WP4

D4.2: SEBCoVE Curriculum

Co-funded by
the European Union

101144027 — SEBCoVE — ERASMUS-EDU-2023-PEX-COVE

SEB CoVE
SMART ELECTRICITY FOR BUILDINGS

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SMART ELECTRICITY FOR BUILDINGS

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Erasmus + EU Solidarity Corps
101144027-SEBCoVE ERASMUS-EDU-2023-PEX-COVE

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Executive Summary

The **SEBCoVE Curriculum** is a forward-looking vocational education and training (VET) initiative designed to upskill professionals in the **Smart Electricity for Buildings (SEB)** sector, aligning with Europe's green and digital transition priorities. Developed under the Erasmus+ EU Solidarity Corps framework, this curriculum addresses emerging competence gaps in energy efficiency, automation, digitalization, and renewable energy systems within the built environment.

Purpose

The primary aim of the SEBCoVE Curriculum is to **equip learners with the knowledge, skills, and competences required to work in the evolving SEB sector**, fostering employability, innovation, and sustainability. It responds to increasing industry demand for qualified technicians and specialists capable of integrating smart technologies in building systems.

Structure

The curriculum is built around **11 modular microcredentials**, each representing a distinct professional profile aligned with the **European Qualifications Framework (EQF)** at levels 4 to 6. The microcredentials follow a **learning-outcomes-based approach**, ensuring clarity, transferability, and relevance across national contexts. Key areas covered include building automation, renewable energy systems, electric vehicle charging, smart grids, energy data analytics, and sustainability management. The training is supported by a ubiquitous learning platform and enriched with digital tools such as video lectures, simulations, and a serious game.

Impact

By offering **stackable, certifiable modules**, the SEBCoVE Curriculum promotes **lifelong learning** and flexible career pathways. It empowers learners to build competence

progressively and tailor their upskilling journeys according to personal and labor market needs. The curriculum fosters the advancement of **green and digital skills**, enabling individuals to contribute actively to the energy transition and sustainable development goals. Its alignment with **ISO/IEC 17024 certification** ensures high-quality, validated assessment of competences across the EU.

Target Groups

SEBCoVE targets a broad audience, including:

- **Initial VET learners** seeking to enter the energy and automation sectors;
- **Professionals and technicians** in electricity profession looking to reskill or upskill in line with industry trends;
- **Adult learners and company staff** engaging in continuing VET (cVET) for career advancement;
- **VET and H/E institutes** offering initial and continuing training that seek to enrich their curricula and better prepare learners to address skills mismatches in the energy and construction sectors.

Abstract

The SEBCoVE Curriculum, developed within the project (101144027-SEBCoVE ERASMUS-EDU-2023-PEX-COVE), presents an innovative, modular, and learning-outcomes-based training model designed to address the evolving needs of professionals in the Smart Electricity for Buildings (SEB) sector. This curriculum supports the European agenda for green and digital transitions by fostering competences in areas such as renewable energy systems, building automation, smart grids, electric vehicle charging infrastructure, and energy data analysis.

Rooted in the European approach to microcredentials, the curriculum is structured around 11 specialized microcredentials, each corresponding to a clearly defined professional profile and aligned with the European Qualifications Framework (EQF) at levels 4 to 6. These microcredentials reflect the core competences needed in the SEB sector and are designed using the legacy principles of the European Credit System for Vocational Education and Training (ECVET). Although ECVET has been formally phased out, its key concepts—such as modular qualifications, learning outcome orientation, and credit point allocation—remain central to the SEBCoVE curriculum's structure.

The curriculum development process involved the identification of occupational profiles and core competences through multi-stakeholder engagement in four EU regions, incorporating industry feedback via the Knowledge Triangle model (VET–Research–Industry). Each microcredential includes detailed units of learning outcomes, supported by estimated workload (expressed in ECVET points), EQF level classification, and robust quality assurance mechanisms. The total training volume is 550 hours, with each microcredential typically comprising 50 hours of learning.

To ensure accessibility and flexibility, the SEBCoVE training programme is delivered in a fully ubiquitous digital learning environment via an e-learning platform, while also supporting hybrid and face-to-face modalities. The pedagogical approach promotes learner autonomy, peer collaboration, and practical engagement. Innovative learning

resources such as serious games, instructional videos, and interactive modules are integrated to enhance learner motivation and retention.

Certification is aligned with ISO/IEC 17024 standards, ensuring fair, consistent, and transparent validation of competences. Each microcredential is independently certifiable and stackable, enabling learners to accumulate qualifications toward a Certificate of Specialization in Smart and Sustainable Building Systems.

By equipping learners with cutting-edge competences and aligning VET provision with labor market needs, the SEBCoVE Curriculum advances the goals of lifelong learning, employability, and sustainable development across Europe.

Keywords

SEBCoVE (Smart Electricity for Buildings Centers of Vocational Excellence)
A European initiative aiming to enhance vocational education and training (VET) in smart electricity for buildings by aligning learning with real-world industry needs through microcredentials and the Knowledge Triangle model.

Microcredential
A certified record of the learning outcomes a learner acquires through a short learning experience, focused on specific skills or competences, and designed to be standalone or stackable toward larger qualifications.

Learning Outcomes
Statements that define what a learner is expected to know, understand, and be able to do after completing a learning process, usually classified into knowledge, skills, and competences.

EQF (European Qualifications Framework)
A common European reference framework that helps compare national qualifications across Europe based on learning outcomes at eight levels of competence.

ECVET (European Credit System for Vocational Education and Training)
A now-discontinued EU framework for transferring, recognizing, and accumulating learning outcomes in vocational education, whose principles still inform SEBCoVE's modular design and credit point allocation.

Modular Curriculum
An educational structure composed of independent learning units or modules that can be combined in various ways to create personalized learning paths or complete qualifications.

Smart Electricity for Buildings (SEB)
A sector that integrates renewable energy systems, building automation, smart grids, and digital energy management to create sustainable and energy-efficient residential and commercial buildings.

Knowledge Triangle
A collaborative framework connecting Vocational Education and Training (VET), Research institutions, and Industry to co-create skills, innovation, and training content relevant to the labor market.

ISO/IEC 17024
An international standard that specifies criteria for certifying individuals based on fair, transparent, and validated assessment procedures to ensure the reliability and quality of credentials.

Lifelong Learning
The ongoing, voluntary pursuit of knowledge for personal or professional development throughout an individual's life, often supported through flexible, modular qualifications like microcredentials.

Stackable Qualification
A system in which smaller credentials (e.g., microcredentials) can be combined or accumulated over time to build toward a full certification or diploma.

Ubiquitous Learning Environment
A flexible learning system that allows access to educational resources and learning activities anytime and anywhere, often supported by digital platforms and mobile technologies.

Certification Scheme
A structured process defining how learners are assessed and awarded credentials, including eligibility, assessment methods, and quality assurance measures.

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Revision History

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THE LEARNING-OUTCOMES ORIENTED CURRICULUM

INTRODUCTION

As defined by CEDEFOP, a curriculum is a "*normative document setting the framework for planning learning experiences*". Depending on the country, the type of education and training, and the institution, curricula may define, among other learning outcomes, objectives, contents, place and duration of learning, teaching and assessment methods to a greater or to a lesser extent. New approaches to learning and research findings on how the brain works, the need to establish a closer link between VET provision have a decisive influence on the introduction of outcome-oriented curricula in VET.

These tools require a similar shift to learning outcomes in national VET systems: there is some evidence that learning outcomes are increasingly used to design qualifications, standards and to orient quality assurance and certification approaches across Europe (Cedefop, 2009b; Cedefop, 2009c).

THE USE OF MICROCREDENTIALS

Background and Rationale

On June 16, 2022, the Council of the European Union adopted a Recommendation on a European approach to microcredentials for lifelong learning and employability. This initiative aims to support the development, implementation, and recognition of microcredentials across institutions, businesses, sectors, and borders. The Council's recommendation sets forth three main objectives for adopting a European approach to microcredentials:

1. **Empower Individuals**
   - Enable individuals to acquire, update, and improve knowledge, skills, and competences to thrive in an evolving labor market and society.

2. **Support Providers**
   - Enhance the quality, transparency, accessibility, and flexibility of learning offerings from microcredential providers.
   - Encourage cooperation among higher education institutions, vocational education and training (VET) institutions, adult learning providers, and employers.
3. **Foster Inclusivity and Accessibility**
   - Promote inclusivity, access, and equal opportunities, contributing to resilience, social fairness, and prosperity for all.

Scope and Definitions

The European Council recommendation defines a microcredential as a “record of the learning outcomes that a learner has acquired following a small volume of learning.”. These learning outcomes are assessed against transparent and clearly defined criteria. Microcredentials are designed to provide specific knowledge, skills, and competences that respond to societal, personal, cultural, or labor market needs. They are owned by the learner, can be shared, and are portable. They may stand alone or be combined into larger credentials and are underpinned by quality assurance following agreed standards in the relevant sector or area of activity (*COUNCIL RECOMMENDATION on a European approach to microcredentials for lifelong learning and employability, 16 June 2022*).

European standard elements to describe a microcredential

The Council's Recommendation encourages Member States to adopt the common definition and apply standard elements for describing microcredentials, **suggesting a list of mandatory and optional elements** which should be used to describe microcredentials.

Table 1: Mandatory and Optional Elements to describe a microcredential

Mandatory elements (11)
1. Identification of the learner (target group)

2. Title of the microcredential
3. Country/Region of the issuer
4. Awarding body
5. Date of issuing
6. Learning outcomes
7. Notional workload needed to achieve the learning outcomes (in ECTS credits, where possible)
8. Level (and cycle, if applicable) of the learning experience leading to the microcredential (EQF), if applicable
9. Type of assessment
10. Form of participation in the learning activity
11. Type of quality assurance used to underpin the microcredential

Source: EU Council Recommendation on Microcredentials.

Optional elements (5)

12. Prerequisites needed to enroll in the learning activity
13. Supervision and identity verification during assessment (unsupervised with no identity verification, supervised with no identity verification, supervised online, or onsite with identity verification)
14. Grade achieved
15. Integration/ stackability options (stand-alone, independent microcredential/ integrated, stackable towards another credential)
16. Further information

Source: EU Council Recommendation on Microcredentials.

The use of ECVET for learning Outcomes

The adoption of a learning outcomes approach in vocational education and training (VET) has been widely endorsed across Europe (Cedefop, 2009b). European tools developed under the Copenhagen Process—such as the European Qualifications Framework (EQF) and the European Credit System for VET (ECVET)—use learning outcomes to enhance **transparency, comparability, transferability, and recognition** of qualifications across countries and levels (*Copenhagen Declaration, 2002*).

Established in 2009, **ECVET** was designed to support lifelong learning and promote the recognition and accumulation of assessed learning outcomes across European VET systems. Inspired by the Erasmus programme, it aimed to facilitate the **mobility of VET learners** through the recognition of training completed abroad (*The European Credit System for Vocational Education and Training, Luxembourg: Publications Office of the European Union, 2021)*.

Beyond learner mobility, ECVET addressed broader goals:

- Recognition of **worker qualifications** across borders,
- Flexibility within national and European **labour markets**,
- Support for **lifelong learning** and upskilling.

Status and Evolution of ECVET

As of **November 2020**, the formal implementation of ECVET was discontinued. The **Council Recommendation on VET for sustainable competitiveness, social fairness, and resilience** replaced it, responding to the limited uptake of ECVET's credit points system and the need for a more integrated VET approach (*The European Credit System for Vocational Education and Training, Luxembourg: Publications Office of the European Union, 2021)*.

Enduring Principles Within the New Framework

Although ECVET as a standalone instrument and is no longer in use, its key principles remain embedded in the current EU VET policy framework:

- A **learning outcomes-based approach**, focused on what learners know and can do;
- **Modularization** of qualifications into units that can be assessed and validated independently; (*The European Credit System for Vocational Education and Training, Luxembourg: Publications Office of the European Union, 2021)*
- **Recognition of non-formal and informal learning**, such as skills acquired through work or self-study.

These principles are now integral to the implementation of EQF and EQAVET.

Implications for Learners and Institutions – the learning Outcomes approach

While ECVET is no longer formally applied, its foundational concepts continue to shape European VET policy. These enduring principles foster a learner-centred, transparent, and flexible system that supports mobility and lifelong learning across Europe.

For learners—especially in many EU countries—the shift means continued support for **flexibility, mobility**, and **recognition of skills** across borders. VET institutions are encouraged to apply modular, outcome-based approaches to improve pathways between education, training, and employment.

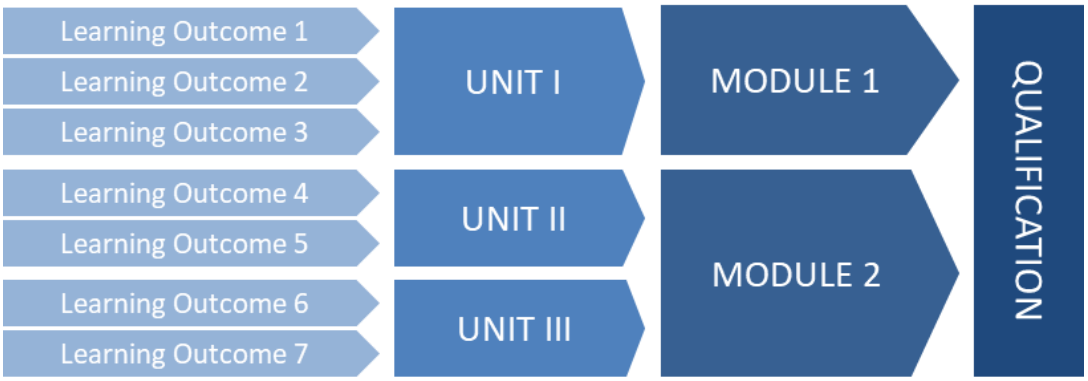
Learning Outcomes are statements of what a learner knows, understands and is able to do after completion of learning.

In other words, Learning Outcomes determine the advancements of learning gained by a learner after a period of study or training in terms of knowledge, skills and competences.

In order to do that, **learning Outcomes** are being introduced as unit of measure of EU educational systems. The introduction of Learning Outcomes shifts the focus from an input model to an output model of qualification. The Learning Outcome model is the only entrance door to the ECVET framework.

Once the learning outcomes which describe a particular qualification are defined, sets of coherent learning outcomes with a specific connection are then combined together to form a UNIT and sets of coherent units can be pooled together to describe a MICROCREDENTIAL.

Describing a qualification in terms of learning outcomes ensure a better basis for its shared understanding and recognition across countries.



Steps to develop a qualification in microcredentials using ECVET

Units Titles

The first step for developing a QUALIFICATION is identifying the CORE COMPETENCES or tasks that the “professional learner” should be able to fulfil and without which the character of the training would be lost.

The core competences – which represent the MICROCREDENTIALS of the training – are then described in terms of sub-competences (Learning UNITS). The first step in creating a Unit is to provide a title for it. Some of the criteria for identifying the Units can be:

- ✓ Importance (how vital to the sector or sub-sector),
- ✓ Employability (better chances of finding work in the sector)
- ✓ High demand (unavailable profiles that the market needs)
- ✓ Lack of training (profiles that might have shown a need for better training)

The above criteria are simple suggestions as to how to choose the occupational profiles that are needed. These occupational profiles will then become ECVET Unit Titles, which will clearly state the position or occupation a professional holds when classified under them. The Title should offer a general idea of what the professional needs to know and do in a work environment, and it can be as specific as is deemed necessary.

Methodology for ECVET points allocation

The documents of the European Union concerning the details of the ECVET framework suggests that each qualification and each learning unit should be provided with a “score”, using ECVET points.

The ECVET points are a numerical representation of the overall weight of learning outcomes and of the relative weight of units in relation to the qualification. For the calculation of the relative weight of a unit of learning outcomes, different criteria can apply. For the case of the SEBCoVE curriculum, two main criteria were used: a. the **TIME** required to acquire the competences included in the course, b. the **RELEVANCE** of the competences included in the Unit. The relevance of each learning outcome is expressed in a scale from Essential (more relevant for the curriculum, more effort for the learner is needed, more complexity) having a relative weight 2,0, important having a relative weight 1,0 and Basic (less relevant) having a relative weight 0,5. The relevance is then converted into percentage, the full qualification being 100% and the total number of ECVET points associated with the curriculum is then allocated to each learning outcome according to this scale established starting from the assumption that **60 ECVET points** are allocated to the learning outcomes expected to be achieved in a year of formal training).

A Learning Unit.

In order to determine the weight of a learning unit, its relevance for the qualification is taken into account. The relevance is then expressed in terms of percentage (Basic, Important, Essential) the full qualification being 100% and the percentage is rewritten according to the overall number of ECVET points for the qualification. For instance, a unit which is evaluated as important (20%) in a qualification of one-year training (60 ECVET points) will be provided with 12 ECVET points.

Set of training objectives (Learning Outcomes).

The next step is the choice and designation of Learning Outcomes to each Unit. Learning Outcomes are the end goal for any professional and they make up the required qualifications. They should note what the professional is expected to have learned by completing that Unit.

The Learning Outcome should be specific, measurable, achievable, realistic and time-bound objectives and consult key competencies.

Knowledge, Skills, Competences

When the Learning Outcomes are complete for the Unit, in line with the EQF level (level descriptor), they should be followed by the knowledge, skills and competence pertaining to it, in order to be complete. At this stage, the ECVET Units and Learning Outcomes should be analysed into all their essential theoretical and practical aspects. These will create descriptions of the required knowledge, skills and competences.

Competence is a more complicated issue, since it needs to consider the subjective factor of personality, which means that a person uses the knowledge and skills he or she has.

Competences and skills are not the same. **According to the definition of competence** in the e-CF user guide, a “competence is a demonstrated ability to apply knowledge, skills and attitudes for achieving observable results”. Hence, a competence is not a skill; on the contrary, a competence *embeds* skills.

Whilst competences are holistic concepts**, skills are precise and definite abilities**, either hard technical, e.g. make cost/ benefit analysis, develop user interfaces; or soft, e.g. deploy empathy to customer needs, negotiate contract terms and conditions.

Qualification Title

Qualifications (also referred as specialisations) are made up of one or more units. A unit may belong to only one specific qualification but it can also be a component of different qualifications (such as competences in using computers). It is therefore useful to name the qualification which relates to each unit. In cases where units are at the same time

components of a qualification and of a training programme, additional information pertaining to the teaching content must be included in the units' description.

The use of EQF in SEBCoVE microcredentials

The European Qualifications Framework (EQF) is a translation tool that helps communication and comparison between qualifications systems in Europe. Its eight common European reference levels are described in terms of learning outcomes: knowledge, skills and competences. This allows any national qualifications systems, national qualifications frameworks (NQFs) and qualifications in Europe to relate to the EQF levels. Learners, graduates, providers and employers can use these levels to understand and compare qualifications awarded in different countries and by different education and training systems. Each of the 8 levels is defined by a set of descriptors indicating the learning outcomes relevant to qualifications at that level in any system of qualifications.[1].

In the context of EQF

- ✓ **Knowledge** is described as theoretical and/or factual
- ✓ **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).
- ✓ **Competence** is described in terms of responsibility and autonomy.

These are the 8 levels according to the European Qualifications Framework:

EQF Level	Knowledge	Skills	Competence
Level 1	Basic general knowledge	Basic skills required to carry out simple tasks	Work or study under direct supervision in a structured context

[1] www.ec.europa.eu/ploteus/en

EQF Level	Knowledge	Skills	Competence
Level 2	Basic factual knowledge of a field of work or study	Basic cognitive and practical skills required to use relevant information in order to carry out tasks and to solve routine problems using simple rules and tools	Work or study under supervision with some autonomy
Level 3	Knowledge of facts, principles, processes and general concepts, in a field of work or study	A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	Take responsibility for completion of tasks in work or study; adapt own behaviour to circumstances in solving problems
Level 4	Factual and theoretical knowledge in broad contexts within a field of work or study	A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	Exercise self-management within the guidelines of work or study contexts that are usually predictable, but are subject to change; supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.
Level 5	Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	Exercise management and supervision in contexts of work or study activities where there is unpredictable change; review and develop performance of self and others
Level 6	Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups

EQF Level	Knowledge	Skills	Competence
Level 7	Highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research Critical awareness of knowledge issues in a field and at the interface between different fields	Specialised problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 8	Knowledge at the most advanced frontier of a field of work or study and at the interface between fields	The most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	Demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research

Source: *https://europa.eu/europass/en/description-eight-eqf-levels*

THE SEBCOVE MICROCREDENTIAL REFERENCE MODEL

Introduction

The SEBCOVE Applied Microcredential Reference Model structures distinct learning blocks, representing 11 specific microcredentials (MCs) each one representing CORE COMPETENCES that the “professional learner” should be able to fulfil, aligned with the European Credit System for Vocational Education and Training (ECVET). This model facilitates modular and stackable learning, ensuring a cohesive and structured approach to skill development.

Aim and objectives

The SEBCoVE microcredentials’ curriculum is outcome-based developed on the basis of the European Credit System in VET (ECVET).

The objective of the curriculum is to improve the educational offerings, instructional activities and practices in order to increase learner’s engagement and improve their achievements in the Smart Electricity for Buildings specialisations. Aiming the learners to achieve specific learning outcomes by the end of the training program. The introduction of microcredential reference in "SEBCoVE curriculum to provide a comprehensive framework for the implementation and evaluation of microcredentials within the SEBCoVE project training.

Methodology used

The development of the SEBCoVE Curriculum was grounded in a structured, evidence-based process that ensured both relevance to labor market needs and alignment with European quality standards. The starting point for curriculum design was the definition of professional profiles created during an earlier project phase, as detailed in the deliverable **D4.1 “Professional Profiles Definition.”** These profiles were the result of a rigorous, multi-stage research and consultation process.

The foundation of this work lies in the findings of **D2.3 "Competences and Skills Gap in the Smart Electricity for Buildings Sector"**, which offered a comprehensive analysis of existing and emerging skills gaps across the SEB industry. This sector-wide diagnostic

study captured the rapid evolution of competences required in areas such as building automation, energy efficiency, smart grid systems, renewable energy integration, and data-driven management. The insights gathered formed the basis for defining an advanced professional pathway encompassing **eleven specialized sub-professional profiles**, each integrating technical, digital, and sustainability-oriented skills.

To ensure real-world applicability and responsiveness to regional and national VET systems, the curriculum design process followed these methodological steps (fig-1):

1. **Gap Analysis and Needs Identification** Sector-specific skills and competence gaps were mapped through literature review, labor market data, and extensive stakeholder consultation across partner regions.
2. **Professional Profile Definition** Based on this analysis, a set of macro and sub-professional profiles were developed, reflecting the diversity of roles in the SEB sector. These profiles serve as the blueprint for the curriculum content.
3. **Knowledge Triangle Collaboration** The profiles and corresponding curriculum components were validated through a co-creation process involving VET providers, industry representatives, and research organizations (the Knowledge Triangle). This ensured that the curriculum met both educational quality criteria and market relevance.
4. **Learning Outcomes-Based Design**Each of the eleven micro-credentials was designed using a modular approach and articulated through clearly defined learning outcomes, following EQF descriptors for levels 4–6. This approach supports transparency, comparability, and mobility across EU member states.
5. **Alignment with Quality Standards**The certification scheme for each micro-credential is aligned with **ISO/IEC 17024**, ensuring a consistent and transparent assessment of competences. The curriculum also builds on legacy principles of ECVET to define learning volumes, credit points, and progression paths.
6. **Regional Adaptability**Regional Knowledge Triangles contributed additional feedback on how the micro-credentials could complement existing regional qualification systems. In Italy and Spain, for example, the micro-credentials were positioned as supplementary modules enhancing existing regional training repertoires.

Each professional specialization was aligned with a stand-alone microcredential, designed to ensure the acquisition of a corresponding CORE competence.

7. The derived microcredentials were then **reviewed in consultation with industry representatives**, within the framework of the established **Knowledge Triangles** in the four SEBCoVE regions. Feedback from these discussions was incorporated into the final design of the 11 microcredentials, particularly regarding their definitions and the detailed specifications outlined in the "Mandatory and Optional Elements" *(table 1).*

Allocation of ECVET points

Although ECVET as a standalone instrument is no longer in use, its key principles remain embedded in the current EU VET policy framework and has been used in the SEBCoVE microcredentials. Each learning unit is described in terms of one or more Learning Outcomes. Each Learning Outcome is identified by a code “Mx.Uy.z”, where “Mx” indicates the Microcredential, “Uy” indicates the Unit and “z” identify the specific Learning Outcome within that particular microcredential and unit. So, for example, M2.U3.2 refers to the second Microcredential, third Unit, and second Learning Outcome.

Fig 2: Learning outcomes relevance weight indicators

The training Course created within the SEBCoVE project consists of 11 microcredentials which represent the11 core competences needed by the Smart Electricity for Buildings

professionals, which are compatible with the EQF Level 4 and 5. Each microcredential consists of two modules of training and five Learning Units. Based on the methodology described earlier, two main criteria were used: a. the **TIME** required to acquire the competences included in the microcredentials, b. the **RELEVANCE** of the competences included in the Unit, the total ECVET points allocated to the SEBCoVE course are 33.

SEBCoVE Microcredentials

	SEBCoVE MICROCREDENTIALS	HOURS	PRACTICAL	ECVET	EQF
MC 01	**Professional Specialisation 1:** Digitalization and Automation Technologies Specialist	50	10	3	4,5
MC 02	**Professional Specialisation 2:** BAS Installer and Technician	50	10	3	4,5
MC 03	**Professional Specialisation 3:** Renewable Energy Systems Installer	50	10	3	4,5
MC 04	**Professional Specialisation 4:** Energy Storage Systems Installer	50	10	3	4,5
MC 05	**Professional Specialisation 5**: EV Charging Systems Specialist	50	10	3	4,5
MC 06	**Professional Specialisation 6:** Energy Data Analyst	50	10	3	4.5.6
MC 07	**Professional Specialisation 7:** Smart Grid Specialist	50	10	3	4.5.6
MC 08	**Professional Specialisation 8:** Electricity Markets Specialist	50	10	3	4.5.6

MC 09	**Professional Specialisation 9:** Buildings Energy Efficiency Auditor	50	10	3	4,5
MC 10	**Professional Specialisation 10:** Sustainability Manager	50	10	3	4,5
MC 11	**Professional Specialisation 11:** Cross-Disciplinary and Soft Skills Specialist	50	10	3	4,5

Requirements to be met for the commencement of the study

Learners should have:

- Basic Digital Skills in terms of digital communication tools and platforms,
- Knowledge of MS office (word, Excel PowerPoint presentations).
- Basic Communication skill

Learning and teaching methods

The SEBCoVE course will be delivered in a fully ubiquitous environment. This approach emphasizes a variety of different types of methods that shift the role of the instructors from the givers of information to facilitating learning. This method gives the learner the opportunity to learn independently and to collaborate with the other learners while improving his skills.

Learning environment

The SEBCoVE course will be developed to be delivered online, in a fully ubiquitous environment www.SEBCoVE.eu/e-learning. However, the material can be used by trainers in a traditional face-to-face learning environment, or in a hydridic educational approach. Learners in rural areas, who are not used in digital technology, can use any mobile application like mobile phones for having the course. Additionally, they can attend a semi-

prudential classroom having a facilitator or a trainer to make the use of the SEBCoVE training platform easier.

Certification scheme

Each microcredential (MC) certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies. The certification process begins with the development of a special regulation outlining the scope, eligibility criteria, assessment methods, and renewal requirements specific to the MC. A comprehensive question bank is then created, mapped to the defined competencies and rigorously validated by subject matter experts to ensure fairness and relevance. Candidates will undergo a formal evaluation, which may include theoretical and practical components, under controlled conditions to ensure reliability. Upon successful completion of each microcredential, participants will receive a a recognized certificate which follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.
Certificate will be under ongoing quality assurance and periodic review of both the question bank for assesmenyt and certification criteria to maintain alignment with evolving standards and industry needs.

Each microcredential is stackable with others in the Smart Electricity for Buildings pathway and leads to the full Certificate of **Specialization in Smart and Sustainable Building Systems (***Fig-3)***.**

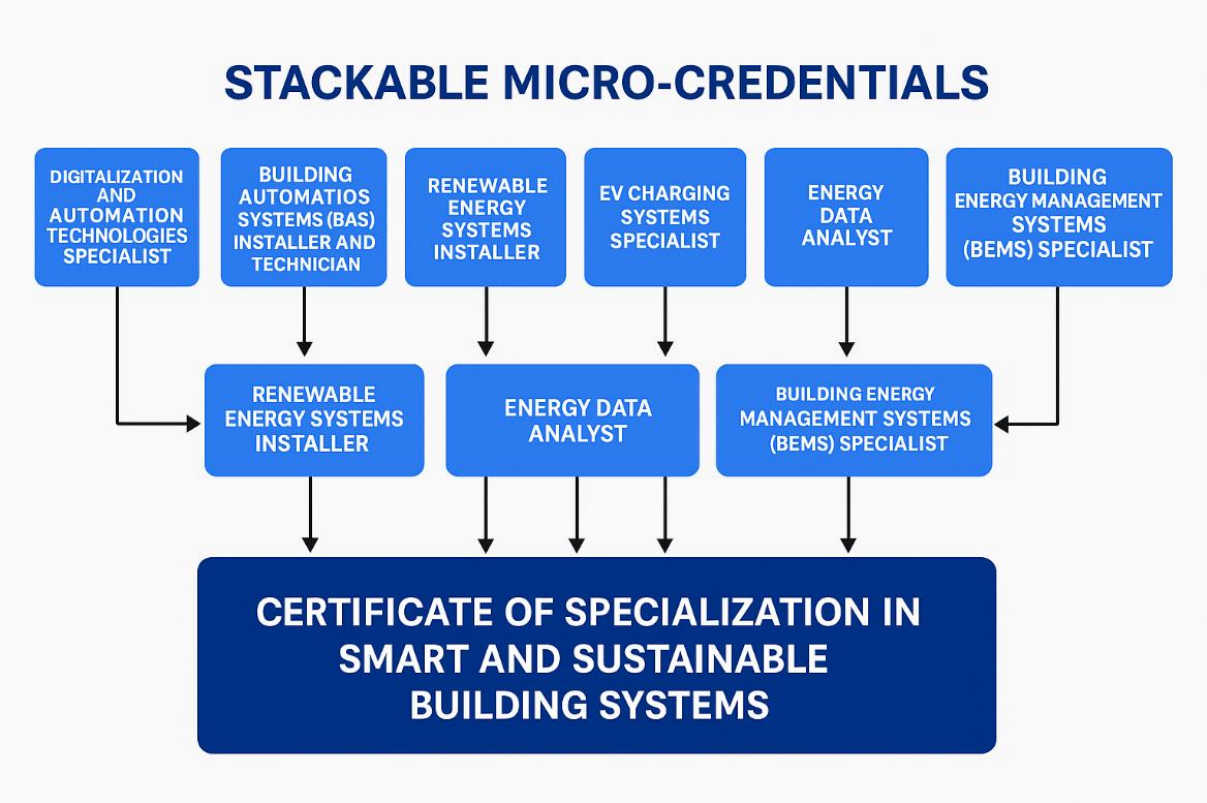


Fig-3: Curriculum map – microcredentials stackability leading to full certification

A full mapping of the microcredentials' description (Annex 1) and the analytical curriculum matrix (Annex 2) are provided to support implementation and localization across partner regions.

Duration

The duration of all the microcredentials is **550 hours, estimated to last 22 weeks** in average (suggested to have three session per week, lasting four hours each). However, a learner can devote as much time as he feel to be effective to fully understands the content and archives the expected learning outcomes.

Each microcredential will last 50 hours lasting two weeks in average.

List of study materials

The training materials are located in the SEBCoVE LMS platform (www.SEBCoVE.eu/e-learning) and include documents introducing and describing each training microcredential, 55 Power Point Presentations (one per each Learning Unit, video presentation, a serious game, and video animations.

Study material also include links to supporting material to be used as an additional reading material.

Regional Adaptability and Localization of SEBCoVE Microcredentials

A key strength of the SEBCoVE Curriculum is its modular, learning-outcomes-based structure, which allows for contextual adaptation to regional training systems and labor market needs. This flexibility has been identified as essential in feedback received from the **Knowledge Triangle stakeholders**—representing VET institutions, industry, and research bodies—in several participating regions, particularly **Italy (Veneto, Lombardia, Friuli Venezia Giulia, Piemonte)** and the **Basque Country in Spain**.

The Knowledge Triangle consultations in Italy highlighted the importance of ensuring that the SEBCoVE microcredentials are compatible with the country's formal qualification system, which is governed through national and regional frameworks such as the *Atlante delle Professioni* and regional repertoires. Stakeholders noted that while the SEBCoVE professional profiles cannot be considered full standalone qualifications in this context, they align well with existing ones and can be used to **complement and upgrade regional profiles**. For instance, microcredentials such as "BAS Installer and Technician," "Digitalization and Automation Specialist," and "Renewable Energy Systems Installer" match closely with existing profiles in building automation, electrical systems, and renewables across these regions.

These SEBCoVE modules have been recommended by regional actors as **supplementary training paths** for upskilling and reskilling purposes, especially within **continuing VET (cVET)**, **company-based training**, and **lifelong learning frameworks**. In iVET contexts, adjustments to EQF levels and the emphasis on practical execution

(rather than design) were also advised. Similarly, in the Basque Country, regional authorities and Knowledge Triangle members proposed using SEBCoVE's microcredentials to **integrate innovation-focused content** into existing curricula without disrupting the formal qualification architecture.

By embedding this regional feedback and promoting local ownership of the curriculum, SEBCoVE reinforces its commitment to aligning European-level innovation with **regional policy priorities, labor market demands, and existing training ecosystems**.

CONCLUSION

The SEBCoVE Curriculum represents a forward-thinking response to the dynamic demands of the Smart Electricity for Buildings (SEB) sector, combining innovation in content with flexibility in delivery. By structuring vocational education through 11 stackable micro-credentials aligned with the European Qualifications Framework (EQF), the curriculum ensures high-quality, relevant, and transferable learning pathways for diverse learner profiles—ranging from VET students and adult professionals to upskilled workers and unemployed youth.

Grounded in a learning-outcomes-based approach and developed collaboratively through the Knowledge Triangle model, the curriculum is responsive to both European strategic objectives and regional labor market realities. The integration of digital tools, inclusive delivery methods, and ISO/IEC 17024-aligned certification schemes further reinforces its credibility and adaptability across varied educational and professional contexts.

As Europe accelerates its green and digital transitions, the SEBCoVE Curriculum stands as a scalable and impactful model for bridging skills gaps, fostering innovation, and promoting sustainable development through vocational excellence.

ANNEX 1: MICROCREDENTIALS DESCRIPTION

Microcredential 1: Digitalization and Automation Technologies Specialist

Code: MC-01

EQF Level: 4–5

ECVET Points: 7

Module 1.1: Industrial Automation and Digital Systems

Module 1.2: Safety, Standards, and Regulatory Compliance

Description

This microcredential provides learners with the competences to operate, integrate, and maintain automation and digitalization systems in smart building environments. It combines foundational technical knowledge in programmable logic controllers (PLCs), IoT, industrial networks, and SCADA systems with critical insights into cybersecurity, predictive maintenance, and compliance with EU regulatory frameworks. Learners will gain practical expertise and applied skills essential for driving digital transformation in the smart electricity and building automation sectors.

Target Audience

This credential targets **electricians and electrical technicians at EQF Level 4–5,** aiming to upskill in the field of smart buildings, industrial digitalization, and automation technologies.

Competences Addressed

Module 1.1: Industrial Automation and Digital Systems

Automation and Data Competence

- Operate and program basic PLCs.
- Understand databases, data analysis, and digital communication protocols.
- Apply IoT principles and network integration.

Industrial Systems Competence

- Work with SCADA systems and human-machine interfaces (HMIs).
- Understand digitalization processes in industrial contexts.
- Apply cybersecurity principles in industrial environments.

Maintenance Competence

- Conduct preventive, corrective, and predictive maintenance.
- Perform maintenance tasks in digitalized system environments.

Module 1.2: Safety, Standards, and Regulatory Compliance

Regulatory Competence

- Understand EU and national regulatory frameworks for smart energy systems.
- Match digitalization projects with available incentives and legal requirements.
- Interpret smart grid and smart tech integration rules.

Safety and Cybersecurity Competence

- Apply IT-level and industrial cybersecurity protocols.
- Ensure system compliance with EU electricity and safety standards.
- Implement practical safety measures in automation environments.

Learning Outcomes

Learners will be able to:

Module 1.1:

- Design and implement automated systems using PLCs, SCADA, and IoT.
- Use data protocols and network technologies in smart systems.
- Conduct predictive and corrective maintenance in digitalized environments.

Module 1.2:

- Analyze and apply applicable regulations for energy automation.
- Enforce IT and industrial-level safety protocols.
- Apply cybersecurity principles in digital energy infrastructures.

Assessment Criteria

Assessment will be based on:

- **Lab-based evaluations** (e.g., programming PLCs, predictive maintenance tasks).
- **Scenario analysis** (e.g., cybersecurity incident response).

- **Design assignments** (e.g., developing an IoT-integrated SCADA network).
- **Knowledge tests and regulatory case studies** to assess understanding of compliance requirements.

Credentialing

Upon successful completion, participants will receive a certificate as a **Digitalization and Automation Technologies Specialist (MC-01)**.

This microcredential is stackable with others in the Smart Electricity for Buildings pathway and contributes to the full Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 2: Building Automation Systems (BAS) Installer and Technician

Code: MC-02

EQF Level: 4, 5

ECVET Points: 7

Module 2.1: Technical Integration and Maintenance of BAS

Module 2.2: Regulatory Framework and Safety Protocols

Description

This microcredential equips learners with the skills and knowledge required to install, configure, and maintain Building Automation Systems (BAS) in smart residential and commercial buildings. Through a blend of technical theory and hands-on lab training, it covers system procurement, PLC programming, communication protocols, and HVAC system integration. The program also strengthens competencies in cybersecurity, documentation, smart grid connection, and regulatory compliance, empowering technicians to operate effectively within digitally connected building environments.

Target Audience

This credential is designed for **electricians and electrical technicians at EQF Level 4–5** who aim to specialize in building automation technologies and the energy efficiency sector within smart building contexts.

Competences Addressed

Module 2.1: Technical Integration and Maintenance of BAS

System Design & Installation Competence

- Understand the architecture and operation of BAS components.
- Configure programmable logic controllers (PLCs) for building systems.
- Integrate communication protocols and install automation networks.

Advanced BAS Operations Competence

- Implement building energy efficiency strategies and basic cybersecurity.

- Use virtual simulation environments to operate and test BAS.
- Apply soft skills for effective technical documentation and client communication.

Maintenance Competence

- Perform maintenance on HVAC systems through BAS.
- Monitor and maintain automation systems through networks.
- Apply PLC programming in diagnostic and corrective operations.

Module 2.2: Regulatory Framework and Safety Protocols

Regulatory Compliance Competence

- Interpret EU and national regulations for smart energy and BAS.
- Align BAS projects with legal incentives and requirements.
- Understand smart grid and technology integration within regulatory limits.

Safety and Cybersecurity Competence

- Apply safety regulations for BAS installations and operations.
- Implement cybersecurity protocols for building networks and automation systems.
- Comply with EU standards for electrical systems and grid connection.
- Conduct hands-on applications of practical safety measures.

Learning Outcomes

Learners will be able to:

Module 2.1:

- Design, install, and configure BAS using industry-standard tools and protocols.
- Program and maintain PLCs, HVAC automation, and BAS network communication.
- Demonstrate energy-saving, cybersecurity-aware solutions using virtual labs.

Module 2.2:

- Navigate legal and regulatory frameworks affecting BAS and smart buildings.
- Apply cybersecurity and safety protocols during installation and maintenance.
- Ensure compliance with EU and national electricity standards in BAS design.

Assessment Criteria

Assessments include:

- **Practical labs** (e.g., virtual simulations, system configuration, PLC diagnostics).
- **Technical reports and documentation exercises**.
- **Scenario-based assignments** covering regulatory compliance and smart grid integration.
- **Written assessments** to evaluate theoretical knowledge in BAS, cybersecurity, and safety standards.

Credentialing

Upon successful completion, participants will be awarded a certificate as a **Certified Building Automation Systems Installer and Technician (MC-02)**.
This microcredential is part of the stackable Smart Electricity for Buildings pathway and leads toward the Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 3: Renewable Energy Systems Installer

Code: MC-03

EQF Level: 4–5

ECVET Points: 7

Module 3.1: Technical and Economical Aspects of RES Systems

Module 3.2: Regulatory Framework and Safety Protocols

Description

This microcredential develops key competences in the design, installation, and maintenance of small-scale renewable energy systems such as photovoltaics (PV), inverters, battery storage, and wind turbines (WT). Participants will acquire technical skills to conduct energy demand assessments, integrate systems into smart grids, and apply safe, compliant installation procedures. The credential also covers relevant EU and national regulations, promoting sustainable energy practices in residential and small commercial settings.

Target Audience

Designed for **electricians and electrical technicians at EQF Level 4–5**, this microcredential is ideal for professionals entering or upskilling in the renewable energy sector, particularly within smart building environments.

Competences Addressed

Module 3.1: Technical and Economical Aspects of RES Systems

Technology and Procurement Competence

- Identify state-of-the-art technologies in PVs, inverters, BOS equipment, and wind turbines.
- Perform basic system design and conduct cost-effective procurement.

System Design and Installation Competence

- Assess residential energy needs and design hybrid RES solutions.
- Integrate RES with smart grid technologies.

- Install PV and battery systems through hands-on lab experience.

Maintenance Competence

- Perform inspections and maintenance of PV, WT, BOS, and inverter systems.
- Apply routine procedures for reliable and efficient system operation.

Module 3.2: Regulatory Framework and Safety Protocols

Regulatory Competence

- Understand national and EU regulation frameworks for renewable systems.
- Evaluate project alignment with smart building strategies and funding opportunities.
- Interpret requirements for smart technology integration.

Safety Competence

- Apply electrical safety regulations and grid compliance principles.
- Use EU standards and protocols in system design and installation.
- Conduct practical safety applications in lab settings.

Learning Outcomes

Learners will be able to:

Module 3.1:

- Analyze modern renewable energy technologies and select suitable components.
- Design and install hybrid energy systems for residential use.
- Maintain and troubleshoot system components effectively.

Module 3.2:

- Comprehend the legal and regulatory environment for RES deployment.
- Apply safety protocols in installation and maintenance.
- Ensure compliance with relevant EU renewable energy standards.

Assessment Criteria

Learners will be assessed through:

- **Practical demonstrations** (e.g., system installation, safety procedures).
- **Case-based exercises** (e.g., hybrid system design, energy demand planning).

- **Knowledge tests and scenario-based evaluations** on regulation and safety compliance.
- **Reflections and peer-assessed projects** on RES integration and best practices.

Credentialing

Upon successful completion, participants will be awarded a certificate as a **Certified Renewable Energy Systems Installer (MC-03)**.

This microcredential is stackable with other microcredentials in the SEBCoVE training program and contributes to the Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 4: Renewable Energy Systems Installer

Code: MC-04

EQF Level: 4–5

ECVET points: 3

Module 4.1: Technical and Economical Aspects of RES Systems

Module 4.2: Regulatory Framework and Safety Protocols

Description

This microcredential prepares learners with the essential theoretical and practical competences to design, install, and maintain small-scale renewable energy systems, including photovoltaics, wind turbines, and battery storage systems. It develops the knowledge to make cost-effective procurement decisions, integrate smart grid technologies, and apply energy-efficient practices in residential and small commercial buildings. Furthermore, it reinforces familiarity with the European and national regulatory frameworks and electrical safety protocols, ensuring compliance and safe installations.

Target Audience

This credential is aimed at electricians and electrical technicians working at **EQF Level 4–5** who are seeking to specialize in renewable energy systems installation for smart buildings and sustainable energy applications.

Competences Addressed

Module 4.1: Technical and Economical Aspects of RES Systems

Procurement and Design Competence

- Identify and compare contemporary technologies in PVs, inverters, wind turbines, and BOS (Balance of System).
- Conduct basic energy demand assessments and system design tailored to client needs.

Installation Competence

- Install and commission PV and battery systems.
- Integrate renewable systems with smart grid functionalities.

Maintenance Competence

- Perform inspections and routine maintenance on PVs, wind turbines, inverters, and BOS.

Module 4.2: Regulatory Framework and Safety Protocols

Regulatory Competence

- Understand national and EU renewable energy frameworks.
- Assess project eligibility for incentives and regulatory compliance.

Safety and Compliance Competence

- Apply electrical safety protocols and standards.
- Implement practical on-site safety measures during installation and maintenance.

Learning Outcomes

Learners will be able to:

Module 4.1:

- Analyze and evaluate current RES technologies and conduct effective procurement.
- Design hybrid RES systems based on residential energy demands.
- Install and maintain PV and battery systems according to technical standards.

Module 4.2:

- Identify and interpret applicable regulations for RES installations.
- Demonstrate safe work practices and compliance with electrical safety standards.

Assessment Criteria

Learners will be assessed through:

- **Practical demonstrations** (e.g., installation and maintenance tasks).
- **Project work** (e.g., design and planning of a residential RES system).
- **Written reflections and knowledge tests** on regulatory and safety issues.

- **Peer review** and **scenario-based simulations** to evaluate understanding and application of safety standards and design logic.

Credentialing

Upon successful completion, participants will be awarded a certificate as a **Certified Renewable Energy Systems Installer (MC-04)**.

This microcredential is stackable with others in the Smart Electricity for Buildings series, contributing to the Certificate of Specialization in Smart and Sustainable Building Systems*.*

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 5: EV Charging Systems Specialist

Code: MC-05

EQF Level: 4–5

ECVET Points: 7

Module 5.1: Electric Vehicle Technologies and Charging Infrastructure

Module 5.2: Regulatory Framework and Safety Protocols

Description

This microcredential equips learners with the knowledge and practical skills needed to work as specialists in Electric Vehicle (EV) charging systems. It covers electric motors, battery and fuel cell technologies, power management, and smart charging systems integration. Learners will gain the ability to diagnose, maintain, and ensure the safe operation of EV charging infrastructure while adhering to European regulations and standards in smart grid environments.

Target Audience

This credential is designed for **electricians and electrical technicians at EQF Level 4–5** seeking to specialize in the rapidly growing sector of EV charging systems and sustainable mobility infrastructure.

Competences Addressed

Module 5.1: Electric Vehicle Technologies and Charging Infrastructure

EV Systems Competence

- Understand the fundamentals of EV technologies, electric motors, and converters.
- Analyze energy and power management systems in EVs.
- Apply principles of battery and fuel cell systems in the context of EVs.

Charging and Monitoring Competence

- Identify types of EV chargers and their functions.
- Operate monitoring systems and control technologies for EV charging.
- Use measuring devices and perform diagnostic testing of EV charging stations.

Maintenance Competence

- Decode EV malfunctions and implement periodic maintenance.
- Apply practical tools and methods for error detection and troubleshooting in EV systems.

Module 5.2: Regulatory Framework and Safety Protocols

Regulatory Compliance Competence

- Interpret EU and national regulatory frameworks related to EV systems and infrastructure.
- Analyze incentive schemes and project alignment with current SEB (Smart Electricity for Buildings) regulations.
- Understand integration of EV charging with smart grids and buildings.

Safety Competence

- Apply grid compliance and charger-specific safety protocols.
- Follow EU electricity standards and implement preventive safety practices.
- Conduct practical safety procedures in EV charging installations.

Learning Outcomes

Learners will be able to:

Module 5.1:

- Demonstrate knowledge of EV components, energy systems, and charging technologies.
- Monitor and manage charging systems and perform fault detection using metering devices.
- Conduct routine and preventive maintenance operations on EV infrastructure.

Module 5.2:

- Apply relevant European regulations to EV charging projects and installations.
- Integrate safety protocols and ensure secure grid-compliant EV infrastructure.
- Evaluate compatibility of smart technologies with EV charging solutions.

Assessment Criteria

Assessments will include:

- **Practical simulations and labs** (e.g., EV charging system diagnostics, safety implementation).
- **Technical design tasks** involving energy and power management.
- **Written tests and case studies** covering regulatory frameworks and safety compliance.
- **Project-based assessments** to demonstrate system integration and fault management.

Credentialing

Upon successful completion, participants will receive a certificate as a **Certified EV Charging Systems Specialist (MC-05)**.
This microcredential is part of the SEBCoVE stackable training framework and contributes to the Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 6: Energy Data Analyst

Code: MC-06

EQF Level: 4, 6

ECVET Points: 7

Module 6.1: Energy Data Systems and Analytics

Module 6.2: Policy, Regulation, and Communication in Energy Systems

Description

This microcredential prepares learners for the emerging profession of **Energy Data Analyst**—a role increasingly critical in smart buildings and renewable energy sectors. Participants will gain skills in analyzing residential renewable energy system performance, programming in Python, time series forecasting, and dashboard development. Additionally, they will explore energy economics, electricity markets, and environmental regulation, enabling them to navigate the energy policy landscape and communicate actionable energy insights effectively.

Target Audience

This credential is ideal for **electricians and energy professionals at EQF Levels 4–6** who are seeking to enter data-driven roles in the energy and smart buildings sector, including performance monitoring, planning, and energy analytics.

Competences Addressed

Module 6.1: Energy Data Systems and Analytics

Energy and Data Foundations

- Understand energy systems and market dynamics.
- Apply data cleaning, analysis, and visualization techniques.
- Analyze residential RES performance using time series and machine learning methods.

Programming and Applied Analytics

- Use Python libraries (e.g., Pandas, NumPy) for energy data manipulation.

- Implement forecasting models for demand and performance.
- Build and deploy energy dashboards for monitoring and decision-making.

Project Design and Communication

- Execute real-world energy data projects using open datasets.
- Perform demand-side analytics to identify efficiency opportunities.
- Communicate energy insights to stakeholders using visual and written reports.

Module 6.2: Policy, Regulation, and Communication in Energy Systems

Energy Market and Policy Literacy

- Analyze multi-level energy policy frameworks and future trends.
- Understand the design and function of electricity markets.
- Interpret laws, authorities, and regulatory structures.

Smart Energy Systems and Environmental Compliance

- Assess smart grid technologies and digital systems in energy transition.
- Navigate environmental and climate regulation landscapes.
- Use online databases and resources to compile energy regulatory reports.

Learning Outcomes

Learners will be able to:

Module 6.1:

- Apply statistical and computational methods to energy datasets.
- Forecast energy demand and performance trends using machine learning.
- Develop and present data dashboards to support energy management.

Module 6.2:

- Analyze and interpret energy policy and regulatory frameworks.
- Communicate complex regulatory and energy market insights clearly.
- Ensure compliance with digital energy system standards and environmental laws.

Assessment Criteria

Assessment will include:

- **Programming tasks and technical labs** (e.g., Python scripts, time series models).
- **Project work** using real energy datasets and policy analysis tools.
- **Written and visual presentations** (e.g., dashboards, regulatory briefs).
- **Scenario-based testing** on market regulations and smart grid policy design.

Credentialing

Upon successful completion, participants will receive a certificate as an **Energy Data Analyst (MC-06)**.

This microcredential is part of the SEBCoVE stackable training suite, contributing toward the Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 7: Smart Grid Specialist

Code: MC-07

EQF Level: 4, 6

ECVET Points: 7

Module 7.1: Smart Grid Design, Technologies, and Operation

Module 7.2: Regulation, Innovation, and Market Trends in Smart Grids

Description

This microcredential equips learners with the core technical and regulatory competences needed to work as a **Smart Grid Specialist**, focusing on decentralized energy systems, digital infrastructure, and energy flexibility. Learners will develop knowledge in smart grid architecture, SCADA operations, renewable integration, and DER aggregation, alongside insights into real-time analytics, power electronics, and cybersecurity. Emphasis is placed on preparing professionals to plan, operate, and troubleshoot smart grids in line with current EU policy frameworks and future energy system trends.

Target Audience

This credential targets **electricians and technicians at EQF Levels 4–6** seeking to specialize in digital energy systems, smart grid infrastructure, and distributed energy technologies within smart building and community contexts.

Competences Addressed

Module 7.1: Smart Grid Design, Technologies, and Operation

Power and Integration Competence

- Understand the basics of power systems and renewable energy integration.
- Analyze distributed energy resources (DERs) and energy storage solutions for grid flexibility.
- Design and simulate smart grids using lab-based tools.

Digital Infrastructure Competence

- Explore smart grid components, interoperability, and power electronics.
- Apply knowledge of SCADA systems, digital communication, and control systems.

- Use real-time data and state estimation tools for grid operations.

Module 7.2: Regulation, Innovation, and Market Trends in Smart Grids

Policy and Market Competence

- Interpret smart grid policies, regulatory frameworks for DERs, and aggregator models.
- Understand electricity market operations in a smart grid environment.
- Apply incentive schemes and policy drivers in project design.

Innovation and Cybersecurity Competence

- Assess emerging trends including electric mobility, grid flexibility, and decentralized intelligence.
- Understand cybersecurity threats and apply data integrity principles.
- Model microgrids and integrate DERs with regulatory compliance in mind.

Learning Outcomes

Learners will be able to:

Module 7.1:

- Design, simulate, and manage smart grid architectures using DERs and storage.
- Operate SCADA systems and apply real-time analytics to grid performance.
- Integrate smart metering and demand-side technologies into energy systems.

Module 7.2:

- Navigate smart grid policies, market structures, and regulations.
- Incorporate cybersecure, interoperable infrastructure into smart grid projects.
- Identify trends like self-healing grids and electric vehicle grid integration.

Assessment Criteria

Learners will be assessed through:

- **Lab-based simulations** (e.g., smart grid and microgrid modeling, SCADA operations).
- **Design assignments and case studies** on DER integration and grid architecture.
- **Written assessments** covering policy frameworks and market analysis.

- **Project presentations** demonstrating application of cybersecurity and digital grid solutions.

Credentialing

Upon successful completion, participants will receive a certificate as a **Smart Grid Specialist (MC-07)**.

This microcredential forms part of the SEBCoVE stackable training pathway and contributes to the Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 8: Electricity Markets Specialist

Code: MC-08

EQF Level: 4, 6 **ECVET Points:** 7

Module 8.1: Market Structures, Trading, and Simulation

Module 8.2: Regulation, Strategy, and Energy Economics

Description

This microcredential equips learners with the technical and regulatory competences needed to specialize in **Electricity Market Systems**. It provides essential knowledge on power systems, market mechanisms, trading structures, and EU integration. Through case studies and simulations, participants explore day-ahead, intraday, and balancing markets, along with pricing methodologies, derivatives, and capacity planning. A strong focus is placed on regulatory compliance, market governance, prosumer integration, and energy transition policies in Europe's evolving electricity sector.

Target Audience

This credential is designed for **electricians and technicians at EQF Levels 4–6** seeking to develop expertise in electricity market structures, energy economics, and smart grid integration within the context of modern and sustainable energy systems.

Competences Addressed

Module 8.1: Market Structures, Trading, and Simulation

Electricity Market Fundamentals

- Understand the foundational principles of power systems and electricity markets.
- Analyze the role of smart grids and the European target model.
- Explore the dynamics of the Day-Ahead, Intraday, and Balancing markets.

Market Mechanisms and Simulation

- Engage in pricing exercises using marginal cost pricing (MCP) calculations.
- Use market simulation tools for Day-Ahead and Balancing markets.
- Understand derivatives markets and capacity planning mechanisms.

Module 8.2: Regulation, Strategy, and Energy Economics

Policy and Governance Competence

- Analyze EU and national regulations governing electricity markets.
- Understand compliance mechanisms and environmental regulations.
- Study real-life case studies and regulatory frameworks shaping the EU electricity market.

Strategic and Economic Insight

- Apply concepts of energy economics to market strategies.
- Understand the impact of Distributed Energy Resources (DERs) and prosumers.
- Explore trends in energy transition and national market evolution.

Learning Outcomes

Learners will be able to:

Module 8.1:

- Navigate and explain different segments of the electricity market.
- Simulate market operations and apply pricing calculations.
- Assess market adequacy through trading and planning tools.

Module 8.2:

- Apply regulatory frameworks to real market scenarios.
- Evaluate market trends and policies driving the energy transition.
- Understand the economics behind energy production, distribution, and consumption.

Assessment Criteria

Learners will be assessed through:

- **Simulations and case-based exercises** (e.g., pricing models, market balancing).
- **Policy and regulation briefs** analyzing EU compliance requirements.
- **Project reports** on strategic market planning and DER/prosumer models.
- **Quizzes and scenario-based assessments** on market operation and governance.

Credentialing

Upon successful completion, participants will receive a certificate as an **Electricity Markets Specialist (MC-08)**.

This microcredential is part of the SEBCoVE stackable pathway and contributes to the Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 9: Buildings Energy Efficiency Auditor

Code: MC-09

EQF Level: 4–5

ECVET Points: 7

Module 9.1: Energy Auditing, Building Systems, and Efficiency Measures

Module 9.2: Regulation, Safety, and Audit Reporting Tools

Description

This microcredential prepares learners for the professional role of a **Buildings Energy Efficiency Auditor**, enabling them to assess, evaluate, and improve the energy performance of buildings. The training includes theoretical and practical components related to thermodynamics, energy consumption analysis, HVAC and electrical systems, and the full energy auditing process. It also covers regulatory compliance, economic evaluation, and reporting using auditing software and standards.

Target Audience

This microcredential is tailored for **electricians and technicians at EQF Levels 4–5** seeking to enter or advance in the energy efficiency, auditing, and sustainable buildings sector.

Competences Addressed

Module 9.1: Energy Auditing, Building Systems, and Efficiency Measures

Technical Energy Assessment Competence

- Understand fundamentals of thermodynamics and building energy behavior.
- Analyze consumption of HVAC, lighting, and electrical systems.
- Evaluate buildings' energy footprints and system performance.

Audit Implementation and Reporting Competence

- Apply economic analysis and investment evaluation to audit recommendations.
- Execute energy audits and prepare standardized audit reports.

- Use building energy systems and technologies for scheduling and energy management.

Maintenance and Systems Operation Competence

- Understand basic maintenance requirements for building systems.
- Apply correct operation protocols for energy efficiency.
- Manage building energy use through system scheduling and monitoring.

Module 9.2: Regulation, Safety, and Audit Reporting Tools

Regulatory and Compliance Competence

- Understand EU and national frameworks for energy efficiency and SEB (Smart Electricity for Buildings) compliance.
- Identify incentive schemes and regulations supporting sustainable energy use.
- Integrate smart grid and digital technologies in compliance with audit protocols.

Safety and Equipment Use Competence

- Use certified equipment and follow safety procedures during audits.
- Interpret EU standards related to building energy systems.
- Operate specialized audit software to document and communicate results.

Learning Outcomes

Learners will be able to:

Module 9.1:

- Conduct full-scale energy audits of residential and commercial buildings.
- Assess and report on building energy consumption, system efficiency, and savings potential.
- Apply building energy technologies for scheduling and optimization.

Module 9.2:

- Navigate energy efficiency regulations and align projects with relevant policy frameworks.
- Ensure proper safety certification, equipment handling, and use of audit software.
- Communicate audit findings in line with professional and legal standards.

Assessment Criteria

Learners will be assessed through:

- **Audit simulation projects** and report writing.
- **Practical demonstrations** of system evaluations and equipment usage.
- **Written tests** on regulatory and safety compliance.
- **Software-based tasks** for reporting and performance benchmarking.

Credentialing

Upon successful completion, participants will receive a certificate as a **Buildings Energy Efficiency Auditor (MC-09)**.

This microcredential is part of the SEBCoVE stackable training suite and contributes to the Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 10: Sustainability Manager

Code: MC-10

EQF Level: 4–5

ECVET Points: 7

Module 10.1: Sustainability Integration and Organisational Practices

Module 10.2: Regulatory Compliance and Environmental Risk Management

Description

This microcredential trains professionals to take on the role of **Sustainability Manager** in the context of smart buildings and sustainable development. It combines foundational knowledge in sustainability, CSR, ESG, and SDGs with applied skills in energy monitoring, circular economy practices, and team-based implementation strategies. Participants will also engage with EU regulatory frameworks and learn to manage environmental risk, ensuring their organisations comply with green standards and operate in line with long-term environmental goals.

Target Audience

This credential is aimed at **electricians and technical professionals at EQF Levels 4–5** interested in integrating sustainability practices and environmental responsibility into energy systems and organisational strategies.

Competences Addressed

Module 10.1: Sustainability Integration and Organisational Practices

Sustainability Strategy Competence

- Understand sustainability frameworks including SDGs, CSR, ESG, and environmental management.
- Apply tools for sustainability reporting and performance indicators.
- Differentiate between ESGs and SDGs through case-based learning.

Workplace Implementation Competence

- Promote team training, communication, and awareness for sustainability action.
- Apply circular economy thinking in predictive maintenance and system use.

- Monitor energy and environmental performance within an organisational context.

Module 10.2: Regulatory Compliance and Environmental Risk Management

Compliance and Policy Competence

- Interpret national and EU regulations relevant to sustainability in energy and construction.
- Align SEB projects with policy goals and available incentives.
- Integrate smart technologies and grid concepts into sustainability planning.

Safety and Environmental Management Competence

- Apply safety regulations and environmental risk mitigation strategies.
- Manage hazardous materials and understand relevant EU standards.
- Conduct environmental safety procedures and reporting using specialised tools.

Learning Outcomes

Learners will be able to:

Module 10.1:

- Implement and monitor sustainability strategies across technical systems.
- Build ESG and SDG integration into day-to-day operations.
- Evaluate the effectiveness of maintenance, circular practices, and energy monitoring tools.

Module 10.2:

- Apply policy frameworks and safety protocols in sustainable building operations.
- Comply with EU legislation on energy, materials, and environmental performance.
- Create sustainability reports and documentation aligned with industry standards.

Assessment Criteria

Assessment methods include:

- **Case studies and report assignments** on ESG/SDG strategies and sustainability tools.
- **Practical evaluations** in environmental monitoring and circular economy scenarios.

- **Written tests and compliance checklists** based on EU regulation and safety standards.
- **Group presentations** on organisational sustainability planning and risk management.

Credentialing

Upon successful completion, participants will receive a certificate as a **Sustainability Manager (MC-10)**.

This microcredential is part of the SEBCoVE stackable training framework, contributing to the Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

Microcredential 11: Cross-Disciplinary and Soft Skills Specialist

Code: MC-11

EQF Level: 4–5

ECVET Points: 7

Module 11.1: Cross-Disciplinary Collaboration and Personal Competence

Module 11.2: Regulatory Awareness and Safety in Multidisciplinary Work

Description

This microcredential develops essential soft and cross-disciplinary skills for professionals working in technical and smart energy environments. Learners will explore critical thinking, multicultural team management, strategic innovation, and project coordination in cross-functional contexts. With a practical focus on infrastructure maintenance, crisis response, and environmental responsibility, the course also introduces key regulatory and safety protocols for professionals involved in Smart Electricity for Buildings (SEB) projects.

Target Audience

This credential is designed for **electricians and technicians at EQF Levels 4–5** who are transitioning into team coordination, interdisciplinary collaboration, or supervisory roles requiring effective communication, project management, and strategic adaptability.

Competences Addressed

Module 11.1: Cross-Disciplinary Collaboration and Personal Competence

Cognitive and Team Competence

- Understand core soft skills including critical thinking and problem-solving.
- Manage multicultural teams and foster inclusive collaboration.
- Apply project management and digital skills in real-world scenarios.

Strategic and Technological Competence

- Incorporate strategic innovation in technical planning.
- Navigate digital tools in multidisciplinary contexts.

- Lead and support cross-thematic teams in complex environments.

Maintenance and Response Competence

- Understand infrastructure maintenance principles.
- Develop crisis management, risk awareness, and environmental sensitivity.
- Support sustainability practices across team activities.

Module 11.2: Regulatory Awareness and Safety in Multidisciplinary Work

Policy and Compliance Competence

- Understand EU and national regulatory frameworks in the context of interdisciplinary energy projects.
- Align soft-skill roles with compliance in SEB-related initiatives.
- Incorporate smart grid understanding into team-based implementation.

Health and Safety Competence

- Adhere to safety standards and electrical safety protocols.
- Understand EU standards and grid compliance.
- Apply safety measures in diverse technical environments.

Learning Outcomes

Learners will be able to:

Module 11.1:

- Apply soft and cross-disciplinary skills to lead and support collaborative technical work.
- Manage innovation and project execution in diverse team settings.
- Coordinate sustainability-focused activities in maintenance and operational environments.

Module 11.2:

- Identify applicable regulatory and safety requirements in SEB projects.
- Promote a safe and inclusive work culture across disciplines.
- Implement standard protocols for health, safety, and environmental responsibility.

Assessment Criteria

Assessments include:

- **Role-play and team simulations** on leadership, crisis response, and multicultural collaboration.
- **Project reports** on team-based innovation strategies and SEB regulatory alignment.
- **Reflective assignments** on cross-disciplinary problem-solving.
- **Practical demonstrations** of environmental awareness, maintenance knowledge, and safety protocols.

Credentialing

Upon successful completion, participants will receive a certificate as a **Cross-Disciplinary and Soft Skills Specialist (MC-11)**.

This microcredential is stackable within the SEBCoVE training pathway and contributes toward the Certificate of Specialization in Smart and Sustainable Building Systems.

Certification

The Certification follows a structured scheme aligned with ISO/IEC 17024, ensuring the impartial, consistent, and valid assessment of competencies.

ANNEX 2: THE ANALYTICAL CURRICULUM OF THE SEBCOVE MICROCREDENTIALS

SEBCoVE SPECIALISATION TITLE	Specialization in Smart and Sustainable Building Systems
TARGET GROUP	Electricians
LEARNING HOURS	550
EQF LEVEL	
ECVET POINTS	

MC-01: Curriculum for Digitalization and Automation Technologies Specialist

Title of course	**Digitalization and Automation Technologies Specialist**
EQF Level	**4,5,6**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 1.1: **Technical & Economical Issues**

LEARNING HOURS	THEORETICAL PRACTICAL	22 8	ECVET POINTS	2

DIDACTIC NEEDS
(educational methodology)

Unit 1.1.1	**Basics principles of Automation and Digitalization**					
LO 1.1.1.1	Automation & PLCs	Theoretical learning in classroom / learning online	4	*Important*	***1***	0,3
LO 1.1.1.2	Data basis and data analysis	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 1.1.1.3	Networks and protocols	Theoretical learning in classroom	3	*Important*	***1***	0,3
LO 1.1.1.4	Basics principles of Internet of things	Theoretical learning in classroom	2	*Essential*	***2***	0,2
Unit 1.1.2	**Industrial Automation and Digitalization**					
LO 1.1.2.1	Introduction to SCADA and Human- Machine interfaces	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1
LO 1.1.2.2	Digitalization and industry	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 1.1.2.3	Cybersecurity and industrial safety	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 1.1.2.4	Industrial networks and automation	Laboratory	3	*Essential*	***2***	0,2
Unit 1.1.3	**Maintainance Basics**					
LO 1.1.3.1	Preventive Maintenance	Theoretical learning in classroom / learning online	2	*Important*	***1***	0,1
LO 1.1.3.2	Corrective Maintenance	Theoretical learning in classroom	2	*Important*	***1***	0,1

LO 1.1.3.3	Predective Maintenance	Laboratory	2	*Essential*	***2***	0,1
LO 1.1.3.4	Maintainance in Digitalized environments	Laboratory	3	*Essential*	***2***	0,2

Module 1.2: Regulatory & Safety Issues					
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**		**1**
	PRACTICAL	**2**			
	DIDACTIC NEEDS (educational methodology)				
Unit 1.2.1	**Residential energy storage regulations**				
LO 1.2.1.1	Knowledge of national and European Regulation Framework	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 1.2.1.2	Investigations of SEB projects matching with the current regulations and insentives	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1
LO 1.2.1.3	Understanding of smart technologies and smart grids integration	Theoretical learning in classroom	3	*Important*	***1***	0,1
Unit 1.2.2	**Digital and Automation safety protocols**					
LO 1.2.2.1	IT-level Security protocols and technologies	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 1.2.2.2	Industrial protocols and security	Theoretical learning in classroom	3	*Essential*	***2***	0,2
LO 1.2.2.3	Familiarity with EU electricity standards	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 1.2.2.4	Practical safety measures applications	Laboratory	2	*Essential*	***2***	0,2

MC-02: Curriculum for BAS Installer and Technician

Title of course	**BAS Installer and Technician**
EQF Level	**4,5**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 2.1: Technical & Economical Issues				
LEARNING HOURS	**THEORETICAL**	**22**	**ECVET POINTS**	**2**
	PRACTICAL	**8**		

DIDACTIC NEEDS
(educational methodology)

Unit 2.1.1	**Procurement and Installations Basics**					
LO 2.1.1.1	Introduction to Building Automation Systems	Theoretical learning in classroom / learning online	4	*Important*	***1***	0,3
LO 2.1.1.2	Programmable Logical Controllers	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 2.1.1.3	Networks and communication protocols	Theoretical learning in classroom	3	*Important*	***1***	0,3
LO 2.1.1.4	Installation and configuration	Theoretical learning in classroom	2	*Essential*	***2***	0,2

Unit 2.1.2	**Advance Building Energy Systems integration**					
LO 2.1.2.1	Energy Efficiency and management	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1
LO 2.1.2.2	Basic cybersecurity for building systems	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 2.1.2.3	Technical Documentation and soft skills	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 2.1.2.4	Virtual simulation at BAS	Laboratory	3	*Essential*	***2***	0,2
Unit 2.1.3	**Maintainance Basics**					
LO 2.1.3.1	Maintainance HVAC systems throw BAS	Theoretical learning in classroom / learning online	2	*Important*	***1***	0,1
LO 2.1.3.2	PLC and programming	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 2.1.3.3	Monitoring	Laboratory	2	*Essential*	***2***	0,1
LO 2.1.3.4	Maintenance throw network	Laboratory	3	*Essential*	***2***	0,2

Module 2.2: Regulatory & Safety Issues					
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**	**1**	
	PRACTICAL	**2**			
	DIDACTIC NEEDS (educational methodology)				

Unit 2.2.1	**Residential energy storage regulations**					
LO 2.2.1.1	Knowledge of national and European Regulation Framework	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1

LO 2.2.1.2	Investigations of SEB projects matching with the current regulations and insentives	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1
LO 2.2.1.3	Understanding of smart technologies and smart grids integration	Theoretical learning in classroom	3	*Important*	***1***	0,1
Unit 2.2.2	**Safety protocols**					
LO 2.2.2.1	Adherence to safety regulations and grid compliance	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 2.2.2.2	Knowledge of cybersecurity and networks safety protocols	Theoretical learning in classroom	3	*Essential*	***2***	0,2
LO 2.2.2.3	Familiarity with EU electricity standards	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 2.2.2.4	Practical safety measures applications	Laboratory	2	*Essential*	***2***	0,2

MC-03: Curriculum for Renewable Energy Systems Installer

Title of course	**Renewable Energy Systems Installer**
EQF Level	**4,5**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 3.1: Technical & Economical Issues

LEARNING HOURS	**THEORETICAL** **PRACTICAL**	**22** **8**	**ECVET POINTS**	**2**

		DIDACTIC NEEDS (educational methodology)				
Unit 3.1.1	**Procurement and Installations Basics**					
LO 3.1.1.1	The trainee gets familiar with contemporary and state of the art **technologies in Photovoltaics** and gets ready to perform correct economotechnical procurements	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 3.1.1.2	The trainee gets familiar with contemporary and state of the art technologies in Inverters and gets ready to perform correct economotechnical procurements	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 3.1.1.3	The trainee gets familiar with contemporary and state of the art technologies in small scale WTs and gets ready to perform correct economotechnical procurements	Theoretical learning in classroom / learning online	1	*Basic*	***0,5***	0,2
LO 3.1.1.4	The trainee knows to complete a basic design that meets the resident needs	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 3.1.1.5	The trainee gets familiar with contemporary and state of the art technologies for the BOS equipement and gets ready to perform correct economotechnical procurements	Theoretical learning in classroom	2	*Essential*	***2***	0,2
Unit 3.1.2	**Advance RES systems integration**					
LO 3.1.2.1	Hybrid systems introduction	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1

LO 3.1.2.2	Residential energy demand assessment and hydrib system design	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 3.1.2.3	Knowledge to integrate renewable systems with smart grid technology	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 3.1.2.4	Perform PV & Battery Projects installation	Laboratory	3	*Essential*	***2***	0,2
Unit 3.1.3	**Maintainance Basics**					
LO 3.1.3.1	Knowledge of routine inspections and maintenance of PVs	Theoretical learning in classroom / learning online	1	*Important*	***1***	0,05
LO 3.1.3.2	Knowledge of routine inspections and maintenance of WTs	Theoretical learning in classroom / learning online	1	*Basic*	***0,5***	0,05
LO 3.1.3.3	Knowledge of routine inspections and maintenance of Inverters and BOS	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 3.1.3.4	Perform inspections and maintenance of PVs	Laboratory	2	*Essential*	***2***	0,1
LO 3.1.3.5	Perform inspections and maintenance of BOS	Laboratory	3	*Essential*	***2***	0,2

Module 3.2: Regulatory & Safety Issues					
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**		**1**
	PRACTICAL	**2**			
	DIDACTIC NEEDS (educational methodology)				
Unit 3.2.1	**Residential RES regulations**				

LO 3.2.1.1	Knowledge of national and European Regulation Framework	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 3.2.1.2	Investigations of SEB projects matching with the current regulations and insentives	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1
LO 3.2.1.3	Understanding of smart technologies and smart grids integration	Theoretical learning in classroom	3	*Important*	***1***	0,1
Unit 3.2.2	**Electrical safety protocols**					
LO 3.2.2.1	Adherence to safety regulations and grid compliance	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 3.2.2.2	Knowledge of electrical safety protocols	Theoretical learning in classroom	3	*Essential*	***2***	0,2
LO 3.2.2.3	Familiarity with EU renewable energy standards	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 3.2.2.4	Practical safety measures applications	Laboratory	2	*Essential*	***2***	0,2

MC-04: Curriculum for Energy Storage Systems Installer

Title of course	**Energy Storage Systems Installer**
EQF Level	**4,5**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 4.1: Technical & Economical Issues						
LEARNING HOURS		**THEORETICAL**	**22**	**ECVET POINTS**		**2**
		PRACTICAL	**8**			
		DIDACTIC NEEDS (educational methodology)				
Unit 4.1.1	**Procurement and Installations Basics**					
LO 4.1.1.1	The trainee gets familiar with contemporary and state of the art **technologies in Energy Storage** and gets ready to perform correct economotechnical procurements	Theoretical learning in classroom / learning online	4	*Important*	***1***	0,3
LO 4.1.1.2	The trainee gets familiar with contemporary and state of the art technologies in Chargers and Inverters and gets ready to perform correct economotechnical procurements	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 4.1.1.3	The trainee knows to complete a basic design that meets the resident needs	Theoretical learning in classroom	3	*Important*	***1***	0,3
LO 4.1.1.4	The trainee gets familiar with contemporary and state of the art technologies for the BOS equipement and gets ready to perform correct economotechnical procurements	Theoretical learning in classroom	2	*Essential*	***2***	0,2
Unit 4.1.2	**Advance RES & Storage systems integration**					

LO 4.1.2.1	Hybrid systems introduction	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1
LO 4.1.2.2	Residential energy demand assessment and hydrib system design	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 4.1.2.3	Knowledge to integrate renewable systems with smart grid technology	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 4.1.2.4	Perform PV & Battery Projects installation	Laboratory	3	*Essential*	***2***	0,2
Unit 4.1.3	**Maintainance Basics**					
LO 4.1.3.1	Knowledge of routine inspections and maintenance of PVs	Theoretical learning in classroom / learning online	2	*Important*	***1***	0,1
LO 4.1.3.2	Knowledge of routine inspections and maintenance of Inverters and BOS	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 4.1.3.3	Perform inspections and maintenance of Batteries	Laboratory	2	*Essential*	***2***	0,1
LO 4.1.3.4	Perform inspections and maintenance of BOS	Laboratory	3	*Essential*	***2***	0,2

Module 4.2: Regulatory & Safety Issues					
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**	**1**	
	PRACTICAL	**2**			
	DIDACTIC NEEDS (educational methodology)				
Unit 4.2.1	**Residential energy storage regulations**				

LO 4.2.1.1	Knowledge of national and European Regulation Framework	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 4.2.1.2	Investigations of SEB projects matching with the current regulations and insentives	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1
LO 4.2.1.3	Understanding of smart technologies and smart grids integration	Theoretical learning in classroom	3	*Important*	***1***	0,1
Unit 4.2.2	**Batteries safety protocols**					
LO 4.2.2.1	Adherence to safety regulations and grid compliance	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 4.2.2.2	Knowledge of batteries safety protocols	Theoretical learning in classroom	3	*Essential*	***2***	0,2
LO 4.2.2.3	Familiarity with EU electricity standards	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 4.2.2.4	Practical safety measures applications	Laboratory	2	*Essential*	***2***	0,2

MC-05: Curriculum for EV Charging Systems Specialist

Title of course	**EV Charging Systems Specialist**
EQF Level	**4,5**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 5.1: Technical & Economical Issues						
LEARNING HOURS		**THEORETICAL**	**22**	**ECVET POINTS**		**2**
		PRACTICAL	**8**			
		DIDACTIC NEEDS (educational methodology)				
Unit 5.1.1	**Electrical Motors**					
LO 5.1.1.1	Introduction to EVs technologies	Theoretical learning in classroom / learning online	4	*Important*	***1***	0,3
LO 5.1.1.2	Electrical motors theory	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,2
LO 5.1.1.3	Converters theory	Theoretical learning in classroom	3	*Important*	***1***	0,3
LO 5.1.1.4	Energy and power managent systems	Theoretical learning in classroom	2	*Essential*	***2***	0,2
Unit 5.1.2	**Batteries & FCs**					
LO 5.1.2.1	Types of batteries	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1
LO 5.1.2.2	Introduction to fuel cells (FCs)	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 5.1.2.3	Introduction to chargers	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 5.1.2.4	Monitoring and control of EVs charging	Laboratory	3	*Essential*	***2***	0,2

Unit 5.1.3	**Maintainance Basics**					
LO 5.1.3.1	EVs malfunction coding	Theoretical learning in classroom / learning online	2	*Important*	***1***	0,1
LO 5.1.3.2	Periodical maintanance procedures	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 5.1.3.3	Use of metering devices	Laboratory	2	*Essential*	***2***	0,1
LO 5.1.3.4	Errors detections	Laboratory	3	*Essential*	***2***	0,2

Module 5.2: Regulatory & Safety Issues					
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**		**1**
	PRACTICAL	**2**			
	DIDACTIC NEEDS (educational methodology)				
Unit 5.2.1	**EVs Regulations**				
LO 5.2.1.1	Knowledge of national and European Regulation Framework	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 5.2.1.2	Investigations of SEB projects matching with the current regulations and insentives	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1
LO 5.2.1.3	Understanding of smart technologies and smart grids integration	Theoretical learning in classroom	3	*Important*	***1***	0,1
Unit 5.2.2	**EVs safety protocols**					
LO 5.2.2.1	Adherence to safety regulations and grid compliance	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 5.2.2.2	Knowledge of EVs Charger safety protocols	Theoretical learning in classroom	3	*Essential*	***2***	0,2

LO 5.2.2.3	Familiarity with EU electricity standards	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 5.2.2.4	Practical safety measures applications	Laboratory	2	*Essential*	***2***	0,2

MC-06: Curriculum for Energy Data Analyst

Title of course	**Energy Data Analyst**
EQF Level	**4.5.6**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 6.1: Technical & Economical Issues				
LEARNING HOURS	**THEORETICAL**	**22**	**ECVET POINTS**	**2**
	PRACTICAL	**8**		

DIDACTIC NEEDS
(educational methodology)

Unit 6.1.1	**Basic Knowledge in Energy Analysis**					
LO 6.1.1.1	Introduction to Energy Systems and EnergyMarkets	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,2

LO 6.1.1.2	Fundamentals of Data Analysis (with intro to data cleaning & quality in energy systems)	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1
LO 6.1.1.3	Performance of residencial RES	Theoretical learning in classroom	2	*Important*	***1***	0,2
LO 6.1.1.4	Time Series Analysis for Energy Data	Theoretical learning in classroom	2	Essential	***2***	0,3
LO 6.1.1.5	Machine Learning and Forecasting models	Theoretical learning in classroom / learning online	2	Important	***1***	0,2
Unit 6.1.2	**Advance Concepts and Programming**					
LO 6.1.2.1	Grid Data and Power Balancing Principles	Theoretical learning in classroom / learning online	3	*Basic*	***1***	0,1
LO 6.1.2.2	Energy Market Analysis and GIS Applications in Energy Planning	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 6.1.2.3	Visual Analytics for Energy Data	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 6.1.2.4	Programming with Python for Energy Data (using Pandas/NumPy)	Laboratory	3	*Essential*	***2***	0,2
Unit 6.1.3	**Project Implementation**					
LO 6.1.3.1	Energy Efficiency & Demand-Side Analytics	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 6.1.3.2	Real-world project using open energy datasets	Laboratory	2	*Essential*	***2***	0,1
LO 6.1.3.3	Build a energy monitoring dashboard	Laboratory	3	*Essential*	***2***	0,2
LO 6.1.3.4	Communicating energy insights	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1

Module 6.2: Regulatory & Policy Issues						
LEARNING HOURS		**THEORETICAL**	**18**	**ECVET POINTS**		**1**
		PRACTICAL	**2**			
		DIDACTIC NEEDS (educational methodology)				
Unit 6.2.1	**Energy Policies**					
LO 6.2.1.1	Energy Economics and Multi-level Policy Frameworks	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 6.2.1.2	Trends in Future Energy Policy and Regulation	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 6.2.1.3	Electricity Market Design	Theoretical learning in classroom	3	*Essential*	***2***	0,1
Unit 6.2.2	**Energy System Regulations**					
LO 6.2.1.1	Smart Grids and Digital Energy Systems	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 6.2.1..2	Energy Regulations, Laws and Authorities	Theoretical learning in classroom	3	*Essential*	***2***	0,2
LO 6.2.1.3	Environmental and Climate Regulations	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 6.2.1.4	Energy regulations report using online resources	Laboratory	2	*Essential*	***2***	0,2

Erasmus + EU Solidarity Corps
101144027-SEBCoVE ERASMUS-EDU-2023-PEX-COVE

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Title of course	**Smart Grid Specialist**
EQF Level	**4.5.6**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 7.1: Technical & Economical Issues					
LEARNING HOURS	**THEORETICAL**	**24**	**ECVET POINTS**		**2**
	PRACTICAL	**6**			

		DIDACTIC NEEDS (educational methodology)				
Unit 7.1.1	**Power System Basics**					
LO 7.1.1.1	Power Systems Fundamentals	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 7.1.1.2	Integration of Renewable Energy Sources	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,2
LO 7.1.1.3	Distributed Energy Resources (DERs) and Aggregation	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 7.1.1.4	Energy Storage Systems and Flexibility	Theoretical learning in classroom	3	*Essential*	***2***	0,3
Unit 7.1.2	**Smart Grid Concept**					
LO 7.1.2.1	Smart Grid Architecture, Components, and Interoperability	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 7.1.2.2	Power Electronics and Control	Theoretical learning in classroom	2	*Important*	***1***	0,2

LO 7.1.2.3	Smart Metering and Demand-Side Technologies	Theoretical learning in classroom	2	*Important*	***1***	0,2
LO 7.1.2.4	Design and Dimensioning of a Smart Grid	Laboratory	3	*Essential*	***2***	0,3
Unit 7.1.3	**Smart Grid Operation**					
LO 7.1.3.1	Digital Communication for Smart Grids	Theoretical learning in classroom / learning online	2	*Important*	***1***	0,1
LO 7.1.3.2	Grid Monitoring and SCADA Operations	Theoretical learning in classroom	3	*Important*	***1***	0,1
LO 7.1.3.3	Real-time Data Analytics, State Estimation	Laboratory	3	*Essential*	***2***	0,2

Module 7.2: Regulatory Issues					
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**		**1**
	PRACTICAL	**2**			
	DIDACTIC NEEDS (educational methodology)				
Unit 7.2.1	**Smart Grid Regulations**				
LO 7.2.1.1	Smart Grid Policies and Incentives	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 7.2.1.2	Regulatory Framework for DER and Aggregators	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1
LO 7.2.1.3	Energy Markets in a Smart Grid Context	Theoretical learning in classroom	3	*Important*	***1***	0,1
LO 7.2.1.4	Develop a Microgrid Model and DER integration	Laboratory	2	*Essential*	***2***	0,2
Unit 7.2.2	**Smart Grid Trends**					
LO 7.2.2.1	Electric Mobility and Grid Flexibility	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2

LO 7.2.2.2	Cybersecurity and Data Integrity in Smart Grids	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 7.2.2.3	Decentralized Intelligence & Self-healing Grids	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1

MC-08: Curriculum for Electricity Markets Specialist

Title of course	**Electricity Markets Specialist**
EQF Level	**4.5.6**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 8.1: Technical & Economical Issues						
LEARNING HOURS	**THEORETICAL**	**22**	**ECVET POINTS**			**2**
	PRACTICAL	**8**				
	DIDACTIC NEEDS (educational methodology)					
Unit 8.1.1	**Energy Markets**					
LO 8.1.1.1	Fundamentals of Power Systems	Theoretical learning in classroom / learning online	4	*Important*	***1***	0,3
LO 8.1.1.2	Electricity Market Fundamentals	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 8.1.1.3	Smart Grids and Digital Energy Systems	Theoretical learning in classroom	3	*Important*	***1***	0,3
LO 8.1.1.4	European target model	Theoretical learning in classroom	2	*Essential*	***2***	0,2
Unit 8.1.2	**Electricity Markets integration**					

LO 8.1.2.1	Day-Ahead Market	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1
LO 8.1.2.2	Intraday Market	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 8.1.2.3	Balancing Market	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 8.1.2.6	Pricing case studies (MCP Calculations)	Laboratory	3	*Essential*	***2***	0,2
Unit 8.1.3	**Market Mechanisms and Trading Structures**					
LO 8.1.3.1	Derivatives Markets in Energy	Theoretical learning in classroom / learning online	2	*Important*	***1***	0,1
LO 8.1.3.2	Capacity Mechanisms and Adequacy Planning	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 8.1.3.3	Market simulation tools (DAM market)	Laboratory	2	*Essential*	***2***	0,1
LO 8.1.3.4	Market simulation tools (balancing market)	Laboratory	3	*Essential*	***2***	0,2

Module 8.2: Regulatory Issues				
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**	**0,8**
	PRACTICAL	**2**		
	DIDACTIC NEEDS (educational methodology)			

Unit 8.2.1	**Regulation, Policy, and Market Governance**					
LO 8.2.1.1	Electricity Market Regulation and Compliance	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 8.2.1.2	EU Electricity Market Integration and Regulation	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1

LO 8.2.1.3	Environmental Regulation and Energy Transition	Theoretical learning in classroom	3	*Important*	***1***	0,1
LO 8.2.1.4	Electricity Market Case Studies	Laboratory	2	*Essential*	***2***	0,2
Unit 8.2:2	**Strategy, Economics, and Emerging Trends**					
LO 8.2.2.1	Energy Economics and Market Strategy	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 8.2.2.2	Distributed Energy Resources and Prosumers	Theoretical learning in classroom	3	*Essential*	***2***	0,2
LO 8.2.2.3	European and National Markets Trends	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1

MC-09: Curriculum for Buildings Energy Efficiency Auditor

Title of course	**Buildings Energy Efficiency Auditor**
EQF Level	**4,5**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 9.1: Technical & Economical Issues				
LEARNING HOURS	**THEORETICAL**	**22**	**ECVET POINTS**	**2**

		PRACTICAL	**8**			
		DIDACTIC NEEDS (educational methodology)				
Unit 9.1.1	**Procurement and Installations Basics**					
LO 9.1.1.1	Introduction to Fundamentals of Energy & Thermodynamics	Theoretical learning in classroom / learning online	4	*Important*	***1***	0,3
LO 9.1.1.2	Energy Consumption Analysis of the Buildings	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 9.1.1.3	Building Systems: Heating, Air Conditioning & Ventilation	Theoretical learning in classroom	3	*Important*	***1***	0,3
LO 9.1.1.4	Electrical Systems & Lighting	Theoretical learning in classroom	2	*Essential*	***2***	0,2
Unit 9.1.2	**Advance Buildings Energy Efficiency Auditor integration**					
LO 9.1.2.1	Building Energy footprint	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1
LO 9.1.2.2	Economic analysis of the building	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 9.1.2.3	Investment evaluation	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 9.1.2.4	Energy Audit Procces and Reporting	Laboratory	3	*Essential*	***2***	0,2
Unit 9.1.3	**Knowledge of Maintainance Basics**					
LO 9.1.3.1	Basics knowledge of maintenance of Heating, Air Conditioning, Vedilation Systems, thermal systems and Building shell	Theoretical learning in classroom / learning online	2	*Important*	***1***	0,1

LO 9.1.3.2	Proper operation of devices	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 9.1.3.3	Energy Management and Scheduling	Laboratory	2	*Essential*	***2***	0,1
LO 9.1.3.4	Use of Building Energy Systems and Technologies	Laboratory	3	*Essential*	***2***	0,2

Module 9.2: Regulatory & Safety Issues					
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**		**1**
	PRACTICAL	**2**			

DIDACTIC NEEDS
(educational methodology)

Unit 9.2.1	**Residential energy storage regulations**					
LO 9.2.1.1	Knowledge of national and European Regulation Framework	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 9.2.1.2	Investigations of SEB projects matching with the current regulations and insentives	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1
LO 9.2.1.3	Understanding of smart technologies and smart grids integration	Theoretical learning in classroom	3	*Important*	***1***	0,1
Unit 9.2.2	**Basics safety protocols**					
LO 9.2.2.1	Training and Certifications	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 9.2.2.2	Use of appropriate equipment	Theoretical learning in classroom	3	*Essential*	***2***	0,2
LO 9.2.2.3	Familiarity with EU electricity standards	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 9.2.2.4	Use of appropriate software	Laboratory	2	*Essential*	***2***	0,2

MC-10: Curriculum for Sustainability Manager

Title of course	Sustainability Manager
EQF Level	4,5
Target group	Electricians
Learning Hours	50
ECVET Points	3

Module 10.1: Technical & Economical Issues					
LEARNING HOURS	THEORETICAL	22	ECVET POINTS		2
	PRACTICAL	8			

DIDACTIC NEEDS
(educational methodology)

Unit 10.1.1	Procurement and Installations Basics					
LO 10.1.1.1	Introduction to Sustainability and Sustainable Development Goals	Theoretical learning in classroom / learning online	4	*Important*	***1***	0,3
LO 10.1.1.2	Introduction to Environmental Management	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 10.1.1.3	Introduction to Corporate Social Responsibility	Theoretical learning in classroom	3	*Important*	***1***	0,3

LO 10.1.1.4	Environmental, Social, and Governance	Theoretical learning in classroom	2	*Essential*	***2***	0,2
Unit 10.1.2	**Advance Sustainability manager integration**					
LO 10.1.2.1	Sustainability Reports and Indicators	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1
LO 10.1.2.2	Practical Tools & Case Studies	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 10.1.2.3	Internal Team Communication and Training	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 10.1.2.4	ESG's versus SDG's	Laboratory	3	*Essential*	***2***	0,2
Unit 10.1.3	**Maintainance Basics**					
LO 10.1.3.1	Equipment Energy Efficiency	Theoretical learning in classroom / learning online	2	*Important*	***1***	0,1
LO 10.1.3.2	Preventive & Predictive Maintenance	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 10.1.3.3	Circular Economy in Maintenance	Laboratory	2	*Essential*	***2***	0,1
LO 10.1.3.4	Energy and Environmental Monitoring	Laboratory	3	*Essential*	***2***	0,2

Module 10.2: Regulatory & Safety Issues				
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**	**1**
	PRACTICAL	**2**		
	DIDACTIC NEEDS (educational methodology)			
Unit 10.2.1	**Residential energy storage regulations**			

LO 10.2.1.1	Knowledge of national and European Regulation Framework	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 10.2.1.2	Investigations of SEB projects matching with the current regulations and insentives	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1
LO 10.2.1.3	Understanding of smart technologies and smart grids integration	Theoretical learning in classroom	3	*Important*	***1***	0,1
Unit 10.2.2	**Safety protocols**					
LO 10.2.2.1	Adherence to safety regulations	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 10.2.2.2	Hazardous Materials Management	Theoretical learning in classroom	3	*Essential*	***2***	0,2
LO 10.2.2.3	Familiarity with EU electricity standards	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 10.2.2.4	Practical safety measures applications	Laboratory	2	*Essential*	***2***	0,2

MC-11: Curriculum for Cross-Disciplinary and Soft Skills Specialist

Title of course	**Cross-Disciplinary and Soft Skills Specialist**
EQF Level	**4,5**
Target group	**Electricians**
Learning Hours	**50**
ECVET Points	**3**

Module 11.1: Technical & Economical Issues

LEARNING HOURS	THEORETICAL	22	ECVET POINTS	2
	PRACTICAL	8		

		DIDACTIC NEEDS (educational methodology)				
Unit 11.1.1	**Procurement and Installations Basics**					
LO 11.1.1.1	Introduction to Cross-Disciplinary Thinking	Theoretical learning in classroom / learning online	4	*Important*	***1***	0,3
LO 11.1.1.2	Introduction to Soft Skills	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,2
LO 11.1.1.3	Critical Thinking and Problem Solving	Theoretical learning in classroom	3	*Important*	***1***	0,3
LO 11.1.1.4	Management of multicultural teams	Theoretical learning in classroom	2	*Essential*	***2***	0,2
Unit 11.1.2	**Advance Cross-Disciplinary and Soft Skills Specialist integration**					
LO 11.1.2.1	Project Management Skills	Theoretical learning in classroom / learning online	2	*Basic*	***0,5***	0,1
LO 11.1.2.2	Strategic Innovation Skills	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 11.1.2.3	Technology and Digital Skills	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 11.1.2.4	Project Management with Cross-Thematic Teams	Laboratory	3	*Essential*	***2***	0,2
Unit 11.1.3	**Maintainance Basics**					

LO 11.1.3.1	Basic Knowledge of Infrastructure Maintenance and Management	Theoretical learning in classroom / learning online	2	*Important*	***1***	0,1
LO 11.1.3.2	Maintenance Management and Maintenance Strategies	Theoretical learning in classroom	2	*Important*	***1***	0,1
LO 11.1.3.3	Crisis Response and Risk Management	Laboratory	2	*Essential*	***2***	0,1
LO 11.1.3.4	Environmental Awareness and Sustainability	Laboratory	3	*Essential*	***2***	0,2

Module 11.2: Regulatory & Safety Issues						
LEARNING HOURS	**THEORETICAL**	**18**	**ECVET POINTS**	**1**		
	PRACTICAL	**2**				
	DIDACTIC NEEDS (educational methodology)					
Unit 11.2.1	**Residential energy storage regulations**					
LO 11.2.2.1	Knowledge of national and European Regulation Framework	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 11.2.2.2	Investigations of SEB projects matching with the current regulations and insentives	Theoretical learning in classroom / learning online	3	*Important*	***1***	0,1
LO 11.2.2.3	Understanding of smart technologies and smart grids integration	Theoretical learning in classroom	3	*Important*	***1***	0,1
Unit 11.2.2	**Safety protocols**					
LO 11.2.2.1	Adherence to safety regulations and grid compliance	Theoretical learning in classroom	3	*Important*	***1***	0,2
LO 11.2.2.2	Knowledge of Electrical safety protocols	Theoretical learning in classroom	3	*Essential*	***2***	0,2

LO 11.2.2.3	Familiarity with EU electricity standards	Theoretical learning in classroom / learning online	3	*Basic*	***0,5***	0,1
LO 11.2.2.4	Practical safety measures applications	Laboratory	2	*Essential*	***2***	0,2

GERMANY

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