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ROTES
ENHANCING THE RELEVANCE OF
VOCATIONAL TRAINING FOR ROOFERS

FORMEDIL
ENTE UNICO FORMAZIONE E SICUREZZA

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List of Acronyms

Acronym	Meaning
ECVET	European credit system for vocational education and training
EQF	European Qualifications Framework
EU	European Union
KSC	Knowledge – Skill - Competence
MCQ	Multiple Choice Question
Q&A	Questions And Answers
WBL	Work-Based Learning
VET	Vocational Education and Training
WBL	Work-Based Learning
C-VET	Continuing vocational education and training
Q&A	Questions and Answers
MCQs	Multiple-choice questions

Executive Summary

This document is framed within the ROTES project, in Work Package 2 "Rotes Curriculum Outline & Educational Resources", as part of the activity A2.2 Design of the curriculum structure and learning outcomes assessment framework.

ROTES is a European project, financed within the framework of the ERASMUS+ programme, which aims to develop, implement and propose a common curriculum, a qualification framework and a certification scheme at European level, for the training and updating of skills of roof technicians to address the evolving labour market needs resulting from the rapid greening & digitisation of the roofing sector.

This document refers to the second step of the project A2.2 Design of the curriculum structure and learning outcomes assessment framework, whose objectives are to present the definition of the training and qualification/certification scheme requirements based on the learning outcomes defined, in line with the European Qualifications Framework (EQF) provisions, to adopt and adapt (nationally) for training and qualification of the different types of professionals targeted, including areas of knowledge, number of hours, trainers and trainee profiles, prequalification required, amongst other relevant criteria. The identified scheme's requirements will form the background for the development of the appropriate training courses for the new proposed by ROTES specialties, as well of the corresponding supporting materials and tools.

With respect to the specific objective of creating the basis for the qualification framework setup, and each short- to long-term learning objective, the training and qualification schemes for the targeted professionals will need to include the identification of the KSC (knowledge, skills, competences) approach. Based on the EQF definitions, the areas of knowledge, skills and competences may be identified as follows:

1. **Knowledge** - the necessary facts, concepts, theories and methodologies for the learning and understanding of the professional activities. In the context of the EQF, knowledge is described as "theoretical and/or factual";

2. **Skills** - both general and specific tasks, routine and non-routine problems, simple to complex instructions, amongst other relevant criteria, i.e., the required skills for task accomplishment and comprehensive completion. In the context of EQF, skills are described "as cognitive (involving the use of logical, intuitive and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments)";

3. **Competences** - evidenced ability to express and communicate with peers or people from different hierarchy levels within an organisation, together with planning and preparation abilities, amongst other relevant criteria, i.e., the relevant professional and social competences required for individual work or in a team. In the context of the EQF, competences are described as "the ability of the learner to apply knowledge and skills autonomously and with responsibility".

Based on the professional profile in terms of the required activities and assuming the KSC approach, ROTES training courses of 120 are foreseen for the qualifications. The ROTES competence program framework may be defined in terms of the professional competences, together with:

1. **Modules**, corresponding to the areas of competences defined for the profile;
2. **Training units,** corresponding to the learning outcomes, with reference to the duration defined for each training unit (number of hours);
3. **KSC**, to each area of competence, following a more detailed description of the necessary 1) standards, basics and fundaments, 2) tasks accomplishment and 3) soft skills, which are the required for the trainee to accomplish for successful completion of each training unit;
4. **Training and evaluation method**, the contents, description, expected delivery and assessment quality requirements for objective attesting of the trainees' accomplished competences.

Based on the competency framework that has been developed, the training programmes will be clearly described with the identification of the training topics and the duration of the theoretical and practical sections, the learning methodology (e.g. online, classroom, tutoring) and the method of evaluation (e.g. continuous assessment, examinations). In addition, the resources and equipment required for task completion and products/outputs must be defined.

Table of contents

List of Tables

1. INTRODUCTION

The second ROTES Work Package "ROTES curriculum outline & educational resources" aims to:

1- Define EU-wide educational requirements for roofers.
2- Design a joint VET curriculum with WBL components to respond to the identified skill needs.
3- Design a VET provision approach focusing on the emerging green, digital & safety skills need.
4- Formulate a delivery model that meets industry's training & workplace needs.
5- Foster the further development of apprenticeship offerings in roofing through enhanced business-education partnerships.
6- Evaluate the learning effectiveness on the curriculum & support upskilling of 400 roofers.

These objectives are associated with the activities of the work package, specifically the one on which these deliverable focuses:

A2.2: Design of the curriculum structure and learning outcomes assessment framework.

The proposed Modules (learning units) will correspond to EQF 4; the entire reskilling curriculum will have a 2-semester duration and comprise both theoretical & WBL components, employing a modular structure to facilitate deployment in formal & informal C-VET environments:

- Module 1. Essentials for roof construction, maintenance, renovation & demolition
- Module 2. Sustainable roofing methods
- Module 3. Handling eco-friendly materials
- Module 4. Use of computer-aided software & digital tools
- Module 5. Health & Safety practices

2. ROTES CURRICULUM STRUCTURE

1.1 MODULES SPECIFICATIONS

The definition of learning module specifications is based on the ECVET principles, which indicate that each unit may include the following elements:

- EQF level of qualification
- Recommended prior knowledge
- Duration of learning process
- Comparative Weighting of learning units
- Credits allocation
- Prerequisites to attend each learning unit
- Training content
- Assessment methods

The duration of a course is counted by accumulating "hours" of the different categories:

- Contact hours
- Traineeship hours
- Hours of study
- Evaluation hours

Thus, ROTES course involves the following hours per module:

- Module 1: 7 contact hours, 4 traineeship hours, 6 hours of study, 3 evaluations
- Module 2: 8 contact hours, 4 traineeship hours, 15 hours of study, 3 evaluations
- Module 3: 5 contact hours, 10 traineeship hours, 12 hours of study, 3 evaluations
- Module 4: 3 contact hours, 7 traineeship hours, 7 hours of study, 3 evaluations
- Module 5: 8 contact hours, 6 traineeship hours, 4 hours of study, 2 evaluations

Regarding the weighting and credit allocation, ROTES course is also based on ECVET credit system. ECVET credits are a numerical representation of the overall weight of learning outcomes in a qualification and of the relative weight of units in relation to the qualification.

The suggested weighting and allocation of ECVET credits for the ROTES course are as follows:

- Module 1: 1 credit (20 hours -> 1 credit)
- Module 2: 1,5 credit (30 hours -> 1,5 credit)
- Module 3: 1,5 credit (30 hours -> 1,5 credit)
- Module 4: 1 credit (20 hours -> 1 credit)

- Module 5: 1 credit (20 hours -> 1 credit)

Total recommended time of 120 hours, corresponding to 6 ECTS credits.

In addition, the assessment of the modules may be carried out through different evaluation methods such as questions and answers (Q&A), practical exercises and multiple-choice questions (MCQs).

1.2 COURSE DESCRIPTION AND FEATURES

The modules to be developed for the ROTES project will add value to roofing training by creating a curriculum that will cover the entire spectrum of skills and skills needed to work on green roof systems under safer conditions (content innovation). The curriculum will be suitable for integration into formal vocational education and training (including apprenticeships), non-formal on-the-job training and WBL provision, as well as self-directed training.
Based on an analysis carried out during the project presentation, 5 training modules with a duration of 120 hours were identified. The 5 modules identified are:

1. Module 1. Essentials for roof construction, maintenance, renovation & demolition
2. Module 2. Sustainable roofing methods
3. Module 3. Handling eco-friendly materials
4. Module 4. Use of computer-aided software & digital tools
5. Module 5. Health & Safety practices

In module 1, topics will be covered to fill the lack of knowledge about current national regulations. Furthermore, participants will acquire skills and knowledge for the construction of green roofs, as well as their maintenance and the dismantling/demolition of existing roofs.

In Module 2, participants will gain an understanding of the economic, energy and environmental benefits of green roofs. Topics such as efficient water management and the introduction of renewable roof technologies will also be covered.

In Module 3, ecological topics such as selecting and recycling waste materials, to select suitable eco-friendly materials for roofs based on their characteristics, to inspect, store and transport eco-friendly materials for roofs will be addressed.

In Module 4, materials for technological tools will be developed. The participants will learn to use tools for 3D modelling and design for green roofs, to use software for estimating costs and materials as well as labour needed for the construction or renovation of green roofs, to use drones to gather information about roof work and to visualise the damages existing in the roofs.

Module 5 will cover topics concerning the health and safety of workers during roof work. Participants will acquire knowledge to reduce the risks of falling from heights and to carry out pre- and post-operational checks on roofs in complete safety. They will also be able to activate first aid interventions.

1.2.1 MODULE 1: ESSENTIALS FOR ROOF CONSTRUCTION, MAINTENANCE, RENOVATION & DEMOLITION

Module 1 Description	
The module consists of six learning units. These units will include topics to fill the lack of knowledge about current national regulations. In addition, participants will acquire skills and knowledge for the construction of green roofs, their maintenance and the dismantling/demolition of existing roofs. In addition to presentations and lectures, there are a series of practical exercises, questions and answers and multiple-choice questions to deepen knowledge. The total duration of the module is 20 hours.	
Learning objectives	
• Gain an overview of building regulations and standards and know how to apply them in various building contexts. • To know the rules and construction characteristics of green roofs. • Know the elements for demolishing and dismantling existing roofs in order to install a green roof	
Learning Units	
UNIT 1	**Building regulations & standards**
UNIT 2	**Roofing tools & equipment**
UNIT 3	**Roof assemblies & structures**
UNIT 4	**Ventilation & water drainage systems**
UNIT 5	**Roof installation & maintenance practices**
UNIT 6	**Disassembly/demolition**

Learning Materials
• 40 presentation slides • 10 pages of lecture notes • 15 Q&As • 2 practical exercises • 15 MCQs
Assessment materials
• Final Test • Study case based on the practical exercises

Table 1. Description of Module 1

1.2.1.1 Module 1 Curriculum

Unit 1: Building regulations & standards	
General description	
Acquire the necessary knowledge to apply current national regulations to carry out activities related to green roofs in urban and suburban contexts.	
Learning outcomes	
Knowledge	- Knowledge of national, regional and European building regulations - Knowledge of national, regional and European sustainable roofing regulations
Skills	- Know how to apply the regulations governing the construction and renovation of roofs. - Be able to work on roofs according to current regulations. - Be able to implement all the necessary documentation for the submission of a green roof project
Competences	- Good autonomy in the presentation and management of green roof documentation

Table 2. KSC Units 1 – Module 1

Unit 2: Roofing tools and equipment	
General description	
Acquire the necessary knowledge to correctly use the tools and equipment for green roofs.	
Learning outcomes	
Knowledge	- Knowledge of the tools and equipment required for processing - Knowledge of the difference between various equipment and tools - Knowledge of the technical characteristics of instruments and equipment - Knowledge of the characteristics of the tools and equipment for green roof construction
Skills	- Being able to use machining tools and equipment for green roofs - being able to choose the correct tools and equipment
Competences	- recognise the various Roofing tools and equipment

Table 3. KSC Units 2 – Module 1

Unit 3: Roofs and structures	
General description	
Acquire the knowledge, skills and competences necessary for the construction of roofs and structures.	
Learning outcomes	
Knowledge	- Knowing the types and characteristics of various types of traditional roofs - Knowing the technical characteristics of traditional roof structures - Knowing the technical characteristics of the load-bearing structures of sustainable roofs - Knowing the loads and capacities of structures
Skills	- Knowing how to monitor existing load-bearing structures - Being able to identify the physical characteristics of roofs

	- Knowing how to check and correctly calculate roof loads and capacities according to location - Knowing how to carry out a load analysis
Competences	- Improving technical skills so that everyone understands the technical and physical performance of covers - Improving technical skills in order to integrate traditional systems with eco-sustainable roofs - Improved technical skills to verify load-bearing structures - Improve technical skills to convey to customers the needs and advantages of using green roofs over traditional roofs

Table 4. KSC Units 3 – Module 1

Unit 4: Ventilation and water drainage systems	
General description	
Acquire the necessary knowledge to implement ventilation and rainwater drainage systems	
Learning outcomes	
Knowledge	- Knowledge of ventilation system concepts - Knowledge of ventilation system techniques - Knowing the characteristics of the ventilation system - Knowledge of drainage principles - Knowledge of drainage techniques
Skills	- Knowing how to apply ventilation system techniques - Ability to interpret and implement the ventilation design - Ability to provide an estimate of the work to be done for - the implementation of the drainage and ventilation system
Competences	- Good organisational and planning skills for effective implementation of the drainage system - Good organisational and planning skills for an effective implementation of the ventilation system

Table 5. KSC Units 4 – Module 1

Unit 5: Installation and maintenance practices for roofs	
General description	
Acquire the necessary knowledge to carry out professional maintenance and installation of green roofs	
Learning outcomes	
Knowledge	- Acquiring theoretical and practical knowledge of laying small green roof systems - Acquiring technical knowledge for maintaining green roofs - Acquiring knowledge of how to correctly carry out construction work
Skills	- Being able to correctly perform green roof maintenance work - Be able to correctly carry out maintenance work on green roofs - Be able to compare various green roof maintenance techniques - Be able to compare various green roof installation techniques
Competences	- Improving technical competences to transmit the best green roof techniques to all workers - Improving technical competences to pass on to all workers the best techniques for maintaining green roofs

Table 6. KSC Units 5 – Module 1

Unit 6: Dismantling/demolition	
General description	
Acquire the necessary knowledge to carry out dismantling/demolition work on roofs	
Learning outcomes	
Knowledge	- Acquire technical knowledge for the verification of load-bearing structures - Acquiring technical knowledge for the correct dismantling/demolition of existing roofs
Skills	- Be able to recognise the most important elements in the Dismantling/demolition phase

	- Be able to correctly apply roof Dismantling/demolition techniques
Competences	- Improving competences to convey competences techniques to perform Dismantling/demolition work on existing roofs

Table 7. KSC Units 6 – Module 1

1.2.2 MODULE 2: SUSTAINABLE ROOFING METHODS

Module 2 Description	
The module consists of five learning units related to sustainable green roof systems. These units cover the benefits of green roofs in economic, energy and environmental terms. It also introduces topics such as efficient water management or the introduction of renewable technologies on green roofs. In addition to the presentations and lectures, a set of practical exercises, questions and answers, and multiple-choice questions are provided to ground the knowledge. The total duration of the module is 30 hours.	
Learning objectives	
• Get an overview of green roof concepts and learn the benefits for both the environment and energy savings in housing. • Calculate the energy savings in dwellings after the installation of a green roof. • Understand the operation of the water management and drainage system on the green roof. • Be aware of the integration of green roofs with renewable technologies as a sustainability practice.	
Learning Units	
UNIT 1	**Introduction to green roof systems and environmental benefits**
UNIT 2	**Green roof energy savings in buildings**
UNIT 3	**Green roofs as a nature-based solution in urban areas**
UNIT 4	**Green roof waterproofing, drainage & recovery**
UNIT 5	**Integration of renewable systems in green roofs**

Learning Materials
• 40 presentation slides • 10 pages of lecture notes • 15 Q&As • 2 practical exercises • 15 MCQs
Assessment materials
• Final Test • Study case based on the practical exercises

Table 8. Description of Module 2

1.2.2.1 Module 2 Curriculum

Unit 1: Introduction to green roof systems and environmental benefits	
General description	
This unit aims to introduce the student to green roofs in order to learn about their benefits and the main influencing factors.	
Learning outcomes	
Knowledge	- Understand the basic concepts of green roofs and analyse the environmental benefit of energy systems and installations, as well as their sustainability. - Determine the environmental parameters for improvement with green roofs (e.g. air quality, temperature). - Be aware of the importance of the presence of green spaces in cities.
Skills	- Autonomously determine the amount and type(s) of roofing needed, based on factors such as location, surface shape and equipment use, energy efficiency, materials properties and sustainability. - Be able to convey the needs and benefits of using green roofs compared to traditional roofs. - Comprehend the ethical responsibility in the development of professional activities.

Competences	- Application, practical and critical thinking. - Ethical, environmental and professional responsibility. - Knowledge of contemporary issues.

Table 9. KSC Units 1 – Module 2

Unit 2: Green roof energy savings in buildings	
General description	
Knowledge of the energy impact and benefits of green roof systems will be acquired in this unit.	
Learning outcomes	
Knowledge	- Analyse the impact of the green roof on the energy savings of a building. - Calculate energetic parameters through a methodology. - Become familiar with the benefits for the user, both environmental and economic. - To be aware of energy control and monitoring equipment.
Skills	- Assessing the energy efficiency of a green roof and the potential of integration of renewable resources on it. - Be able to convey the needs and benefits of using green roofs to clients compared to traditional roofs. - Analyze and assess the technical-economic and environmental impact of energy systems and facilities, as well as their sustainability. - Autonomously determine the amount and type(s) of roofing needed, based on factors such as location, surface shape and equipment use, energy efficiency, materials properties and sustainability.
Competences	- Application, practical and critical thinking. - Ethical, environmental and professional responsibility. - Analysis and problem solving. - Knowledge of contemporary issues.

Table 10. KSC Units 2 – Module 2

Unit 3: Green roofs as a nature-based solution in urban areas
General description

This unit addresses green roofs from a holistic citywide perspective, understanding the benefits to society as a nature-based solution.	
Learning outcomes	
Knowledge	- Understand the benefits for the health and well-being of the population, as well as the level of comfort for the users. - Be aware of the advantages of nature-based passive solutions and the contribution to the SDGs in densely populated areas. - Calculation of the effect of green roofs on ambient temperature. - Application of environmental technologies and sustainability. - Green roofs as a nature-based solution to reduce the carbon footprint and the heat island effect.
Skills	- Be able to convey the needs and benefits of using green roofs to clients compared to traditional roofs. - Creating visually appealing green roofs. - Autonomously determine the amount and type(s) of roofing needed, based on factors such as location, surface shape and equipment use, energy efficiency, materials properties and sustainability.
Competences	- Application, practical and critical thinking. - Ethical, environmental and professional responsibility. - Analysis and problem solving. - Knowledge of contemporary issues. - Innovation, creativity and entrepreneurship

Table 11. KSC Units 3 – Module 2

Unit 4: Green roof waterproofing, drainage & recovery	
General description	
The objective is to gain knowledge about water management systems as an essential component of green roofs.	
Learning outcomes	
Knowledge	- Study the water management system used on green roofs. - Analyse hydraulic circuits to properly deviate the water. - Determine the adequate materials to reduce the risk of flooding.

	- Analyse the possible uses of the water recovered through the green roof.
Skills	- Understand the properties and technical specifications of sustainable materials (insulation, waterproof, mechanical properties, etc) and the possibilities of vegetation on green roofs. - Evaluate the possibility of collecting water from the green roof.
Competences	- Application, practical and critical thinking. - Ethical, environmental and professional responsibility. - Analysis and problem solving.

Table 12. KSC Units 4 – Module 2

Unit 5: Integration of renewable systems in green roofs	
General description	
This unit aims to provide an integrated view of green roofs and renewable energies as solutions for improving the energy efficiency of buildings.	
Learning outcomes	
Knowledge	- Assessing the energy efficiency of a green roof and the potential of integration of renewable resources on it. - Evaluate the introduction of different renewable technologies on green roofs. - Study the economic and energy benefits brought to the system. - Identify the proper disposition for PV panels to ensure maximum efficiency.
Skills	- Analysis of the operation of energy systems and installations. - Assessing the energy efficiency of a green roof and the potential of integration of renewable resources on it. - Use digital tools to facilitate the work of installing renewable systems.
Competences	- Application, practical and critical thinking. - Analysis and problem solving. - Lifelong learning and use of specific tools.

Table 13. KSC Units 5 – Module 2

1.2.3 MODULE 3: HANDLING ECO-FRIENDLY MATERIALS

Module 3 Description	
The module consists of three learning units related to eco-friendly materials and how to handle them. These units cover the benefits of eco-friendly materials in economic, energy and environmental terms. In addition to the presentations and lectures, a set of practical exercises, questions and answers, and multiple-choice questions are provided to ground the knowledge. The total duration of the module is 30 hours.	
Learning objectives	
• Get an overview of eco-friendly materials and learn the benefits for both the environment and energy savings in housing. • Understand material inspection and management of materials storage and transportation Be aware of the waste sorting and recycling methods and materials	
Learning Units	
UNIT 1	**Green roofing materials and their characteristics**
UNIT 2	**Material inspection, storage & transportation**
UNIT 3	**Waste sorting and recycling**
Learning Materials	
• 40 presentation slides • 10 pages of lecture notes • 15 Q&As • 2 practical exercises • 15 MCQs	
Assessment materials	
• Final Test • Study case based on the practical exercises	

Table 14. Description of Module 3

1.2.3.1 Module 3 Curriculum

Unit 1: Green roofing materials and their characteristics	
General description	
Acquire the necessary knowledge to select suitable eco-friendly materials for roofs based on their characteristics.	
Learning outcomes	
Knowledge	- Knowledge of general roof materials - Knowledge of eco-friendly materials characteristics
Skills	- Know how to select eco-friendly materials for the construction and renovation of roofs - Be able to utilize eco-friendly materials for a green roof
Competences	- Good autonomy in the presentation and management of green roof materials based on their characteristics

Table 15. KSC Units 1 – Module 3

Unit 2: Material inspection, storage & transportation	
General description	
Acquire the necessary knowledge to inspect, store and transport eco-friendly materials for roofs.	
Learning outcomes	
Knowledge	- Knowledge of general and eco-friendly material inspection - Knowledge of eco-friendly material storage - Knowledge of eco-friendly material transportation
Skills	- Know how to inspect materials and to select eco-friendly materials for roofs - Be able to present and describe material storage and transportation
Competences	- Good skills in material inspection and management of materials storage and transportation

Table 16. KSC Units 2 – Module 3

Unit 3: Waste sorting and recycling	
General description	
Acquire the necessary knowledge to sort and recycle waste materials.	
Learning outcomes	
Knowledge	- Knowledge of waste sorting - Knowledge of waste recycling
Skills	- Know how to sort waste materials and to recycle most of them - Be able to present and describe sorting and recycling procedures and methods
Competences	- Good autonomy in the presentation and management of waste sorting and recycling

Table 17. KSC Units 3 – Module 3

1.2.4 MODULE 4: USE OF COMPUTER-AIDED SOFTWARE & DIGITAL TOOLS

Module 4 Description	
The module consists of three learning units related to computer software and digital tools used in sustainable roof developing. These units cover the benefits of 3D modelling and estimation software in economic, energy and environmental terms. In addition to the presentations and lectures, a set of practical exercises, questions and answers, and multiple-choice questions are provided to ground the knowledge. The total duration of the module is 20 hours.	
Learning objectives	
• Use of computer-aided tools for green roof design and 3D modelling. • Use of estimation software for costs, materials and labour. • Use of drones for roof visualization and information gathering.	
Learning Units	
UNIT 1	**3D modelling/design tools**

UNIT 2	**Cost/material/labour estimation software**
UNIT 3	**Drones for gathering information on roofing works & visually assessing roofing damage**
Learning Materials	
• 40 presentation slides • 10 pages of lecture notes • 15 Q&As • 2 practical exercises • 15 MCQs	
Assessment materials	
• Final Test • Study case based on the practical exercises	

Table 18. Description of Module 4

1.2.4.1 Module 4 Curriculum

Unit 1: 3D modelling/design tools	
General description	
Acquire the necessary knowledge to use tools for 3D modelling and design for green roofs	
Learning outcomes	
Knowledge	- Knowledge of computer tools used for 3D roof modelling - Knowledge of tools used for green roof design
Skills	- Know how to use computer tools for green roof 3D modelling - Be able to work with computer-aided tools for roofs design
Competences	- Good autonomy in the usage of computer-aided tools for green roof design and 3D modelling

Table 19. KSC Units 1 – Module 4

Unit 2: Cost/material/labour estimation software
General description

Acquire the necessary knowledge to use software to estimate costs and materials, as well as labour needed for green roof construction or restoration	
Learning outcomes	
Knowledge	- Knowledge of cost estimation for green roof - Knowledge of material selection for roof construction or restoration - Knowledge of labour needed for green roof construction or restoration
Skills	- Know how to use computer software for green roof cost, material and labour estimation - Be able to work with computer software for estimations concerning the green roof
Competences	- Good autonomy in the usage of estimation software for green roof costs, materials and labour

Table 20. KSC Units 2 – Module 4

Unit 3: Drones for gathering information on roofing works & visually assessing roofing damage	
General description	
Acquire the necessary knowledge to use drones to gather information about roof work and to visualize the damages existing in the roofs	
Learning outcomes	
Knowledge	- Knowledge of drone's usage for gathering information about works on roof - Knowledge of visualization of roof damages using drones
Skills	- Know how to use drones to visualize roofs and gather information - Be able to work with drones to facilitate the roof visualization
Competences	- Good autonomy in the usage of drones for roof visualization and information gathering

Table 21. KSC Units 3 – Module 4

1.2.5 MODULE 5: HEALTH & SAFETY PRACTICES

Module 5 Description	
The module consists of 4 learning units on health and safety practices for working on roofs. These units cover the minimum safety requirements to be observed when working on roofs. Guidance is given on the operations to be carried out when checking work and the practices to be followed for first aid operations. The total duration of the module is 20 hours.	
Learning objectives	
• Acquire the technical knowledge to perform roofing work while ensuring compliance with health and safety regulations for workers. • Acquire knowledge of health and safety regulations for roof work • Acquire the knowledge, skills and competences needed to carry out pre- and post-operational checks. • Acquire knowledge to carry out first aid interventions	
Learning Units	
UNIT 1	**Occupational health & safety standards**
UNIT 2	**Safety and protection equipment**
UNIT 3	**Pre- and post-operational checks**
UNIT 4	**First aid techniques**
Learning Materials	
• 40 presentation slides • 10 pages of lecture notes • 15 Q&As • 2 practical exercises • 15 MCQs	
Assessment materials	
• Final Test • Study case based on the practical exercises	

Table 22. Description of Module 5

1.2.5.1 Module 5 Curriculum

Unit 1: Occupational health & safety standards	
General description	
Acquire technical knowledge to carry out roofing work while ensuring compliance with regulations concerning the health and safety of workers	
Learning outcomes	
Knowledge	- Good knowledge of current occupational health and safety regulations - Good knowledge of the regulations in force for roofing work - Good knowledge of roofing techniques
Skills	- Be able to perform roofing work safely - Be able to apply in the field what is required by the regulations concerning workers' health and safety - Be able to implement all the techniques for carrying out roof work safely
Competences	- Good autonomy in organising work phases safely - Ensuring safety for yourself and others - Good ability to communicate minimum standard health and safety requirements to others

Table 23. KSC Units 1 – Module 5

Unit 2: Safety and protection equipment	
General description	
Provide participants with adequate knowledge of the current legislation on working at height. Knowledge of the risks concerning workers at height, measures and devices to be taken, specifically individual and collective fall protection equipment.	
Learning outcomes	
Knowledge	- Good knowledge of personal and collective protective equipment - Good knowledge of risks related to workers at height - Good knowledge of emergency management
Skills	- Be able to choose the correct personal and collective protective equipment

	- Be able to correctly install the lifeline - Be able to carry out checks and maintenance of individual and collective protective equipment - Be able to rescue workers in difficulty
Competences	- Correctly identifying which personal and collective protective equipment to use during work - Improving technical knowledge for emergency management

Table 24. KSC Units 2 – Module 5

Unit 3: Pre- and post-operational checks	
General description	
Acquire the knowledge, skills and competences necessary to carry out pre- and post-operational checks	
Learning outcomes	
Knowledge	- Good knowledge of techniques for controlling and monitoring workers' health and safety standards
Skills	- be able to carry out pre- and post-operational checks
Competences	- improved technical skills to implement a control management system before during and after operations - improvement of technical skills to carry out visual checks and monitoring

Table 25. KSC Units 3 – Module 5

Unit 4: First aid techniques	
General description	
The aim is to train all participants in order to recognise the first symptoms and to activate help as quickly as possible, managing the call with them and protecting the injured person while waiting for help to arrive.	
Learning outcomes	
Knowledge	- Good knowledge of first aid intervention techniques - Good knowledge of trauma in the work environment - Good knowledge of cardiopulmonary resuscitation techniques

Skills	- Be able to alert the rescue system - Be able to perform first aid manoeuvres - Be able to perform cardiopulmonary resuscitation manoeuvres - Be able to apply the techniques of lifting, moving and transporting the traumatised person
Competences	- Recognising a medical emergency - Recognising the severity of the injury - Good communication with the emergency system - Improved technical knowledge for assessing the psycho-physical condition of the injured worker KHMHYO

Table 26. KSC Units 4 – Module 5

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