by tutor.   Resources:   * **PowerPoint 2: Working at height** * [Work at height - Occupational health and safety (hse.gov.uk)](https://www.hse.gov.uk/work-at-height/index.htm) | Classroom discussions  Peer assessment |
| Session 3 | 1. **Know the underlying principles used in roofing occupations**   1.1 Types of tiling and natural slating   1. **Know the requirements to install slating and tiling task**   2.3 The roof structure | Activities:   * Ask learners if anyone can name a type of tiling. * Look at different types of tiles and discuss the differences between them. * Introduce the main responsibilities of a slater and tiler. * Learners to draw a diagram of a basic roof to show where each component goes.   Resources:   * **PowerPoint 3 Roof structure** * **Worksheet 3: Roof structure** * Examples of single-lap, double-lap and slate tiles | Classroom discussions  **Worksheet 3**  Peer assessment |
| Session 4 | 1. **Know the underlying principles used in roofing occupations**   1.1 Types of tiling and natural slating  1.2 The tools and equipment used   1. **Know the requirements to install slating and tiling tasks**   2.1 Understanding the role of a slater and tiler | Activities:   * Discuss how to position and fix single-lap roof coverings to eaves. * Describe how to measure single-lap roof coverings to position eaves batten. * Explain the minimum overhang required for single-lap roof coverings at the eaves. * Describe the relationship between the roof pitch and the overhang. * State appropriate fixings for the eaves course. * Discussion: is it more effective to use damaged or broken tiles for the under-eaves; why?   Resources:   * **PowerPoint 4: Single-lap roof coverings** * **Worksheet 4: Single lap tiles** | Classroom discussions  **Worksheet 4**  Peer assessment |
| Session 5 | 1. **Know the underlying principles used in roofing occupations**   1.1 Types of tiling and natural slating  1.2 The tools and equipment used   1. **Know the requirements to install slating and tiling tasks**   2.1 Understanding the role of a slater and tiler | **Activities:**   * Discuss how to position and fix plain tiles. * Explain the formula used to calculate batten gauge for plain tiling, including establishing first course and eaves batten position. * Describe the formation of eaves for receiving valley and hip finishes. * Describe the installation of abutment and verge eaves and first course tiles. * Group discussion: what are the nailing requirements for eaves and first course plain tiles according to BS 5534? Why is it important to follow these guidelines? * Group activity: installation of the first and eaves course of plain tiles at the verge and abutments. Split into two groups, one doing verges and one doing abutments. Draw a diagram with labels showing: * how the eaves and first course tiles are positioned * how the batten is positioned * how the tiles will be fixed * what size tiles will be used. * Present to the other group with explanations.   Resources:   * **PowerPoint 5: Double-lap roof coverings** * **Worksheet 5: First fix** * **Worksheet 6: Double lap tiles** | Classroom discussions  **Worksheets 5 and 6**  Peer assessment |
| **Session 6** | 1. **Know the underlying principles used in roofing occupations**   1.1 Types of tiling and natural slating  1.2 The tools and equipment used   1. **Know the requirements to install slating and tiling tasks**   2.1 Understanding the role of a slater and tiler | Activities:   * There are certain tools specifically designed to use with slate. Can anyone name any? * State the method used to calculate gauge for natural slating including eaves and first course batten position. * Describe the hole position for natural slate eaves. * Describe the characteristics of eaves formation in relation to the slate. * Describe the grading and sorting process when fixing natural slates.   Resources:   * Examples of different grades of slates to handle. * **PowerPoint 6: Natural roof slates** * **Worksheet 7: Natural slate** | Classroom discussions  **Worksheet 7**  Peer assessment |
| **Session 7** | 1. **Install roof coverings**   3.2 Prepare backgrounds | Activities:   * Introduce installing eaves ventilation systems and fire-stops. * Group discussion: what materials are used to help prevent the spread of fire when installing roofs? Where do the fire-stop materials go? * Pair activity: give two reasons why eaves ventilation is important and discuss as a group. * Describe the reason for adjusting fascia board heights to eaves for ventilation systems. * Describe the differences between warm roofs and cold roofs. * Group discussion: what are felt supports and air control components? Where would they be located? Why are they used? What could happen if they were not? Feedback to the rest of the group   Resources:   * Examples of fire-stop materials for the group to handle and discuss. * A fascia board to use as a visual aid when explaining heights etc. * Examples of felt supports and airflow components to encourage discussion/questions. * **PowerPoint 7: Installing roofing backgrounds and ancillary components** * **Worksheet 8: Backgrounds** | Classroom discussions  **Worksheet 8**  Peer assessment |
| **Session 8** | 1. **Know the requirements to install slating and tiling tasks**   2.4 Fixing requirements for battens, slate and tiles   1. **Install roof coverings**   3.2 Prepare backgrounds.  3.3 Install underlay, measure and mark gauge and strike horizontal lines. | Activities:   * Discuss how to set out underlays, battens and counter-battens to gauge and minimum laps. * Group discussion: what different types of underlay are used in pitched roofs? * Discuss the underlay formations to abutments and openings. * Discuss the different types of underlay used in pitched roofs and vertical cladding. * Describe upstands and laps taping/sealing requirements in accordance with recommendations. * Discuss when counter battens should be used. * Describe the different timber types and sizes of batten used to install tiles and slates in accordance with recommendations. * In groups discuss how to set out, cut and nail battens: * in general formation * at hips and valleys * at verges * fixing to masonry.     Resources:   * Cut offs/examples of underlay types for discussion. * Examples of sealants/tapes for discussion and use diagrams to show minimum requirements. * **PowerPoint 7: Install roofing backgrounds and ancillary components** * **Worksheet 9: Backgrounds multi-choice questions** | Classroom discussions  **Worksheet 9**  Peer assessment |
| **Session 9** | **3. Install roof coverings**  3.6 Fit dry fix verge and ridge systems | Activities:   * Requirement of additional fixings: in groups, discuss why you must have additional fixings when installing ridge tiles. What could they be? Feedback and look at some examples. * Group activity: name two pros and two cons of dry verges compared to bedded verges. * Different types of dry fix ridge systems: in two groups, each discuss a different type of dry fix system (vented or non-ventilated). Prepare a five-minute presentation to outline the system, its uses and its benefits. Present to the rest of the group, making sure all the team are involved. * Discuss how to prepare undercloak and bedding to verges and install dry verge systems. * Describe the overhang requirements for different types of tile and slate verge formations when using bedding materials. * Describe the required materials for mixing mortars. * List the different types of ancillary components required to secure tiles and slates to bedded verges in accordance with recommendations. * Describe different finishes used to form a dry verge in tiles and slates. * List the different components required to form dry verges in tiles and slates. * Discuss how to install wet bedded and dry ventilated ridge components to receive tiles and slates. * Describe ancillary components used to strengthen mortar joints and edges when wet bedding ridge tiles. * Explain the reason for using additional fixings to ridge ends and junctions in accordance with recommendations. * Describe the air flow requirements at ridge level for pitched roof formations. * List the component requirements to form dry ridge and dry ventilated ridge finish in tiles and slates. * Group discussion: what is a bargeboard? What does it protect?   Resources:   * **PowerPoint 8: Dry fix** * Examples of ridge ends to discuss and handle. | Classroom discussions  Peer assessment |
| Session 10 | 1. **Install roof coverings**   3.5 Cover the roof with slates or tiles using correct fixing methods. | Activities:   * Discuss how to install full and cut single-lap roof coverings to abutments and openings. * Describe the requirements for cuts at abutments for single-lap roof coverings. * Group discussion: what is a perpendicular line and when would it be used on a roof? How are these lines made? * Explain the importance of keeping to perpendicular lines. * Installation sequence of plain tiles to abutments team activity – split into two teams. Against the clock put the items in the correct order of installation of plain tiles and abutments. Discuss what you would require first. Make sure all the team agrees with your final sequence. Discuss sequence as a group. * Working in two teams – Team Bonnet and Team Arris – learners should put together a description of the installation process for their tile to present to the other group. Learners can use a flow chart, diagrams, step by step process, card templates and a demonstration etc. Have a look at each of the tiles to help.   Resources:   * **PowerPoint 9: Install single-lap roof coverings** * Examples of bonnet and arris hip tiles for each group. | Classroom discussions  Peer assessment |
| Session 11 | 1. **Install roof coverings**   3.5 Cover the roof with slates or tiles using correct fixing methods  3.6 Fit dry fix verge and ridge systems | * Discuss how to install single-lap roof coverings to verges. * List the different types of dry verge systems available for single-lap roof coverings. * Describe the appropriate setting out procedure for wet fix and dry fixed verge systems. * Describe the appropriate fixings for securing cloaked verge tiles. * Discuss how to install and secure ridge tiles to single-lap roof coverings. * Describe the setting out process for single-lap roof coverings to the ridge line. * Describe the mortar formation to ridge for wet bedding and the requirement of additional fixings to wet bedding ridges. * Describe the different types of dry fix ridge systems. * Describe the installation process for dry fix ridge systems. * Describe the various methods of finishing ends to ridge. * Discuss the different types of verge bedded systems. What is the difference between them? What are the benefits and drawbacks? * Discuss how fixings help strengthen the ridge. * Bedding process for angle ridges: Learners to put together a simple process outlining how to bed an angle ridge tile. Feedback the process to the group.   Resources:   * **PowerPoint 9: Install single-lap roof coverings** * **Worksheet 10: Single lap multi-choice questions** * Examples of components for the group. * Examples of dentil slips/security fixings. * [How To Install Slate Continuous Dry Verge | European Plastics](https://www.europeanplastics.co.uk/fitting-instructions-for-slate) * [Roofing\_brochure\_webJuly14.pdf (welshslate.com)](http://www.welshslate.com/wp-content/uploads/2013/07/Roofing_brochure_webJuly14.pdf) | Classroom discussions  **Worksheet 10**  Peer assessment |
| Session 12 | 1. **Install roof coverings**   3.5 Cover the roof with slates or tiles using correct fixing methods | Activities:   * Discuss how to install full and cut plain tiles to abutments, openings and verges. * Describe the installation sequence of plain tiles and abutments. * Describe the different types of weathering units for use at openings. * Explain the types of verge bedded systems used for plain tiles. * Describe the different methods for forming a plain tile verge. * Discuss how to cut and secure plain tiles to hip finishes. * Describe the batten requirements used to receive hip tiles. * Explain the fixings used to secure hip tiles. * Describe the installation process for hip tiles and explain how bedded hip ridge tiles are secured to plain tiles.   Resources:   * **PowerPoint 10: Install double-lap roof coverings** * [Hip details with plain clay roof tiles (dreadnought-tiles.co.uk)](https://www.dreadnought-tiles.co.uk/Hips) | Classroom discussions  Peer assessment |
| Session 13 | 1. **Install roof coverings**   3.6 Fit dry fix verge and ridge systems | Activities:   * Discuss how to install and secure ridge tiles to plain tiles. * Describe the top edge batten position for clay and concrete plain tiles. * Explain the requirements for securing top edge eaves and the systems used. * Describe the appropriate mortar mix and methods to receive ridge tiles. * Describe the air-flow requirements for top edge dry ventilated ridge systems.   Resources:   * **PowerPoint 10: Install double-lap roof coverings** * **Worksheet 11: Double lap multi-choice questions** | Classroom discussions  **Worksheet 11**  Peer assessment |
| Session 14 | 1. **Install roof coverings**   3.5 Cover the roof with slates or tiles using correct fixing methods. | Activities:   * Discuss how to install full and cut natural slates to abutments and opening. * Describe the installation sequence for natural slates and abutments. * Describe the different types of weathering units used at openings. * Explain the importance of nailing pattern and slate width. * Discuss how to install and secure ridge tiles to natural slates. * Explain the top edge batten requirements for natural slates. * Describe the requirements for preventing uplift of the top slate. * Describe the bedding process for angle ridges.   Resources:   * **PowerPoint 11: Install regular-sized natural slate** * **Worksheet 12: Slate multi-choice questions** | Classroom discussions  **Worksheet 12**  Peer assessment |
| 15–47  Remaining sessions (98 hours) | 1. **Install roof coverings**   3.1 Ensure a safe working environment.  3.2 Prepare backgrounds  3.3 Install underlay, measure and mark gauge and strike horizontal lines  3.4 Calculate correctly  3.5 Cover the roof with slates or tiles using correct fixing methods  3.6 Fit dry fix verge and ridge systems  3.7 Evaluation and performance analysis   1. **Understand performance criteria and methods of evaluating performance**   4.1 Evaluation against set standards  4.2 Performance analysis | Workshop activities:   * Use appropriate methods for assessing the suitability of the sub-structure for roofing and re-roofing. * Select and use the correct personal protective equipment (PPE) required for installing roof coverings, roofing backgrounds and components. * Select and use the appropriate resources and materials required for installing roof coverings, roofing backgrounds and components. * Use the correct methods to mix mortars. * Safely use the access equipment required for the work, following associated legislation. * Protect the work and its surrounding area from damage in accordance with the given specification.   Resources:   * **Worksheet 13: Install roofing backgrounds and components** * **Worksheet 14: Install plain tiles** * **Worksheet 15: Install interlocking tiles** * **Worksheet 16: Install natural slates** * **Worksheet 17: Reflection** | Monitoring of ability and evaluation of practical work  Discussing the methods and techniques used to establish the learners’ depth of understanding.  **Worksheets 13 to 17** |