Memorandum of Understanding

Recognition of the Learning Outcomes

Intellectual Output 6

Co-funded by the Erasmus+ Programme of the European Union

CONSTRUCTION INHERITANCE

ERASMUS+ Programme
Key Action 2 | Call 2015
Strategic Partnership for VET (KA202)

Project Code:
2015-1-ES01-KA202-016031

Partnership:

- Fundación Laboral de la Construcción (Spain),
- Comité de Concertation et de Coordination de l'Apprentissage du Bâtiment et des Travaux Publics (France),
- Bildungszentren des Baugewerbes e.V. (Germany),
- Ente Nazionale per la Formazione e L´Addestramento Professionale Nell´Edilizia di Puglia (Italy),
- Centre IFAPME Liège-Huy-Waremme (Belgium),
- Centro de Formação Profissional da Indústria da Construção Civil e Obras Públicas do Sul (Portugal).

Index

MEMORANDUM OF UNDERSTANDING

Recognition of the Learning Outcomes

Context and Objectives of the MoU

Description of project

The objective of the project is to identify the main processes of restoration of antique buildings in Europe with the purpose of developing a training programme that gathers different tasks and techniques used by the workers with more experience in restoration addresses to the youngest workers in the sector, in order to preserve this knowledge and guarantee an appropriate restoration of the architectural heritage in Europe.

As a part of the project execution, it is planned at first information gathering phase through two procedures:

- Expert consultation in the field of refurbishment an restoration of antique buildings, formalized through the completion of a questionnaire about the main challenges of a work of such characteristics, as well as a matrix of the different work processes, constructive elements and restoration activities in which will be evaluated, on a scale from 1 to 5, their importance in our country, in order to define the most employed trades, tasks and techniques and delimit the existing qualification necessities for the restoration of traditional architectural elements.
- The observation of a key restoration case in each of the six countries of the consortium, which will take into account the different phases of the constructive process, in antique buildings where there are protected architectural elements and, thus, it is necessary the application of traditional materials and techniques.

In the second phase of the project, the first-hand gathered information will be connected to the education development of the training system, through the of the map of knowledge, skills and competencies, as a basis for the development of the training content and its learning outcomes for the levels 3, 4 and 5 of the EQF for the restoration and conservation of antique buildings.

Subsequently, the technological development of an educational resource as an application for the mobile devices – such as tablets or mobile phones , freely downloadable to facilitate in a practical and visual approach, the student learning on traditional building restoration techniques. Thus, core traditional building restoration processes applied by senior workers which have been identified at risk of disappearing, may be learnt by youngest by using new technologies, making possible to overcome the barriers of time and space and, therefore, tending bridges between generations.

European area of skills and qualifications

ECVET is based on a set of technical components that are all underpinned by the development of learning outcomes. This system ensures a better understanding and comparability of qualifications and learning achievements across countries.

For the development of the qualification "**Rehabilitation of traditional architecture in Europe**" these technical components have been taken into account to provide to the training system with a European dimension.

Credit arrangements in European education and training (ECVET) build upon the learning outcomes underpinning qualifications and programmes; they link to the EQF by the use of the level descriptors expressed in learning outcomes.

It is essential in implementing ECVET to ensure that learning outcomes of the qualification and units are clearly identified and described to enable mutual understanding and judgements among different countries, assuring this way the process of recognition and validation of skills by common accreditations as well as a coherent implementation at national level.

Together with units, description of learning outcomes and information about the EQF level, ECVET system supports the understanding of a qualification. Thereby, the number of ECVET points allocated to a qualification, together with other specifications, indicate for example, if the scope of the qualification is narrow or broad.

The ECVET system is a technical framework for the allocation of ECVET points to hours of training for the transfer, recognition and, where appropriate, accumulation of individuals' learning outcomes with a view to achieving a qualification. ECVET points 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 complete qualification.

Following the ECVET Recommendation[1] to enable a common approach for the use of ECVET points for a given qualification, the allocation of ECVET points should be based on:

- The use of the convention according to which **60 points** are allocated to the learning outcomes expected to be achieved in **one year of formal full time VET**.
- The **selection** of one **formal learning programme as a point of reference**. It is up to the competent institutions in charge of designing qualifications to decide which specific programme will be chosen as a point of reference (e.g. the initial VET or the most common programme). For qualifications which do not have a formal learning pathway reference, ECVET credit points can be allocated through estimation by comparison with another qualification which has a formal reference context.

This way, the duration of the selected reference programme together with the "convention" on ECVET points, will give the number of ECVET points to be allocated to the qualification as a whole, and then, to its units according to their relative weight within the qualification.

The relative weight of a unit of learning outcomes, with regard to the qualification, should be established according to the following criteria or to a combination thereof:

[1] Recommendation of the European Parliament and of the Council of 18 June 2009 on the establishment of a European Credit system for Vocational Education and Training (ECVET).

- The relative importance of the learning outcomes which constitute the unit for labour market participation, for progression to other qualification levels or for social integration;
- The complexity, scope and volume of learning outcomes in the unit;
- The effort necessary for a learner to acquire the knowledge, skills and competence required for the unit.

The ultimate stage of ECVET arrangements is **recognition and validation** of the learning outcomes achieved **through crediting** by way of the assessment. It can be considered as part of a quality assurance process. Credit transfer and accumulation process is underpinned by ECVET documents: the Memorandum of Understanding[2], the Learning Agreement and the Personal Transcript.

Purpose of the MoU

For applying ECVET in the participating countries to learning outcomes achieved in formal, non-formal and informal learning context particularly for the professional qualification of "Entrepreneur in Construction", this MoU establishes that each participant:

- accepts each other's status as interested actors and/or competent institutions;
- accepts each other's quality assurance, assessment, validation and recognition criteria and procedures as satisfactory for the purposes of credit transfer;
- agrees the conditions for the operation of the partnership, such as objectives, duration and arrangements for review of the MoU;
- agrees on the comparability of qualification concerned for the purposes of credit transfer, using EQF to establish the reference levels;
- identifies other actors and competent institutions that may be involved in the process concerned and their functions;

Procedures for the accreditation and recognition at national level

Transfer and Accumulation of learning outcomes, ECVET partnerships: In ECVET, units of learning outcomes achieved in one setting are assessed and then, after successful assessment, transferred to another setting. In this second context, they are validated and recognised by the competent institution as part of the requirements for the qualification that the person is aiming to achieve. Units of learning outcomes can then be accumulated towards this qualification, in accordance with national or regional rules.

Procedures and guidelines for the assessment, validation, accumulation and recognition of units of learning outcomes are designed by the relevant competent institutions and partners involved in the training process.

Credit transfer based on ECVET and applied to learning outcomes achieved in formal learning contexts should be facilitated by establishing partnerships and networks involving competent institutions, each of which is empowered, in their own setting, to award qualifications or units or to give credit for achieved learning outcomes for transfer and validation.

[2] A MoU is an agreement between competent institutions which sets the framework for credit transfer. It formalises the ECVET partnership by stating the mutual acceptance of the status and procedures of competent institutions involved. It also establishes partnership's procedures for cooperation.

The establishment of partnerships aims to: — provide a general framework of cooperation and networking between the partners, set out in Memoranda of Understanding (MoU) through which a climate of mutual trust is established, — assist the partners in the design of specific arrangements for credit transfer for learners.

~~The MoU should confirm that the partners: — accept each other's status as competent institutions, — accept each other's quality assurance, assessment, validation and recognition criteria and procedures as satisfactory for the purposes of credit transfer, — agree the conditions for the operation of the partnership, such as objectives, duration and arrangements for review of the MoU, — agree on the comparability of qualifications concerned for the purposes of credit transfer, using the reference levels established by EQF, — identify other actors and competent institutions that may be involved in the process concerned and their functions. For applying ECVET to learning outcomes achieved in a non-formal and informal learning context or outside the framework of an MoU, the competent institution which is empowered to award qualifications or units or to give credit should establish procedures and mechanisms for the identification, validation and recognition of these learning outcomes through the award of the corresponding units and the associated ECVET points.~~

<table>
<tr><td colspan="2">BELGIUM</td></tr>
<tr><td colspan="2">Procedures for the accreditation and recognition of learning outcomes:
Learning outcomes units are formally awarded if skills and knowledge assessments were passed. For each learning outcomes unit all essential criteria must be demonstrated to pass skills assessments</td></tr>
<tr><td>Name and status of the body awarding the LO:
Centre IFAPME Liège-Huy-Waremme
Rue du Château Massart 70
4000 LIEGE</td><td>Name and status of the national/regional authority providing accreditation/recognition of the LO:
IFAPME – Institut de Formation en alternance des petites et moyennes entreprises
Place verte 15
6000 CHARLEROI</td></tr>
<tr><td colspan="2">Type of certification :
☐ Official certificate
X Non official certificate
Describe the type of certificate: Certificat complémentaire remis par le centre IFAPME de Liege – Huy-Waremme

Level of the certificate (national or international)
European level: 5</td></tr>
<tr><td colspan="2">Legal Basis : Réglementations IFAPME au niveau des compétences techniques et pédagogiques.</td></tr>
<tr><td colspan="2">SPAIN</td></tr>
<tr><td colspan="2">Procedures for the accreditation and recognition of learning outcomes:</td></tr>
<tr><td>Name and status of the body awarding the LO:</td><td>Name and status of the national/regional authority providing accreditation/recognition of the LO:</td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="2">Type of certification :
☐ Official certificate
☐ Non official certificate</td></tr>
</table>

Describe the type of certificate: **Level of the certificate (national or international)** European level:	
Legal Basis :	
FRANCE	
Procedures for the accreditation and recognition of learning outcomes:	
Name and status of the body awarding the LO:	**Name and status of the national/regional authority providing accreditation/recognition of the LO:**
Type of certification : ☐ **Official certificate** ☐ **Non official certificate** **Describe the type of certificate:** **Level of the certificate (national or international)** European level:	
Legal Basis :	
GERMANY	
Procedures for the accreditation and recognition of learning outcomes:	
Name and status of the body awarding the LO:	**Name and status of the national/regional authority providing accreditation/recognition of the LO:**
Type of certification : ☐ **Official certificate** ☐ **Non official certificate** **Describe the type of certificate:** **Level of the certificate (national or international)** European level:	
Legal Basis :	
ITALY	
Procedures for the accreditation and recognition of learning outcomes:	

Name and status of the body awarding the LO:	**Name and status of the national/regional authority providing accreditation/recognition of the LO:**
Type of certification : ☐ **Official certificate** ☐ **Non official certificate** **Describe the type of certificate:** **Level of the certificate (national or international)** European level:	
Legal Basis :	
PORTUGAL	
Procedures for the accreditation and recognition of learning outcomes:	
Name and status of the body awarding the LO:	**Name and status of the national/regional authority providing accreditation/recognition of the LO:**
Type of certification : ☐ **Official certificate** ☐ **Non official certificate** **Describe the type of certificate:** **Level of the certificate (national or international)** European level:	
Legal Basis :	

Organisations signing the Memorandum of Understanding

Organization 1 – Lead of the partnership	
Country	Spain
Name of the Organization	**Fundación Laboral de la Construcción**
Address	Calle Rivas Nº25, 28052 Madrid
Telephone	+34 91 398 45 00
E-mail	internationalprojects@fundacionlaboral.org
Website	www.fundacionlaboral.org
Contact	Javier González
	Head of International projects
Organization 2	
Country	BELGIUM
Name of the Organization	Centre IFAPME Liège-Huy-Waremme ASBL
Address	Rue du Château Massart 70 – 4000 LIEGE
Telephone	+32 4 229 84 78
E-mail	liege@centreifapme.be
Website	http://www.centrelhw.ifapme.be/
Contact	Emilie PREUD'HOMME
	Emilie.preudhomme@centreifapme.be
Organization 3	
Country	
Name of the Organization	
Address	
Telephone	
E-mail	
Website	
Contact	
Organization 4	
Country	
Name of the Organization	
Address	
Telephone	
E-mail	
Website	
Contact	
Organization 5	
Country	
Name of the Organization	
Address	
Telephone	
E-mail	
Website	
Contact	
Organization 6	
Country	
Name of the Organization	
Address	
Telephone	
E-mail	

Website	
Contact	

Other organisations that might endorse this MoU

State Authorities
Ministry of Education
Labour Ministry
Labour Offices
Labour Health and Safety inspections Departments
Regional and Local Authorities
Regional Authorities for Planning and Urban Management
County Councils
Chambers
Chambers of Commerce and Industry
Chambers of Architecture
Professional Associations and Unions
Labour Unions (Construction)
Company Representatives
Association of Construction Companies
Regional Constructors and Promoters Institutions
Education institutions
Universities
VET schools
Research Institutions
Businesses
Big construction companies
SMEs
Eco-efficient building material suppliers
Any construction company hosting apprentices
Any construction company interested in educating EU Fundraisers
Consultancies
Professionals
Managing Directors of SMEs
Managers/Executives
Craftsmen
Architects
Employees
Young Professionals
Other Professionals of different trades
Trainers/Teachers/Instructors
Other
Time-sharing companies
Mutual Insurance companies
Migrant Workers organisations
Technological Institutes
Construction Workers

Qualification covered by this MoU

General aim of the training programme / Key competence to be acquired

To organize and carry out the renovation and rehabilitation works in antique buildings at foundations, structure, facades, roofs, sanitation and plumbing and interior design, for their integrated conservation, complying with the established conditions and deadlines as well as the requirements of quality, safety and environment.

Sequencing and distribution of professional modules

	HOURS	ECVET
"Rehabilitation of traditional architecture in Europe"	118	20
- Module 1 Integrated conservation of antique buildings	8	1
- Module 2 Rehabilitation activities at foundations, structure and facades	30	5
- Module 3 Rehabilitation activities at roofs	30	5
- Module 4 Sanitation and plumbing interventions for rehabilitation	30	5
- Module 5 Finishing works and restoration of decorative elements	20	4

Occupations involved / target groups

- Ceramists/potters (ceramic roof tiles)
- Glassworkers
- Masons/ bricklayers
- Metalworkers (steel, lead, copper and zinc metal sheeting)
- Painters
- Plasterers
- Slate workers
- Steelworkers (Locksmiths)
- Stoneworkers
- Woodworkers (Carpenters)

EQF level

The learning outcomes relevant to **level 4** are defined by a set of descriptors:

- ***Knowledge***: Factual and theoretical knowledge in broad contexts within the field of work or study.
- ***Skills***: A range of cognitive and practical skills required to generate solutions to specific problems in the field of work or study.
- ***Competences***: a) Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change; b) Supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.

Learning Outcomes

Within the framework described, upon successful completion of the curriculum, trainees should be able to:

- Know sensitive restoration techniques and choose the appropriate functions, materials, and tools.
- Cut customized pieces of stone.
- Construct the rows (courses) of brick walling: rigging according to required specifications.
- Construct the false work/shoring scaffolds.
- Carve and configure structural lintels.
- Set the arch or vault elements, anchors and encounters to other construction elements.
- Rehabilitate staircases and other special elements: configure its structural elements.
- Place the components of a gable structure.
- Place tiles and plate covering.
- Execute finishing works, roof aprons and parapet walls.
- Resolute roof encounters.
- Install and repair gutters, downpipes and system components.
- Execute joints, encounters and anchors to other construction elements in sanitation installations.
- Finish encounters of roof plumbing with other building elements.
- Treat the seams and joints in facades and interior architecture.
- Configure finishes and decorative elements in masonry (stone, brick).
- Restore and place other finishes and decorative elements.
- Paint decorations: selection of pigments and application of colour, lacquers and varnishes.
- Elaborate and apply templates and moulds for decorative fittings.

Module 1: Integrated conservation of antique buildings

LEARNING UNITS

Unit 1. Rehabilitation activities at foundations, structure and facades.
Unit 2. Rehabilitation activities at roofs.
Unit 3. Sanitation and plumbing interventions for rehabilitation.
Unit 4. Finishing works and restoration of decorative elements.

HOURS / ECVET POINTS
10 h / 0.6 point
HOURS / ECVET POINTS
8 h / 1 point

Unit 1. Rehabilitation activities at foundations, structure and facades

GENERAL DESCRIPTION
Understand the basis of potential rehabilitation activities that can be applied to foundations, structure and facades of an antique building, paying attention to its main elements such as stone applications, brick walling, arches, lintels, staircases, etc.

LEARNING OUTCOMES
On successful completion of the Unit, trainee should:

Knowledge	K1. Know the different types of natural stones and mortars for processing thereof
	K2. Know the key requirements of existing structures, foundations, walls and components made of masonry.
	K3. Recognize editing systems scaffolding prefabricated frame to be realized for the renovation (i.e. ribs).
	K4. Identify key types of frequently used structural lintels and their construction method.
	K5. Know the functions of arch/vault elements
	K6. Know the key aspects for the reconstruction of staircases
Skills	S1.Distinguish natural and artificial stones before processing.
	S2. Distinguish different masonry and foundation works.
	S3. Identify key types of shoring scaffolding and ribs.
	S4. Understand the function of structural lintels.
	S5. Understand the functions of arches, vaults and abutments and each encounters with others elements of the building.
	S6. Be aware of the importance of renovating staircase suitable for users.
Competences	C1. Be aware of the importance of esthetical, historical, cultural and artistically aspects related to stones, brick walling, arches, vaults, staircases, etc., for antique buildings.

Unit 2. Rehabilitation activities at roofs

GENERAL DESCRIPTION

Know the basis of potential rehabilitation activities that can be applied to roofs, paying attention to main elements such gable structure, encounters and aprons, different material for covering, etc.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Know the main components of a gable structure
	K2. Identify the different materials composing traditional coverings: inclination walls formation, boards and covering material (tiles and plates).
	K3. Identify the finish elements of the traditional coverings or roofs: eaves, ridge tiles, hip rafters, parapet walls, edge tiles…
	K4. Identify encounters of traditional coverings or roofs with other constructive elements.
	Skills
Skills	S1. Know about basic materials resistance
	S2. Understand the different functions of layers, elements and material used for covering traditional roofs.
	S3. Identify the damages affecting the finish elements of the traditional coverings and the reparation needed according to each damage.
	S4. Identify the damages affecting the encounter of traditional coverings with other constructive elements and the needed restoration according to each damage.
Competences	C1. Be aware of the importance

Unit 3. Sanitation and plumbing interventions for rehabilitation

GENERAL DESCRIPTION

Know the basis of potential rehabilitation activities that can be applied to sanitation and plumbing installations, paying attention to elements such as guttering, downpipes, system components, joints, encounters and anchors with other building elements, etc.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Distinguish the different types of sanitation and plumbing facilities used in rehabilitation, their performance and incompatibilities.
	K2. . Identify joints, encounters and anchors with other constructive elements in sanitation installations.
	K3. Distinguish the different types of pluvial water drainage systems used in rehabilitation, their performance and incompatibilities
Skills	S1. Identify the pathologies that affect the sanitation and plumbing installations.
	S2. Identify the pathologies that affect the encounters of plumbing and sanitation installations with other constructive elements of the building.
	S3. Identify the pathologies that affect the various elements used in the drainage of pluvial water (clogging of gutters, degradation of welds and materials.

Competences	C1. Be aware of the importance of esthetical, historical, cultural and artistically aspects of sanitation, plumbing and guttering installations.

Unit 4. Finishing works and restoration of decorative elements

GENERAL DESCRIPTION

Know the basis of finishing works and potential restoration of decorative elements activities that can be applied to different parts of the building, paying attention to elements such seams and joints, stone carving, decorative painting and fittings, etc.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Distinguish different types of interior/exterior seams and joints.
	K2. Identify different kind of stones that can be carved by the stonemason.
	K3. Know different finishing that can be applied to restore a given element or parament.
Skills	S1. Identify different diseases that may affect the building: gutted grouts, parasites, salts, lichen, vegetation, grout chalking, cracking, fouling…
	S2. Understand the techniques of the stonemasons for the integration of sculptural and decorative elements in stone.
	S3. Distinguish the main types of finishing and fittings such as glazing, whitewashing, crystallizing, coating, lacquering.
Competences	C1. Be aware of the importance of esthetical, historical, cultural and artistically aspects of finishing works and decorative elements of the building.

Module 2: Rehabilitation activities at foundations, structure and facades

LEARNING UNITS

Unit 1. Cutting of customized pieces of stone.
Unit 2. Rows (courses) of brick walling: rigging and construction to required specifications.
Unit 3. Construction of falsework for arched structures.
Unit 4. Carving and configuration of structural lintels.
Unit 5. Setting of the arch, vault elements and anchors or encounters to other construction elements according to their required layout.
Unit 6. Reconstruction of staircases and other special elements: configuration of its structural elements.

HOURS / ECVET POINTS

75h / 4,6 point

Unit 1. Cutting of customized pieces of stone

GENERAL DESCRIPTION

Shaping rough pieces of rock into accurate geometrical shapes, and arranging the resulting stones, often together with mortar, to form structures.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Know and explain the basics of EQF Levels 1 - 3 (bricklayer, stonemason).
	K2. Know the different types of natural stone, their characteristics and their application; Know the different mortars for processing with natural stones.
	K3. Know the techniques for the extraction, transport, handling and processing of natural and artificial stones (with hand tools and machines).
	K4. Know the techniques for the foundation, anchoring and dowelling of natural and artificial stones.
Skills	S1. Be able to recognize and evaluate natural and artificial stones before processing (e.g. layering).
	S2. Be able to manufacture, profile and install part stones according to the customer's requirements (with hand tools and machines).
	S3. Be able to make reliefs, sculptures, deepened and sublime ornaments and writings.
	S4. Be able to manufacture and install wall cladding and flooring.
Competences	C1. Communicate knowledge and skills to workmates, lead them to independent work and supervise the execution.
	C2. Be able to take the time and material requirements and report it to the construction management as the basis for the billing.
	C3. Be able to advise customers expertly and recommend further work.

Unit 2. Rows (courses) of brick walling: rigging and construction to required specifications

GENERAL DESCRIPTION

Construct masonry out of natural and artificial stones or bricks, install and assemble finished parts. To perform concrete and reinforced concrete works according to plans, for example in foundations or ceilings.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Know and explain the basics of EQF Levels 1 - 3 (bricklayers, concrete workers, plasterers).
	K2. Know and explain the relevant regulations of the technical building regulations (Euro codes) and the information sheets of the WTA (Scientific-technical work group for building conservation and preservation of monuments). http://wta-international.org/?L=2
	K3. Know the functions, constructive principles and differences of foundations and the different walls in the structure.
	K4. Know and explain the various requirements of existing structures, foundations, walls and components made of masonry and the special characteristics of concrete, masonry and mortar.
Skills	S1. Be able to distinguish and characterize different masonry and foundation works.
	S2. Be able to plan, execute, control and evaluate brickwork according to the specifications of existing buildings.
	S3. Be able to explain the functions, characteristics, scopes of application and limits of foundations and walls made of masonry to customers and employees.
Competences	C1. Communicate knowledge and skills to employees, lead them to independent work and supervise the execution.
	C2. Be able to take the time and material requirements and report it to the construction management as the basis for the billing.
	C3. Be able to advise customers expertly and recommend further work.

Unit 3. Construction of falsework for arched structures: shoring scaffolds

GENERAL DESCRIPTION

Position of temporary works to support spanning or arched structures in order to hold the component in place until its (re)construction is sufficiently advanced to support itself. Falsework includes the creation of suitable working areas and service passages, which make accessible any surface, even at high altitude, to be treated. Among the temporary structures there are also scaffolding and ribs, often made of wood, through which create adequate support during installation of arches or times or sustain horizontal architectural elements (beams and slabs).

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Know descriptive geometry for the design of the tracks generators for the creation of the rib of vaults and arches.
	K2. Know the theory on the structures, to identify the correct position of any supports or the structural functioning of the architectural element that includes support with the scaffolding.
	K3. Know the wood cutting theory and the mounting and joints of flexible strips and panels for the construction of curved ribs, also through the study of treatises of stereotomy of the wood.
	K4. Know editing systems scaffolding prefabricated frame to be realized for the renovation of vertical surfaces.
	K5. Knowledge of methods and theories for the de-Arching of masonry, with particular attention to the works mounted dry.
Skills	S1. Cutting wood workshop and assembly of ribs.
	S2. Design of appropriate ribs for the support of existing arcs and vaults.
	S3. Playing ribs and scaffolding described in the manuals.
	S4. Tests de-arching of works mounted dry.
Competences	C1. Creating ribs and temporary works of adequate support for every need.
	C2. Identification of the structural scheme of the architectural elements turned to be mounted on the ribs.
	C3. Identification of the structural scheme of the architectural elements to be mounted on the curved ribs.
	C4. Correct assembly of scaffolding for machining vertical surfaces in safety altitude.

Unit 4. Carving and configuration of structural lintels

GENERAL DESCRIPTION

Architectural element used to support the materials of the wall above a bay, a door or a window. The lintel can serve as a base for a tympanum and a discharge arc. At the beginning, made of stone and wood, raw materials found on the early sites of construction, gradually more worked, lintels have gone from the rectilinear form to curved shapes allowing greater spans and less binding loads for the materials. The lintels (mainly above doors) can be decorated elements that show a certain notoriety of the owner.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Identify different types of frequently used lintel in its region and their construction method.
	K2. Identify conditions that ensure the work stability (shapes, weight, disorders, flaws…).
	K3. Identify problems linked to the stapling.
Skills	S1. Work preparation: - Make technical drawings (blueprint + drawing). - Search for source and type of materials. - Note the shapes, dimensions and features of the work (type of cut).
	S2. Plan time and number of workers needed, order materials, communicate the safety and handling needs to the architect or the safety coordinator.
	S3. Work making: - Create and set up a template (intern formwork. - Check the stones joining on the floor.

	- Place elements with compassing and correct alignment. - Make a graft. - Make a stone stapling.
Competences	C1. Combine the technical knowledge linked to the heritage in order to make or repair a lintel that will meet the customer's expectations and the requirements of the global project.

Unit 5. Setting of the arch, vault elements and anchors or encounters to other construction elements according to their required layout

GENERAL DESCRIPTION

Arches or vaults are formed by the joining together of individual stones which are strengthened with their lateral surfaces mutually and in their entire scope against other, fixed components (abutments). In this way, openings and rooms are covered free-hovering. Before the development of reinforced concrete, vaults were the only (incombustible) components with which rooms could be massively covered.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Know and explain the basics of EQF Levels 1 - 3 (bricklayers, concrete workers, stoneworkers).
	K2. Know the functions, constructive principles and differences of arch/vault elements.
	K3. Know the static rules and principles for the construction of arches, vaults and abutments.
Skills	S1. Is able to draw the different arches in the various designs on a scale of 1: 1 (e.g. segmental arch, basket arch, gothic arch).
	S2. Is able to manufacture the scaffold and formwork and arrange the brickwork.
	S3. Is able to manufacture arches and vaults of masonry in visual quality (notice: the under view of the arch or vault is not visible during masonry work).
Competences	C1. Communicates knowledge and skills to employees, lead them to independent work and supervise the execution.
	C2. Is able to take the time and material requirements and report it to the construction management as the basis for the billing.
	C3. Is able to advise customers expertly and recommend further work.

Unit 6. Reconstruction of staircases and other special elements: configuration of its structural elements

GENERAL DESCRIPTION

Reconstruction of structural elements damaged through the use of identical materials to the original (or similar and compatible) aimed at ensuring the structural integrity of the article and its usability.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Know the basic principles on the static and dynamic behaviour of the structures, to identify and classify the elements to replace and reproduce.
	K2. Know the dimensional standards for the construction of staircases suitable for the correct use.
	K3. Know the theory on the intrinsic and extrinsic characteristics and quality of the material to be used (stone, brick, concrete, wood...) for the formation of structural elements.
	K4. Classify and define case studies emblematic of wider application.
	K5. Know descriptive geometry of two-dimensional and three-dimensional structural element design.
	K6. Know the stone stereotomy for the construction of complex stone stairs.
	K7. Know the production modules of the stone structural elements through the manufacturing procedure Cad - Cam, with the use of numerical control machines.
Skills	S1. Create models that reproduce theoretical applications.
	S2. Discuss on possible alternative modes of execution of case studies.
	S3. Classify of reconstruction interventions, identify the major issues in relation to the materials used, and choose the best solutions and the best performing material for each type of intervention.
	S4. Work on the definition of the structural elements in stone through the practice of the techniques of the stonemasons.
	S5. Create structural elements through the production Cad-Cam, with the use of numerical control machine.
Competences	C1. Engage in identification of structural members deteriorated to replace.
	C2. Produce structural elements in stone through the use of the stonemasons' techniques.
	C3. Produce structural elements in stone through the use of CAD - CAM techniques.
	C4. Deal with the assembly of the structural elements (steps of a ladder, lintel replacement, etc.) by managing the static behaviour of the same and the surrounding structures.

Module 3: Rehabilitation activities at roofs

LEARNING UNITS

Unit 1. Placement of straps and components of the gable structure.
Unit 2. Placement of tiles and plate covering.
Unit 3. Execution of finishes and roof aprons.
Unit 4. Resolution of roof encounters.

HOURS/ ECVET POINTS
75 / 4.6 point

Unit 1. Placement of straps and components of the gable structure

GENERAL DESCRIPTION

The gable is the exterior wall with a triangular end, which are supporting, in traditional frame (wall to wall), the horizontal beams (purlin). The gable is perpendicular to the lateral wall which is receiving the water ledges.
The gable can:

- *Be higher than the roof in a straight-lined way or "sawtooth".*
- *Be covered by the roof.*

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Take into account the stability to resist the lateral forces due to winds and the load of the roof.
	K2. Know regulation about common walls.
	K3. Know functions and flaws in insulation.
	K4. Know about basic materials resistance.
	K5. Know regulation for works-at-height (work on a scaffold…).
Skills	S1. Work preparation: - Make the exact blueprint of masonry. - Cut the bricks at a regular angle.
	S2. Place the insulation.
	S3. Make decorative masonry.
	S4. Put stable and precise slope markers.
Competences	C1. Combine the technical knowledge linked to the heritage in order to make a gable structure that will meet the customer's expectations and the requirements of the global project.

Unit 2. Placement of tiles and plate covering

GENERAL DESCRIPTION

Placement of tiles and other covering materials by placing the tiles or covering pieces, as a general rule, in horizontal strings on the support, perpendicular to the ridge, following the line of maximum slope and bottom up, ensuring the correct overlap of the Pieces and fixing them, if necessary and according to the type of covering material, by paste or mortar or by nails or hooks on screens.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Interpret the planes and to know the content of the documentation of the construction projects, particularly, in the relative thing to technical definition, graphic representation and requirements of water tightness, insulation and covering resistance.
	K2. Understand the functions of the coverings and its performance in the presence of water, wind and passage of heat: flow of water/water flow laws/rights, surface-tension, overflow, absorption and capillarity; the wind action and the suction power of the wind; insulating materials and thermal bridges.
	K3. Identify the different materials composing traditional coverings: inclination walls formation, boards and covering material.
	K4. Distinguish the different types of traditional coverings: mounting systems, special pieces, properties, performance and incompatibilities.
	K5. Identify the damages which affect the coverings and to define the repairs needed according to each damage.
	K6. Know the execution procedures of the traditional coverings: materials and construction methods of skirts, boards and its components.
	K7. Identify the traditional solutions of coverings, inclined coverings by tiles (ceramic tiles and slates tiles) and by metal plates (zinc, copper…).
	K8. Identify the tools used in the placement of coverage materials for inclined coverings: types, function, management and safety requirements.
	K9. Define the acceptation or rejection conditions of covering materials which are dismantled for its exploitation on restoration of the covering.
	K10. Distinguish the types of construction and demolition wastes that can be generated on restoration works of the traditional coverings and its correspondent treatment.
	K11. Identify the labour risks associated to the restoration Works of inclined coverings, and to know the preventive and protection measures needed for its control.
Skills	S1. Describe the development of execution Works of traditional coverings; specifying the different functions of layers and elements, material used, construction methods of the skirts and the boards and the placement sequence of coverage material…); explaining the realization of singular elements and its importance; by linking the causes of the dysfunctions detected in the covering and the needed reparations and identifying the measurements that need to be respected.
	S2. Accomplish the dismantling of the covering materials, preventing from any damage to the removed materials and other constructive elements that must be kept, watching the manipulation conditions and supply of different materials, applying the acceptance criteria of the original elements dismantled for its reutilization, and verifying the state and resistance of the plank, the support structure and the rest of the elements of the covering.

	S3. Determine setting outs and to apply traditional techniques of coverage in inclined coverings, according to each original material of coverage; ceramic or slates tiles, copper strips, zinc…; identifying the configuration to be executed (distribution and overlapped pieces…); interpreting the relevant technique documentation; using the suitable materials; applying the solution and adopted execution sequence; respecting the original fixation system (Spiking, on batten support frames, glues for plasterboards, dry conditions…); solving convergences and special elements of the covering; analysing the conditions required on water tightness, insulation and the covering ventilation; and selecting and using the proper way the work equipment for the mechanization and placement of the covering pieces.
Competences	C1. Apply traditional techniques of placing materials of coverings in restoration works; identifying the execution sequence and the original configuration of the covering which is going to be interceded; interpreting the technique documentation needed and accomplishing the requirement of projects of original coverage; selecting and applying the profited material and work equipment; applying the safety and preventive measures against the identified risks; and minimizing the impact on the environment.

Unit 3. Execution of finishes and roof aprons

GENERAL DESCRIPTION

Execution of finishes and roof aprons: rebuilding of eaves, ridges, construction valley, overhangs and other damaged elements on the covers, through the application of traditional techniques and the use of identical, similar or compatible materials to the originals.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Know how to interpret the plans and to know the documentation content of work projects, particularly, to the thing related to technical definition, graphical representation and water tightness requirements, insulation and resistance of coverings and its final elements.
	K2. Identify the finish elements of the traditional coverings or roofs: eaves, ridge tiles, hip rafters, parapet walls, edge tiles…
	K3. Identify the damages affecting the finish elements of the traditional inclined coverings and to define the reparation needed according to each damage.
	K4. Know the execution procedures of the traditional coverings: materials, construction methods of the skirts and boards and its components.
	K5. Identify the execution solutions of the finishing of the traditional inclined coverings: eaves, ridge tiles, hip rafters, parapet walls, edge tiles…
	K6. Identify tools: types, function, use and security requirements.
	K7. Define the acceptance or rejection conditions of the dismantled materials for its exploitation in the finish restoration of the covering.
	K8. Distinguish the different types of construction wastes and demolition that can be generated in the restoration works of traditional coverings and its correspondent treatment.
	K9. Identify the labour risks associated to restoration Works of covering finishing and to know the preventive and protection measures needed for its control.
Skills	S1. Describe the development of finishing executions and parapet walls of the traditional coverings; specifying the different elements functions (eaves, ridge tiles, hip rafters, parapet

	walls, edge tiles…), the material used and the sequence of realization; linking the causes of the detected dysfunctions in those finish elements and the reparation needed.
	S2. Accomplish the dismantling of the finish elements of coverings that must be repaired or substituted, preventing from any damage to the removed materials and other covering elements that must be kept, analysing the manipulation conditions and supply of different materials, applying the acceptance criteria of the original elements dismantled for its reutilization, and verifying the state and resistance of the support structure and the rest of the elements of the covering.
	S3. Determine setting outs and to apply traditional techniques of execution of finish inclined coverings, …); interpreting the relevant technique documentation; using the suitable materials; respecting the original configuration of the finish element that needs to be restored (eave, ridge tiles, hip rafters, parapet wall, edge tile…) analysing the conditions required when assembling with the rest of the elements of the covering and the building facing, and selecting and using properly the needed work equipment.
Competences	C1. Apply traditional techniques of finish execution and parapet walls of coverings in restoration works; identifying the original solution and interpreting the technique documentation required and accomplishing the requirement of projects; if it is needed making a selecting dismantle in order to use the original elements selecting and applying the profited material and work equipment; applying the safety and preventive measures against the identified risks; and minimizing the impact on the environment.

Unit 4. Resolution of roof encounters

GENERAL DESCRIPTION

Resolution of roof encounters: repair of construction valley and damaged encounters on gable roofs, overhangs, fireplaces, dormer rooms and skylights, among other salient elements, through the application of traditional techniques and the use of identical, similar or compatible materials to the originals.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Know how to interpret the plans and to know the documentation content of restoration projects, particularly, to the thing related to technical definition and solvency of encounter of coverings and the requirements of water tightness, insulation and resistance.
	K2. Identify encounter of traditional coverings or roofs with other constructive elements.
	K3. Identify the damages affecting the encounter of inclined traditional coverings with other constructive elements and define the needed restoration according to each damage.
	K4. Know the execution procedures of the traditional coverings: materials, construction methods of the skirts and boards and its components.
	K5. Identify the execution solutions of valley rafters of inclined traditional coverings and the encounter with gable ends, parapet walls, chimneys, mansards, skylights…
	K6. Identify used tools, types, and function, use and security requirements.
	K7. Define the acceptance or rejection conditions of the dismantled materials for its exploitation in the restoration of encounters of coverings with other constructive elements.
	K8. Distinguish the different types of construction wastes and demolition that can be generated in the restoration works of traditional coverings and its correspondent treatment.
	K9. Identify the labour risks associated to restoration Works of inclined covering and to know the preventive and protection measures needed for its control.

Skills	S1. Describe the development of works for roof encounters of traditional buildings with other constructive elements: gable ends, parapet walls, chimneys, mansards, skylights…: specifying the adopted solutions, the material used and the realization sequence; linking the causes of the detected malfunctions in this encounters and the reparations needed.
	S2. Accomplish the dismantling of the used materials in covering valley rafters and the encounter with other constructive elements that need to be repaired of substituted, preventing from damaging removed materials and the remaining covering elements, by analysing the manipulation conditions and supply of the different materials, applying the acceptance criteria of original dismantled elements for its reutilization and verifying the state and resistance of the support structure and the rest of covering elements.
	S3. Accomplish the dismantling of the used materials in covering valley rafters and the encounter with other constructive elements that need to be repaired of substituted, preventing from damaging removed materials and the remaining covering elements, by analysing the manipulation conditions and supply of the different materials, applying the acceptance criteria of original dismantled elements for its reutilization and verifying the state and resistance of the support structure and the rest of the covering elements.
Competences	C1. Apply the traditional execution techniques of the covering valley rafters and its encounter with other elements, identifying the original solution and interpreting the required technique document and accomplishing the restoration project requirements; making a selective dismantle if it is needed for the exploitation of original materials; selecting and applying the proper material and work equipment; applying the prevention and protection measures against other identified risks and minimizing the impact on the environment.

Module 4: Sanitation and plumbing interventions for rehabilitation

LEARNING UNITS

Unit 1. Installation and repairs of guttering, downpipes and system components.
Unit 2. Execution of joints, encounters and anchors to other construction elements in sanitation installations.
Unit 3. Finishing of encounters of roof plumbing with other building elements.

HOURS / ECVET POINTS
50 / 3.1 points

Unit 1. Installation and repairs of guttering, downpipes and system components

GENERAL DESCRIPTION

Diagnose, plan, implement and monitoring rehabilitation / reconstruction work of guttering, downpipes and system components, according the original construction and respecting current construction standards (technical standards / safety, health and environment).

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Interpret the constitution of a process, distinguishing its different parts in particular with respect to special technical parts within the scope of sanitation and plumbing installations.
	K2. Understand the functions of the different piping systems and their constituents, namely pipes and fittings, auxiliary seals and their reaction to water, moisture, vibration, infiltration.
	K3. Distinguishes the different types of sanitation and plumbing facilities used in rehabilitation, their performance and incompatibilities.
	K4. Identify the different types of materials used in traditional plumbing systems, their characteristics and applicability.
	K5. Identify the pathologies that affect the sanitation and plumbing installations and define a reparation plan considering the materials and processes used.
	K6. Identify the tools and the equipment used in sanitation and plumbing installations, their functions and precautions in their handling and safety requirements.
	K7. Distinguish the different types of traditional building waste that are generated and the corresponding treatment (lead, copper).
	K8 Identify the risks associated to the tasks performed in the sanitation and plumbing installations as well as the respective safety measures for their elimination or reduction. Identify individual safety measures and equipment.
	K9. Distinguish different types of costs, specially labour and material costs.
	K10. Identify issues related to Construction Site implementation (Dimensions, conditions, location and relationship with local authorities).
Skills	S1. Programme and plans the sequence of activities which must be developed and establishing precedence among them. Determine the materials to be used, determine the

	constructive processes to be adopted in view of the operationally of the construction and the anomalies and their repair needs.
	S2. Accomplish the clearing works of deteriorated materials, its packaging for further treatment, according to its hazards.
	S3. Determine setting outs and to apply traditional techniques of execution of sanitation and plumbing installations using appropriate materials and equipment taking into account their characteristics and resistance, respecting the original design of the buildings, accomplishing the development of the execution in order to guarantee the quality of the work in accordance with technical specifications.
Competences	C1. Manage and supervise the rehabilitation works of guttering, downpipes and system components, respecting the processes and techniques appropriate to each stage of the process, selecting materials, tools and equipment's to use. Be responsible for the monitoring and management of waste streams, minimize the environmental impact of the work carried out and taking prevention and safety measures.

Unit 2. Execution of joints, encounters and anchors to other construction elements in sanitation installations

GENERAL DESCRIPTION

Diagnose, plan, implement and monitor rehabilitation / reconstruction work in the execution of joints, encounters and anchors to other construction elements in sanitation installations, considering the original construction and respecting the current norms of construction (technical standards / safety, health and environment) and taking into account the functionality of buildings.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Interpret the constitution of a project, distinguishing its different parts in particular with respect to special technical parts within the scope of sanitation and plumbing installations.
	K2. Understand the functions of the different sanitation installations, their constituents, and their compatibility with other construction elements.
	K3. Distinguishes the different sanitation installations used in rehabilitation, their performance and incompatibilities.
	K4. Identify the different types of materials used in traditional sanitation installations, their characteristics and applicability.
	K5. Identify the pathologies that affect the sanitation installations and define a reparation plan considering the materials and processes used.
	K6. Identify the tools and the equipment used in sanitation installations, their functions and precautions in their handling and safety requirements.
	K7. Distinguish the different types of traditional building waste that are generated and the corresponding treatment.
	K8. Identify the risks associated to the tasks performed in the sanitation installations as well as the respective safety measures for their elimination or reduction. Identify individual safety measures and equipment.
	K9. Distinguish different types of costs, specially labour and material costs.

	K10. Identify issues related to Construction Site implementation (Dimensions, conditions, location and relationship with local authorities).
Skills	S1. Programme and plans the sequence of activities which must be developed and establishing precedence among them. Determine the materials to be used, determine the constructive processes to be adopted in view of the operationally of the construction and the anomalies and their repair needs.
	S2. Accomplish the works of removal of deteriorated materials, its packaging for further treatment.
	S3. Determine setting outs and to apply traditional techniques of execution of sanitation installations using appropriate materials and equipment taking into account their characteristics and resistance, accomplishing the development of the execution in order to guarantee the quality of the work in accordance with technical specifications.
Competences	C1. Manage and supervise the rehabilitation works of sanitation installations, respecting the processes and techniques appropriate to each stage of the process, selecting materials, tools and equipment's to use. Be responsible for the monitoring and management of waste streams, minimize the environmental impact of the work carried out and taking prevention and safety measures.

Unit 3. Finishing of encounters of roof plumbing with other building elements

GENERAL DESCRIPTION

Manage and supervise the rehabilitation works that make possible the transport of pluvial water coming from the roof of the building to the exterior through gutters or other elements that need to be framed with other constructive elements.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Identify the constitution of a process, distinguishing its different parts in particular with regard to special technical parts in the scope of pluvial water outflow.
	K2. Understand the functions of the different pluvial water drainage systems and their constituents, namely gutters, downpipes, drop tubes and other elements as well as their reaction to the surrounding environment.
	K3. Distinguish the different types of pluvial water drainage systems used in rehabilitation, their performance and incompatibilities.
	K4. Identify the different types of materials used in traditional pluvial water drainage systems, their characteristics and applicability.
	K5. Identify the pathologies that affect the various elements used in the drainage of pluvial water (clogging of gutters, degradation of welds and materials) and define a reparation plan considering the materials and processes used.
	K6. Identify the tools and equipment used in pluvial water drainage works, their functions and precautions in their handling and safety requirements, in particular those relating to work at heights.
	K7. Distinguish the different types of traditional building waste that are generated in this process and the corresponding treatment (lead, copper, concrete, zinc).
	K8. Identify the risks associated with the tasks it carries out in the context of pluvial water drainage (in particular those related to working at heights and welding) as well as the

	respective safety measures for its elimination or reduction. Identify individual and collective safety measures and equipment.
	K9. Distinguish different types of costs, specially labour and material costs.
	K10. Identify issues related to Construction Site implementation (Dimensions, conditions, location and relationship with local authorities).
Skills	S1. Programme and plans the sequence of activities which must be developed and establishing precedence among them. Determine the materials to be used, determine the constructive processes to be adopted in view of the operation of the work, the anomalies diagnosed and the respective repairs needs.
	S2. Accomplish the work of removing the deteriorated materials, its packaging for later treatment / reuse, according to its danger.
	S3. Determine setting outs and to apply traditional techniques of execution of pluvial water drainage, the use of appropriate materials and equipment taking into account their characteristics and strength, respecting the original design of the buildings and the compatibility between elements, accomplishing the execution of the project in ensure the quality of the work in accordance with the technical specifications.
Competences	C1. Manage and supervise the rehabilitation works that make possible the transport of pluvial water coming from the roof of the building to the exterior through gutters or other elements that need to be framed with other constructive elements, respecting the processes and techniques appropriate to each phase of the process, selecting materials, tools and equipment to use. Be responsible for monitoring and managing waste streams, minimizing the environmental impact of the work carried out and taking appropriate prevention and safety measures.

Module 5: Finishing works and restoration of decorative elements

LEARNING UNITS

Unit 1. Treatment of the seams and joints in facades and interior architecture.
Unit 2. Configuration of finishes and decorative masonry elements
Unit 3. Restoration of decorative stone elements (stone carving).
Unit 4. Decorative painting: selection of pigments and application of colour, lacquers and varnishes.
Unit 5. Elaboration and application of templates and moulds for decorative fittings.

HOURS / ECVET POINTS
50 / 3.1 points

Unit 1. Treatment of the seams and joints in facades and interior architecture

GENERAL DESCRIPTION

Surface treatment of the spaces between the masonry elements which guarantees water tightness and avoids the proliferation of undesirable mosses and vegetation that can degrade the masonry. The joint produces aesthetic appearance. These joints can be treated in various ways by applying different mortars.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Identify different types of grouts according to different eras and areas.
	K2. Identify different diseases: gutted grouts, parasites, salts, lichen, vegetation, grout chalking, cracking, fouling…
	K3. List the grouts composition: sands from different sources, air lime, cement, and colouring.
Skills	S1. Work preparation: - Detect diseases and defects of the mortar. - Decided which technique to execute. - Identify the mortar composition with the help of qualified persons. - Copy the composition the most precisely possible. - Clean the wall (empty the grouts, remove and treat the vegetation).
	S2. Work achievement: - Treat the grouts (waterproof, cleaning, reinforcement…). - Prepare a homogenous and lasting pointing mortar with the right consistency. - Compact the mortar in the empty grouts.
	S3. Setting the finishing touches: - Put the right finishing touches. - Protect the places that do not have to be treated or the attendant materials (floors, frames…). - Protect the wall from bad weather.
Competences	C1. Combine the technical knowledge linked to the heritage in order to renovate grouts that will meet the customer's expectations and the requirements of the global project.

Unit 2. Configuration of finishes and decorative masonry elements

GENERAL DESCRIPTION

Available finishes and masonry decorations: renovating or restoring the superficial layer, not structural, protection and decoration of vertical surfaces, exterior and interior of the buildings, as well as the reconstruction of the original form of decorative masonry.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1 Know the finishing products to determine their compatibility with the support and of the chemical composition of the same.
	K2. Know the application technique (thickness) of the products finishes in order to respond to the protection needs of the masonry.
	K3. Know stucco decoration techniques (modine types and use).
	K4. Know relevant technical and descriptive geometry for the redesign of the decorative items to complete.
	K5. Know the production modules of the stone decorative elements through the manufacturing procedure Cad - Cam, with the use of numerical control machines.
	K6. Know the techniques of the stonemasons for the integration of sculptural and decorative elements in stone.
Skills	S1. Do plaster casts of the decorative elements to the end of the shapes and volumes understanding.

	S2. Execute work through batter board decorations and plaster profiles or stucco applications.
	S4. Work on the definition of the structural elements in stone through the practice of the techniques of the stonemasons.
	S5. Create structural elements through the production Cad-Cam, with the use of numerical control machine.
Competences	C1. Take care of the identification of the decorative elements needing repair to replace.
	C2. Produce decorative elements in stone through the use of the stonemasons' techniques.
	C3. Produce decorative elements in stone through the use of CAD - CAM techniques.
	C4. Deal with the assembly of the decorative elements (sculptures, cornices, balustrades and frames ...) managing the static behaviour of the same and neighbouring structures, through the use of rods made of carbon fibber and epoxy resins, adhesives, or through the formation of special segments to anchor with mortar.

Unit 3. Restoration and placement of decoration finishes (ornamentations)

GENERAL DESCRIPTION

Cut and ornamentation, as part of new or renovation works, exterior building elements (window sills, paving stones, stairs, ...), interior (fireplaces, ...) or decoration (cornices, balconies, balustrades) in natural minerals (sandstone, granite, limestone, slate ...) according to safety rules. Can sculpt and engrave, lay the moulded elements on the sites and carry out works of protection or restoration of the stone.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1 Know different types of stones (limestone, granite, sandstone, resin) and materials annex (marble powder, polymers, impregnation products, etc.) and their properties.
	K2. Identify different styles and times characterizing the elements which compose of ornamentation.
	K3. Know different techniques of cutting and sculpting manually and mechanically.
	K4. Identify the tools (rock saw, chisel, mallet, bush hammer) and their functions.
	K5. Know the different techniques of sealing and fixing (dowelling traditional technic, chemical dowelling technique).
	K6. Know different additives agents (plasticizing agent, waterproofing agent, and fungicide), consolidating agents (hardening resin) and re-mineralizing agents (surfacing product) currently employed.
Skills	S1. Read, comprehend and translate plans and sketch notebooks.
	S2. Carry out the survey of elements of simple structures or of sites to be replaced or fitted out.
	S3. Cut up, carve, sculpt, assembly, polish.

	S4. Carry out disassembly or removal work.
	S5. To Carry out repairs using appropriate techniques (restoration).
Competences	C1. Being able of replacing and / or restoring old decorative or ornamental elements respecting the architectural style and the historical features of the building. This taking into account the environmental constraints and knowing at the same time how to put the intervention in the global execution of the restoration process.
	C2. Deal with the analysis of the different structural components and implementing the proper restoration techniques for civil engineering structures.
	C3. Produce decorative elements in stone through the use of CAD - CAM techniques.
	C4. Deal with the assembly of the decorative elements (sculptures, cornices, balustrades and frames ...) managing the static behaviour of the same and neighbouring structures, through the use of rods made of carbon fibber and epoxy resins, adhesives, or through the formation of special segments to anchor with mortar.

Unit 4. Decorative painting: selection of pigments and application of colour, lacquers and varnishes

GENERAL DESCRIPTION

Realization of manufactured works characterized by an aesthetic and decorative component in a restoration worksite.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Know different techniques of realization of ancient patina (lead, with washes, wax coating etc.).
	K2. Identify different styles and an artistic periods together with all the elements which characterize it.
	K3. Identify different materials resources (lime, stones powder, oils, casein).
	K4. Identify different surfaces, such as white washes, coating, wood, stones.
	K5. Identify different materials and tooling (brushes and paint brushes, spatulas, smooth tool).
	K6. Know the different components: pigments, solvents, binders and dryers.
Skills	S1. Choose the execution processes et different protocols of implementation (glazing, whitewashing, crystallizing, coating, lacquering…).
	S2. Verify the nature and state of the supports.
	S3. Prepare the tools and the materials to realize a decoration.
	S4. Realize the basis/support respecting the preparatory works chronological order.
	S5. Prepare the products respecting dosages and instructions especially in regard with safety regulations.
	S6. Apply the products with adequate tools and respecting the timing and the condition to apply and let dry in the proper manner. Respect the timing of recovery - polymerization and drying time.
	S7. Realize aging patinas and decoration (wax coating, whitewashes, simulation of materials – ex marbles etc.).
	S8. To realise fitting of restoration on the worksite.
Competences	C1. Putting in place a deep analyses of the substrates, assessing their states of the art. Determining which the areas of intervention and/or restoration are. Elaborate an intervention protocol taking into account the environmental issues and the worksite conditions. Being able to repair substrates and basis supports.
	C2. Be responsible for applying the products respecting the state of the art and all the H&S issues, taking into account at the same time the worksites conditions and the unexpected situations.
	C3. Comply in realizing decorations respecting the state of the art and understanding the global harmony of the worksite.
	C4. Decoding, analysing and understanding the specifications taking into account the exigencies or the not reversibility of some techniques.

Unit 5. Elaboration and application of templates and moulds in plaster for decorative fittings

GENERAL DESCRIPTION

Cornices, moldings of style, capitals, columns or rosettes: the molding and ornamental plasterer realizes elements of decoration in staff (fibrous plaster) or in stucco to dress up an interior or restore an old building. Colored plasters and sophisticated finishes allow it to create interiors of character.

LEARNING OUTCOMES

On successful completion of the Unit, trainee should:

Knowledge	K1. Identify and know different styles and components of artistic periods.
	K2. Identify different precast elements (gypsum plaster, mouldings, and ornaments).
	K3. Know different types of plaster (coarse plaster, coating plaster, reduced plaster for coating, model gypsum, MOLDA plaster).
	K4. Know the different techniques and types of moulding (fibre drawing plaster or not).
	K5. Know the different types of sealing (for the very thick high dosed plaster or for the plaster where sand is added).
	K6. Know different techniques of assembling and collage (straight laying, oblique laying, bonded laying).
	K7. Know different techniques of raising the dimensions of the support (visual with sketches, taking impression, pictures).
	K8. Identify the manufacturing equipment (zinc template, silicone mould, trowel, brushes, sponges, spatulas) and installation materials (nails, laser, spirit level, CORDEX).
Skills	S1. To perform dragging with zinc patterns. https://www.youtube.com/watch?v=uQHlIqakJ-o
	S2. To perform prototypes, models and moulding https://www.youtube.com/watch?v=K5o3CrjDnrc
	S3. To realize objects built with fibrous plaster or tissues, or vegetal or mineral.
	S4. To utilise laying techniques by sealing or gluing.
Competences	C1. Comply with lying manufactured or precast elements following the specific and given characteristics. Replacing or restoring ancient decorative elements taking into account the global style in order to respect the global project of restoration.
	C2. Carrying out and realizing models and / or moulds and / or tests of different complexity. To create or recreate missing or non-existent old decor items. Determining and realizing appropriate mixture respecting the use of the products. Choosing the right technic and putting it in place properly.

Assessment, documentation, validation and recognition

By signing this Memorandum of Understanding we confirm that we have discussed the procedures for assessment, documentation, validation and recognition and agree on how it is done.

Validity of this MoU

This Memorandum of Understanding is valid from the end of the project until five years later, may be renewed in subsequent updates of the project or in a new one.

Signatures

Organisation / Country	Organisation / Country	Organisation / Country	Organisation / Country
Name / Role	Name / Role	Name / Role	Name / Role
Place / Date	Place / Date	Place / Date	Place / Date
Signature	Signature	Signature	Signature

Do not eliminate this page

Project leader:

Fundación Laboral de la Construcción
SPAIN

Partners:

Comité de Concertation et de Coordination de l'Apprentissage du Bâtiment et des Travaux Publics
FRANCE

Ente Nazionale per la Formazione e L´Addestramento Professionale Nell´Edilizia di Puglia
ITALY

Centro de Formação Profissional da Indústria da Construção Civil e Obras Públicas do Sul
PORTUGAL

Bildungszentren des Baugewerbes e.V.
GERMANY

Centre IFAPME Liège-Huy-Waremme
BELGIUM

CONSTRUCTION INHERITANCE