D3.2

Curricula and certification schemes

Funded by the European Union. Views and opinions expressed are however those of author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

Co-funded by the European Union

NS4nZEBs New Skills for nearly Zero Energy Buildings

Deliverable version: 1:	October 2024
Deliverable version: 2	
Dissemination level:	**Public**
Author	Paul De Schepper (TMK), Evelina Stoykova (SEC), Nina Nikolova (CISB)

Contents

1. Purpose and scope 4
2. Curricula 6
2.1. Curricula for training of architects, EQF level 6-7 7
2.2. Curricula for training of electrical and mechanical engineers, EQF level 5-6 14
2.3. Curricula for up-skilling training of electrical and mechanical engineers, EQF level 5-6 20
2.4. Curricula for training of HVAC engineers, EQF level 5-6 24
2.5. Curricula for training up-skilling of HVAC engineers, EQF level 5-6 30
2.6. Curricula for training HVAC- installers, EQF level 3-4 46
2.7. Curricula for up-skilling training of HVAC- installers, EQF level 3-4 52
2.8. Curricula for up-skilling trainers 57
3. Certification Schemes 60
3.1. Scheme's Technical Committee 60
3.2. Prerequisites for applicants 61
3.3. Examination Mechanism 62
3.3.1. General 62
3.3.2. Theoretical examination 62
3.3.3. Practical examination 63
3.4. Certification 63
3.4.1. Issue and award of Certificate 63
3.4.2. Suspension and withdrawal of the Certificate 63
3.5. Code of Conduct 63
3.6. Confidentiality 64
3.7. Objections, Complaints and appeals 64

1. Purpose and scope

The main objective of the project NS4nZEBs is to increase the number of skilled building professionals in the fields of PVs, smart electrical systems, heat pumps and energy storage including small-scale applications for production of hydrogen in buildings at all levels of the building design, operation and maintenance value chain.

This will be achieved by addressing the following focus areas:

- Skills for new and existing nearly Zero Energy Buildings (nZEBs) and bridging the gap towards Zero Emission Buildings (ZEBs).
- Skills for integration of renewable energy and efficient heating and cooling technologies, including in particular heat pumps roll-out; skills for installers to deliver heating and cooling upgrades as part of renovation projects.
- Digital skills supporting greater energy performance of buildings, in particular through an enhanced use of Building Information Modelling.
- Skills for upgrading the smartness of buildings for greater energy performance (based on the Smart Readiness Indicator), looking in particular at sensors, building controls and building management systems. Energy efficiency management.

The first task was to review, assess and identify the gaps in the skills of installers of RES technologies in buildings. This was achieved through round tables and surveys with stakeholders.

The next step was to develop respective professional qualification profiles, focusing on what has to be improved and/or upskilled in order to tackle the skills mismatch identified in the surveys. The assessment of the needs of new skills of specialists in RES technologies in buildings show that the trainings should be adapted to the different levels of expertise of the trainees, as some of them need new skills, while other need only an up-skilling.

Qualification profiles were developed for two levels of qualification: EQF level 3-5 and EQF level 6-7.

Nine qualification profiles are developed as follows:

- Architects – EQF level 6-7
- Electrical engineers – EQF level 6-7
    - New skills
    - Up-skills
- HVAC engineers – EQF level 6-7
    - New skills
    - Up-skills
- Electrical technicians – EQF level 3-5
    - New skills
    - Up-skills
- HVAC technicians – EQF level 3-5
    - New skills
    - Up-skills

This document is dedicated to:

- The development of 9 curricula aligned with the agreed professional qualifications, including specifications of learning structures, contents, basic timing, and other requirements. ECVET and micro-credentials approach will be applied in its design in concurrency with other curricular components (professional qualifications and certificates).
- The definition of 9 certification schemes for the assessment and accreditation of acquired competences during the training delivered, which is the main way for students and professionals to reach the agreed professional qualifications. They will be defined in compliance with the standard ISO 17024 (personnel competency certification) and a micro-credentials approach allowing for partial and cumulative accreditation.

2. Curricula

The best teaching practices of innovative teaching methods in vocational training were investigated in order to be able to identify and select the best ones, and the obtained conclusions meet the needs, dynamics and strategies of learning that may be supported by new technologies and pedagogical methodologies. The selected best practices are used as a model for the creation of the training under the current project.

Since the intent is to create training courses that are flexible, engaging and innovative, allowing trainees to learn at their own pace and to earn microcredentials certifying their learning outcomes, it was decided that a flexible hybrid method of teaching will be adopted for the Project NS4nZEBs using an e-learning platform, with integrated different digital technologies, such as videos, serious games, screencasts, interactive presentations and quizzes.

A template was designed to allow the following:

The definition of core skills and competences that a trainee should develop (based on the needs analysis);

- The definition of corresponding sub-competences;
- The weighing of those competences into 3 categories:
    - Basic;
    - Important;
    - Essential.

Corresponding “teaching time” for each competence, and sub-competence respectively, was allocated;

Corresponding ECVET-equivalent points are allocated, according to the previous weighing of competences, giving a coefficient of 0.5 for basic competences, 1 for important competences, and 2 for essential competences. We have used the term ECVET-equivalent

The duration of the whole training is determined and planned.

The training materials are divided in modules. This makes them more flexible, easy to adapt and the trainees will be able to choose the modules applicable and relevant to them.

2.1. Curricula for training of architects, EQF level 6-7

Title of the course	New skills for architects for NZEB
EQF level	6 & 7
Target group	Architects who wish to upgrade their competences in NZEB
Learning Hours	70
ECVET-equivalent Points	41

MODULE 1: Introduction and Legislation				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3,5
	Practical	0		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2023/1791 of 13 September 2023 on energy efficiency ○ DIRECTIVE (EU) 2023/2413 of 18 October 2023 ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators				
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours		Important	1,0
1.3 National legislation related to EE and RES in buildings				
The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0

MODULE 2: Understanding the integrated concept of NZEBs and Zero Emission Buildings				
LEARNING HOURS	Theoretical	11	ECVET – equivalent points	9
	Practical	0		

2.1 Energy transition and building's role			
The trainee is familiar with the buildings' role in the energy transition	Theoretical learning in classroom/online learning – 1hour	Important	1,0
2.2 Energy efficiency – the building envelope			
The trainee is familiar with the requirements for energy efficient buildings' envelope	Theoretical learning in classroom/online learning - 2 hours	Essential	2,0
2.3 Energy efficiency – energy efficiency of building's systems – energy management – ventilation – heat pumps			
The trainee is familiar with the requirements for energy efficiency of building's systems	Theoretical learning in classroom/online learning – 2 hours	Important	1,0
2.4 RES in buildings: – Solar-related issues (solar irradiance, geometry, solar potential, modelling, irradiance measurements, and analysis) – Biomass			
The trainee is familiar with the use of RES in buildings	Theoretical learning in classroom/online learning – 2 hours	Essential	2,0
2.5 Urban planning and energy performance of buildings			
The trainee is familiar with the influence of the urban planning to the EE of buildings	Theoretical learning in classroom/online learning – 1 hour	Important	1,0
2.6 Energy, sustainability and health impacts			
The trainee is familiar with the influence of EE and RES in buildings to the energy use, the sustainability of the building sector and the impact on health	Theoretical learning in classroom/online learning – 1 hours	Important	1,0
2.7 Voluntary schemes overview (Low Carbon Building Initiative, Passivhaus, BREEAM, DGNB, LEED, VERDE (in Spain), other)			
The trainee is familiar with the different schemes for LCA	Theoretical learning in classroom/online learning – 2 hours	Important	1,0

MODULE 3: PV systems in buildings				
LEARNING HOURS	**Theoretical**	**8**	**ECVET – equivalent points**	**5,0**
	Practical	**1**		
3.1 Types of PV modules, grid-connected and off-grid systems				
The trainee is familiar with the different types of PV modules and systems	Theoretical learning in classroom/online learning – 2 hours		Important	1,00
3.2 Mounting and building integration options for PV systems in buildings				
The trainee is familiar with the options for integration of PV systems in buildings	Theoretical learning in classroom/online learning- 2 hours		Essential	2,0
3.3 Design Parameters and Performance Factors, Examples				
The trainee is familiar with the design parameters and performance factors	Theoretical learning in classroom/online learning – 2 hours		Important	1,0
3.4 Elements in a PV installation and basic electricity design				
The trainee is familiar with the elements of a PV installation and basic electricity design	Theoretical learning in classroom/online learning – 2 hours		Important	1,0
Virtual lab – options for integration of PV systems in buildings	Online – 1 hour			

MODULE 4: Heat pumps				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**2,0**
	Practical	**0**		
4.1 Type of heat pumps and their applications				
The trainee is familiar with the different types of heat pumps and their applications	Theoretical learning in classroom/online learning – 2 hours		Important	1,00
4.2 Requirements for the installation of heat pumps				

The trainee is familiar with the requirements for the installation of heat pumps	Theoretical learning in classroom/online learning- 2 hours	Important	1,00

MODULE 5: Ventilation				
LEARNING HOURS	**Theoretical**	**3**	**ECVET – equivalent points**	**2,0**
	Practical	**0**		
5.1 Natural and mechanical ventilation – design, opportunities, and limitations				
The trainee is familiar with the different types of ventilation systems and their applications	Theoretical learning in classroom/online learning – 1,5 hours		Important	1,00
5.2 New smart ventilation systems				
The trainee is familiar with smart ventilation systems and the requirements for their installation	Theoretical learning in classroom/online learning- 1,5 hours		Important	1,00

MODULE 6: Storage systems				
LEARNING HOURS	**Theoretical**	**2**	**ECVET – equivalent points**	**1,0**
	Practical	**0**		
6.1 Batteries				
The trainee is familiar with the requirements for installation of batteries	Theoretical learning in classroom/online learning – 1hour		Basic	0,5
6.2 Small–scale applications for the production of hydrogen from PV systems				
The trainee is familiar with the requirements for installation of small–scale applications for the production of hydrogen from PV systems	Theoretical learning in classroom/online learning- 1 hour		Basic	0,5

MODULE 7: Solar thermal systems in buildings				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**1,0**
	Practical	**1**		
7.1 Types of solar thermal systems, their components and applications				

The trainee is familiar with the different types of solar thermal systems, their components and applications	Theoretical learning in classroom/online learning – 2 hours	Basic	0,50
7.2 General configuration of solar thermal systems			
The trainee is familiar with the general configuration of solar thermal systems	Theoretical learning in classroom/online learning- 2 hours	Basic	0,50
Virtual lab: types of solar thermal systems and their components	Online – 1 hour		

MODULE 8: Energy Communities				
LEARNING HOURS	**Theoretical**	**7**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
8.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
8.2 Examples of energy communities				
The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 2 hours		Important	1,0
8.3 How to create an energy community – engagement of stakeholders, business plans				
The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0
8.4 Implementation and exploitation				
The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –2 hours		Important	1,0
Virtual lab – serious game – giving advices to clients how to create an energy community	Online – 1 hour			

MODULE 9: Organisational and financial issues				
LEARNING HOURS	**Theoretical**	**5**		**4,0**

	Practical	**2**	**ECVET – equivalent points**	
9.1 The process of building's refurbishment – step by step				
The trainee is familiar with the process of building's refurbishment	Theoretical learning in classroom/online learning – 2hours		Essential	2,00
9.2 Green procurement and LCC assessment				
The trainee is familiar with the opportunities for green procurement of building materials and components and LCC assessment	Theoretical learning in classroom/online learning- 3 hours		Essential	2,00
serious game – the process of building refurbishment step-by-step	Online-2 hours			

MODULE 10: Working with clients				
LEARNING HOURS	**Theoretical**	**3**	**ECVET – equivalent points**	**4,0**
	Practical	**0**		
10.1 Give advices for energy efficiency and RES systems				
The trainee is able to give advices for energy efficiency and RES systems	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
10.2 Analysis of user behaviour				
The trainee is able to analyse the user behaviour of its clients	Theoretical learning in classroom/online learning- 2 hours		Essential	2,00

MODULE 11: Soft skills				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**2,0**
	Practical	**0**		
11.1 Communicative skills, emotional intelligence and networking				
The trainee has acquired communicative skills	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
11.2 Critical thinking and decision-making				

The trainee is able to apply critical thinking and decision-making	Theoretical learning in classroom/online learning – 1hour	Basic	0,50
11.3 Entrepreneurship Competence			
The trainee has acquired competences in entrepreneurship	Theoretical learning in classroom/online learning – 1hour	Basic	0,50
11.4 Diversity, inclusiveness and social responsibility			
The trainee has acquired competences in diversity, inclusiveness and social responsibility	Theoretical learning in classroom/online learning – 1hour	Basic	0,50

MODULE 12: Media and Information Literacy; Digital Skills				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**1,5**
	Practical	**0**		
12.1 Ability to access and analyse media messages as well as create, reflect and take action, using the power of information and communication;				
The trainee is able to access and analyze media messages as well as create, reflect and take action, using the power of information and communication	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
12.2 Digital Skills – DigComp2.2, software used in the profession.				
The trainee is aware of the available digital tools used in the profession and the application of BIM	Theoretical learning in classroom/online learning- 3 hours		Important	1,00

2.2. Curricula for training of electrical and mechanical engineers, EQF level 5-6

Title of the course	New skills for electrical and mechanical engineers for NZEB
EQF level	5
Target group	Electrical and mechanical engineers who wish to upgrade their competences in NZEB
Learning Hours	55
ECVET-equivalent Points	37,5

MODULE 1: Introduction and Legislation				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3.5
	Practical	0		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2023/1791 of 13 September 2023 on energy efficiency ○ DIRECTIVE (EU) 2023/2413 of 18 October 2023 ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators				
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours		Important	1,0
1.3 National legislation related to EE and RES in buildings				
The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0

MODULE 2: Understanding the integrated concept of NZEBs and Zero Emission Buildings				
LEARNING HOURS	Theoretical	11	ECVET – equivalent points	9
	Practical	0		

2.1 Energy transition and building's role			
The trainee is familiar with the buildings' role in the energy transition	Theoretical learning in classroom/online learning – 1hour	Important	1,0
2.2 Energy efficiency – the building envelope			
The trainee is familiar with the requirements for energy efficient buildings' envelope	Theoretical learning in classroom/online learning - 2 hours	Essential	2,0
2.3 Energy efficiency – energy efficiency of building's systems – energy management – ventilation – heat pumps			
The trainee is familiar with the requirements for energy efficiency of building's systems	Theoretical learning in classroom/online learning – 2 hours	Important	1,0
2.4 RES in buildings: – Solar-related issues (solar irradiance, geometry, solar potential, modelling, irradiance measurements, and analysis) – Biomass			
The trainee is familiar with the use of RES in buildings The trainee is familiar with the different solar related issues	Theoretical learning in classroom/online learning – 2 hours	Essential	2,0
2.5 Urban planning and energy performance of buildings			
The trainee is familiar with the influence of the urban planning to the EE of buildings	Theoretical learning in classroom/online learning – 1 hour	Important	1,0
2.6 Energy, sustainability and health impacts			
The trainee is familiar with the influence of EE and RES in buildings to the energy use, the sustainability of the building sector and the impact on health	Theoretical learning in classroom/online learning – 1 hours	Important	1,0
2.7 Voluntary schemes overview (Low Carbon Building Initiative, Passivhaus, BREEAM, DGNB, LEED, VERDE (in Spain), other)			
The trainee is familiar with the different schemes for LCA	Theoretical learning in classroom/online learning – 2 hours	Important	1,0

MODULE 3: PV systems in buildings				
LEARNING HOURS	**Theoretical**	**9**	**ECVET – equivalent points**	**9.0**
	Practical	**3**		
3.1 Solar engineering and solar Photovoltaic (PV) Energy				
The trainee is familiar with the solar radiation and its geometry to extract the maximum energy out of PV modules at a given location	Theoretical learning in classroom/online learning – 1hour		Important	1,00
3.2 Types of PV modules, elements of PV-systems				
The trainee is familiar with the different types and elements of PV modules and systems The trainee is familiar with grid-connected and off-grid systems	Theoretical learning in classroom/online learning – 2 hours		Important	1,00
3.3 Design principles - Mounting and building integration options for PV systems in buildings				
The trainee learns about the mounting and building integration options for PV-systems in buildings based on on-site-visit. The trainee learns about system sizing and design : basics e.g. I-V curve, effect of temperature, interconnecting PV modules, strings, sizing of cables, …	Theoretical learning in classroom/online learning- 2 hours		Essential	2,0
3.4 Simulation software				
The trainee is familiar with simulation software for site analysis e.g. PV*SOL	Practical case – 2 hours		Important	1,0
3.5 Installation				
The trainee is familiar with the elements of a PV installation and basic electricity design The trainee is familiar with working safely with PV The trainee is familiar with the installation of - Electrical components - Equipment - Mechanical components	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0
3.6. Maintenance and troubleshooting				

The trainee is familiar with the maintenance and troubleshooting for PV-panels	Theoretical learning in classroom/online learning –2 hours	Essential	2,0
Serious game	1 practical hour		

MODULE 4: Storage systems				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**2,0**
	Practical	**0**		
4.1 Design parameters of batteries and other storage systems				
The trainee is familiar with the solar battery technology and knows other storage systems for electricity	Theoretical learning in classroom/online learning – 2hour		Important	1,00
4.2. Small–scale applications for the production of hydrogen from PV systems				
The trainee is familiar with the requirements for installation of small–scale applications for the production of hydrogen from PV systems	Theoretical learning in classroom/online learning – 2 hour		Important	1,00

MODULE 5 : Energy management, organization management of Work activities				
LEARNING HOURS	**Theoretical**	**7**	**ECVET – equivalent points**	**3,0**
	Practical	**1**		
5.1. Energy management parameters, indicators, protocols				
The trainee is familiar with an EMS – Energy Management Systems and know how its works	Theoretical learning in classroom/online learning – 2 hours Practical case – 1 hour		Important	1,00
5.2. Hardware and software for EMS (energy management systems)				
The trainee learns the basic concepts of an energy management system and how to deal with it	Theoretical learning in classroom/online learning – 2hour		Important	1,00
5.3. Organizational Management of Work activities				
He trainee is familiar with defining tasks, time and operating modes	Theoretical learning in classroom/online learning – 3hour		Important	1,00

The trainee is familiar with conducting work phases based on project specifications The trainee is familiar with document management of procurement and activities The trainee is familiar with budget management			

MODULE 6: Energy Communities				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
6.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
6.2 Examples of energy communities				
The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 1 hour		Important	1,0
6.3 How to create an energy community – engagement of stakeholders, business plans				
The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 1 hour		Essential	2,0
6.4 Implementation and exploitation				
The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –1 hour		Important	1,0
Virtual lab – serious game – giving advice to clients how to create an energy community	Online – 1 hour			

MODULE 7: Organisational and financial issues, working with clients, soft skills, digital skills				
LEARNING HOURS	**Theoretical**	**9**	**ECVET – equivalent points**	**5,0**
	Practical	**1**		
7.1. The process of building's refurbishment				

The trainee understand modern and effective procedures for the renovation of the building The trainee is familiar with-up-to-date renovation methods	Theoretical learning in classroom/online learning – 2 hours	Important	1,00
7.2. Organisational and financial issues			
The trainee is familiar how to reduce the carbon footprint The trainee is familiar with the EU GPP training toolkit The trainee is familiar with life cost analysis (LCC) and knows how to identify the cost of an investment	Theoretical learning in classroom/online learning – 2 hours	Important	1,00
7.3. Working with clients			
The trainee learns how the give advice for energy efficiency and RES systems The trainee is familiar with the analysis of user behaviour	Theoretical learning in classroom/online learning – 1hour	Important	1,00
7.4. Soft skills			
The trainee is familiar with communicative skills, emotional intelligence and networking The trainee can think critically and is able to make decisions The trainee is familiar with diversity, inclusiveness and social responsibility	Theoretical learning in classroom/online learning – 2 hours	Important	1,00
7.5. Digital skills			
The trainee is familiar with the ability to access and analyse media messages as well as create, reflect and take action The trainee is familiar with digital skills and more specific with Digicomp 2.2	Theoretical learning in classroom/online learning – 2 hours	Important	1,00
Serious game	1 hour		

2.3. Curricula for up-skilling training of electrical and mechanical engineers, EQF level 5-6

Title of the course	Up-skilling for electrical and mechanical engineers for NZEB
EQF level	6
Target group	Electrical and mechanical engineers who wish to upgrade their competences in NZEB
Learning Hours	35
ECVET-equivalent Points	16.5

MODULE 1: Introduction and Legislation				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3,5
	Practical	0		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2023/1791 of 13 September 2023 on energy efficiency ○ DIRECTIVE (EU) 2023/2413 of 18 October 2023 ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators				
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours		Important	1,0
1.3 National legislation related to EE and RES in buildings				
The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0

MODULE 2: PV systems in buildings				
LEARNING HOURS	Theoretical	6		4

	Practical	**1**	**ECVET – equivalent points**	
2.1 Solar engineering and solar Photovoltaic (PV) Energy				
The trainee is familiar with the solar radiation and its geometry to extract the maximum energy out of PV modules at a given location The trainee is familiar with design parameters and performance factors	Theoretical learning in classroom/online learning – 2 hours		Important	1,00
2.2 Types of PV modules, elements of PV-systems				
The trainee is familiar with the different types and elements of PV modules and systems The trainee is familiar with grid-connected and off-grid systems	Theoretical learning in classroom/online learning – 2 hours		Important	1,00
2.3 Mounting and building integration options for PV systems in buildings				
The trainee learns about the mounting and building integration options for PV-systems in buildings based on on-site-visit.	Theoretical learning in classroom/online learning- 2 hours Practical case – 1 hour		Essential	2,0

MODULE 3: Storage systems				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**2,0**
	Practical	**0**		
3.1 Design parameters of batteries and other storage systems				
The trainee is familiar with the solar battery technology and knows other storage systems for electricity	Theoretical learning in classroom/online learning – 2hour		Important	1,00
3.2. Small–scale applications for the production of hydrogen from PV systems				
The trainee is familiar with the requirements for installation of small–scale applications for the production of hydrogen from PV systems	Theoretical learning in classroom/online learning – 2hour		Important	1,00

MODULE 4 : Energy management, organization management of Work activities				
LEARNING HOURS	**Theoretical**	**5**		**3,0**

	Practical	**1**	**ECVET – equivalent points**	
4.1. Energy management parameters, indicators, protocols				
The trainee is familiar with an EMS – Energy Management Systems and know how its works	Theoretical learning in classroom/online learning – 2 hours Practical case – 1 hour		Important	1,00
4.2. Hardware and software for EMS (energy management systems)				
The trainee learns the basic concepts of an energy management system and how to deal with it	Theoretical learning in classroom/online learning – 2 hour		Important	1,00
4.3. Organizational Management of Work activities				
The trainee is familiar with defining tasks, time and operating modes The trainee is familiar with conducting work phases based on project specifications The trainee is familiar with document management of procurement and activities The trainee is familiar with budget management	Theoretical learning in classroom/online learning – 1hour		Important	1,00

MODULE 5: Energy Communities				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
5.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
5.2 Examples of energy communities				
The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 1 hour		Important	1,0
5.3 How to create an energy community – engagement of stakeholders, business plans				

The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 1 hour	Essential	2,0
5.4 Implementation and exploitation			
The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –1 hour	Important	1,0
Virtual lab – serious game – giving advice to clients how to create an energy community	Online – 1 hour		

MODULE 6 : Organisational and financial issues, working with clients, soft skills, digital skills				
LEARNING HOURS	**Theoretical**	**6**	**ECVET – equivalent points**	**5,0**
	Practical	**2**		
6.1. The process of building's refurbishment				
The trainee understand modern and effective procedures for the renovation of the building The trainee is familiar with-up-to-date renovation methods	Theoretical learning in classroom/online learning – 2hour		Important	1,00
6.2. Organisational and financial issues				
The trainee is familiar how to reduce the carbon footprint The trainee is familiar with the EU GPP training toolkit The trainee is familiar with life cost analysis (LCC) and knows how to identify the cost of an investment	Theoretical learning in classroom/online learning – 1 hour Practical 2 hour		Important	1,00
6.3. Working with clients				
The trainee learns how the give advice for energy efficiency and RES systems The trainee is familiar with the analysis of user behaviour	Theoretical learning in classroom/online learning – 1hour		Important	1,00
6.4. Soft skills				
The trainee is familiar with communicative skills, emotional intelligence and networking The trainee can think critically and is able to make decisions	Theoretical learning in classroom/online learning – 1hour		Important	1,00

The trainee is familiar with diversity, inclusiveness and social responsibility			
6.5. Digital skills			
The trainee is familiar with the ability to access and analyse media messages as well as create, reflect and take action The trainee is familiar with digital skills and more specific with Digicomp 2.2	Theoretical learning in classroom/online learning – 1hour	Important	1,00

2.4. Curricula for training of HVAC engineers, EQF level 5-6

Title of the course	New skills for HVAC-engineers for NZEB
EQF level	5 & 6
Target group	HVAC-engineers who wish to upgrade their competences in NZEB
Learning Hours	54
ECVET-equivalent Points	26.5

MODULE 1: Introduction and Legislation				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3,5
	Practical	0		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2023/1791 of 13 September 2023 on energy efficiency ○ DIRECTIVE (EU) 2023/2413 of 18 October 2023 ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators				
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours		Important	1,0
1.3 National legislation related to EE and RES in buildings				

The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours	Essential	2,0

MODULE 2: Understanding the integrated concept of NZEBs and Zero Emission Buildings				
LEARNING HOURS	**Theoretical**	**7**	**ECVET – equivalent points**	**6**
	Practical	**0**		
2.1 Energy transition and building's role				
The trainee is familiar with the buildings' role in the energy transition	Theoretical learning in classroom/online learning – 1hour		Important	1,0
2.2 Energy efficiency – increasing the heat shielding properties of the building's eclosing				
The trainee is familiar with the requirements for energy efficient buildings' envelope The trainee is familiar with the properties of the heat shielding of the buildings enveloppe	Theoretical learning in classroom/online learning - 2 hours		Essential	2,0
2.3 Energy efficiency – improvement of engineering systems of the building – energy management – ventilation – heat pumps				
The trainee is familiar with the requirements for energy efficiency of building's systems and know how to improve them	Theoretical learning in classroom/online learning – 2 hours		Important	1,0
2.4 RES in buildings: – Solar-related issues (solar irradiance, geometry, solar potential, modelling, irradiance measurements, and analysis) – Biomass				
The trainee is familiar with the use of RES in buildings The trainee is familiar with the different solar related issues	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0

MODULE 3 : Application of RES systems for cooling and heating of buildings				
LEARNING HOURS	**Theoretical**	**17**		**11,0**

	Practical	**10**	**ECVET – equivalent points**	
3.1. Solar thermal systems, biomass and geothermal				
The trainee is familiar with the construction and the working of a solar system with solar collectors, The trainee is familiar with the construction and operation of a biomass system	Theoretical learning in classroom/online learning – 2hours		Important	1,0
3.2. Applies methods for calculation and selection of a suitable RES-based HVAC system				
The trainee will be able to calculate and select a solar installation. A practical example serves as a guide The trainee will be able to calculate and select a suitable RES-based HVAC-system. A practical example serves as a guide	Theoretical learning in classroom/online learning- 2 hours Practical case – 2 hours		Essential	2,0
3.3. Heatpumps				
The trainee is familiar with the operation of a heat pump and knows the different sources (air, soil, water) and their limitations The trainee can choose the best possible source depending on the available sources the trainee is familiar with determining the highest performance factor using a practical example	Theoretical learning in classroom/online learning – 3 hours Practical case : 2 hours		Essential	2,0
3.4. Ventilation				
the trainee knows why ventilation is needed the trainee is familiar with the different types of ventilation systems and the basic requirements	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0
3.5. Solar thermal systems in buildings				
The trainee is familiar with the different types of solar collectors and their components the trainee can read and prepare shemas for solar thermal systems the trainee can calculate the domestic hot water demand based on the storage temperature and the domestic hot water demand the trainee can calculate a solar installation: number of solar collectors, expansion tank, pump and all other necessary fittings	Theoretical learning in classroom/online learning – 4 hours Practical case – 3 hours		Essential	2,0

The trainee is familiar with the tools and materials needed for a solar collector installation. The trainee knows the concepts of thermal energy storage and its possibilities and applications The trainee is familiar with simulation software and can apply it. The trainee is familiar with maintenance regulations The trainee is able to solve problems in order to eliminate errors in a solar collector installation			
3.6. Geothermal heating and cooling			
The trainee knows the basics of shallow geothermal energy (up to 150 m) and the operation of a geothermal heat pump The trainee is familiar with soil properties and can look them up and interpret them (e.g. heatmap Traine can dimension a ground water heat pump (depth of boreholes, diameter, ...) based on local soil properties, including the use of software The trainee is familiar with the concept of passive cooling and can apply it to a geothermal heat pump The trainee is familiar with local and European legislation The trainee is familiar with future prospects in shallow geothermal energy The trainee is familiar with drilling techniques, the possible hazards involved and document and budget management	Theoretical learning in classroom/online learning – 4 hours Practical case – 3 hours	Essential	2,0

MODULE 4: Energy Communities				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
4.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
4.2 Examples of energy communities				

The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 1 hour	Important	1,0
4.3 How to create an energy community – engagement of stakeholders, business plans			
The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 1 hour	Essential	2,0
4.4 Implementation and exploitation			
The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –1 hour	Important	1,0
Virtual lab – serious game – giving advice to clients how to create an energy community	Online – 1 hour		

MODULE 5: Organization management of Work activities, Organisational and financial issues, working with clients, soft skills, digital skills				
LEARNING HOURS	**Theoretical**	**8**	**ECVET – equivalent points**	**6,0**
	Practical	**2**		
5.1. Organizational Management of Work activities				
He trainee is familiar with defining tasks, time and operating modes The trainee is familiar with conducting work phases based on project specifications The trainee is familiar with document management of procurement and activities The trainee is familiar with budget management	Theoretical learning in classroom/online learning – 2 hours		Important	1,00
5.2. The process of building's refurbishment				
The trainee understand modern and effective procedures for the renovation of the building The trainee is familiar with-up-to-date renovation methods	Theoretical learning in classroom/online learning – 2 hour		Important	1,00
5.3. Organisational and financial issues				

The trainee is familiar how to reduce the carbon footprint The trainee is familiar with the EU GPP training toolkit The trainee is familiar with life cost analysis (LCC) and knows how to identify the cost of an investment	Theoretical learning in classroom/online learning – 1hour Practical – 2 hours	Important	1,00
5.4. Working with clients			
The trainee learns how the give advice for energy efficiency and RES systems The trainee is familiar with the analysis of user behaviour	Theoretical learning in classroom/online learning – 1hour	Important	1,00
5.5. Soft skills			
The trainee is familiar with communicative skills, emotional intelligence and networking The trainee can think critically and is able to make decisions The trainee is familiar with diversity, inclusiveness and social responsibility	Theoretical learning in classroom/online learning – 2 hours	Important	1,00
5.6. Digital skills			
The trainee is familiar with the ability to access and analyse media messages as well as create, reflect and take action The trainee is familiar with digital skills and more specific with Digicomp 2.2	Theoretical learning in classroom/online learning – 2 hours	Important	1,00
Serious game	1 practical hour		

2.5. Curricula for training up-skilling of HVAC engineers, EQF level 5-6

Title of the course	Up-skilling for HVAC engineers for NZEB
EQF level	5 & 6
Target group	HVAC-engineers who wish to up-skil their competences in NZEB
Learning Hours	37
ECVET-equivalent Points	19

MODULE 1: Introduction and Legislation				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3,5
	Practical	0		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2023/1791 of 13 September 2023 on energy efficiency ○ DIRECTIVE (EU) 2023/2413 of 18 October 2023 ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators				
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours		Important	1,0
1.3 National legislation related to EE and RES in buildings				
The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0

MODULE 2: Understanding the integrated concept of NZEBs and Zero Emission Buildings				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	4
	Practical	0		

2.1 Energy transition and building's role			
The trainee is familiar with the buildings' role in the energy transition	Theoretical learning in classroom/online learning – 1hour	Important	1,0
2.2 Energy efficiency – increasing the heat shielding of the buildings eclosing structures			
The trainee is familiar with the properties of the heat shielding of the building enveloppe	Theoretical learning in classroom/online learning - 2 hours	Essential	2,0
2.3 Energy efficiency – improvement of engineering systems of the building – energy management – ventilation – heat pumps			
The trainee is familiar with the requirements for energy efficiency of building's systems and know how to improve them	Theoretical learning in classroom/online learning – 2 hours	Important	1,0

MODULE 3 : Application of RES systems for cooling and heating of buildings				
LEARNING HOURS	**Theoretical**	**8**	**ECVET – equivalent points**	**5.5**
	Practical	**5**		
3.1. Solar thermal systems, biomass and geothermal				
The trainee is familiar with the construction and the working of a solar system with solar collectors, The trainee is familiar with the construction and operation of a biomass system	Theoretical learning in classroom/online learning – 2 hour Practical 1 hour		Basic	0,50
3.2. Applies methods for calculation and selection of a suitable RES-based HVAC system				
The trainee will be able to calculate and select a solar installation. A practical example serves as a guide The trainee will be able to calculate and select a suitable RES-based HVAC-system. A practical example serves as a guide	Theoretical learning in classroom/online learning- 2 hours Practical 2 hours		Important	1,0
3.3. Heatpumps				
The trainee is familiar with the operation of a heat pump and knows the different sources (air, soil, water) and their limitations The trainee can choose the best possible source depending on the available sources	Theoretical learning in classroom/online learning – 2 hours Practical 2 hours		Essential	2,0

the trainee is familiar with determining the highest performance factor using a practical example			
3.4. Ventilation			
the trainee knows why ventilation is needed The trainee is familiar with the comfort parameters and can apply them the trainee is familiar with the different types of ventilation systems and the basic requirements	Theoretical learning in classroom/online learning – 2 hours	Essential	2,0

MODULE 4: Energy Communities				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
4.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
4.2 Examples of energy communities				
The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 1 hour		Important	1,0
4.3 How to create an energy community – engagement of stakeholders, business plans				
The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 1 hour		Essential	2,0
4.4 Implementation and exploitation				
The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –1 hour		Important	1,0
Virtual lab – serious game – giving advice to clients how to create an energy community	Online – 1 hour			

MODULE 5 : Organization management of Work activities, Organisational and financial issues, working with clients, soft skills, digital skills

LEARNING HOURS	Theoretical	8	ECVET – equivalent points	6,0
	Practical	1		
5.1. Organizational Management of Work activities				
The trainee is familiar with defining tasks, time and operating modes The trainee is familiar with conducting work phases based on project specifications The trainee is familiar with document management of procurement and activities The trainee is familiar with budget management	Theoretical learning in classroom/online learning – 1hour		Important	1,00
5.2. The process of building's refurbishment				
The trainee understand modern and effective procedures for the renovation of the building The trainee is familiar with-up-to-date renovation methods	Theoretical learning in classroom/online learning – 2hour		Important	1,00
5.3. Organisational and financial issues				
The trainee is familiar how to reduce the carbon footprint The trainee is familiar with the EU GPP training toolkit The trainee is familiar with life cost analysis (LCC) and knows how to identify the cost of an investment	Theoretical learning in classroom/online learning – 2hour		Important	1,00
5.4. Working with clients				
The trainee learns how the give advice for energy efficiency and RES systems The trainee is familiar with the analysis of user behaviour	Theoretical learning in classroom/online learning – 1hour		Important	1,00
5.5. Soft skills				
The trainee is familiar with communicative skills, emotional intelligence and networking The trainee can think critically and is able to make decisions The trainee is familiar with diversity, inclusiveness and social responsibility	Theoretical learning in classroom/online learning – 1hour		Important	1,00
5.5. Digital skills				

The trainee is familiar with the ability to access and analyse media messages as well as create, reflect and take action The trainee is familiar with digital skills and more specific with Digicomp 2.2	Theoretical learning in classroom/online learning – 1hour	Important	1,00
Serious game	1 practical hour		

Title of the course	**New skills for electrical installers for NZEB**
EQF level	**3 & 4**
Target group	**Electrical installers who wish to upgrade their competences in NZEB**
Learning Hours	**75**
ECVET-equivalent Points	**32**

MODULE 1: Introduction and Legislation				
LEARNING HOURS	**Theoretical**	**5**	**ECVET – equivalent points**	**3.5**
	Practical	**0**		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators				
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours		Important	1,0
1.3 National legislation related to EE and RES in buildings				
The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0

MODULE 2 : Understanding the integrated concept of NZEBs and Zero emission Buildings				
LEARNING HOURS	**Theoretical**	**3**	**ECVET – equivalent points**	**1.5**
	Practical	**0**		
2.1. Energy efficiency				
The trainee is familiar with the energy efficiency of building's systems The trainee is familiar with the influences of RES in the energy efficiency of buildings The trainee is familiar with energy management systems	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
2.2. RES in buildings				
The trainee is familiar with solar related issues - amount of radiation, modelling, solar irradiance, irradiance measurements and analysis The trainee is familiar with biomass, production and working	Theoretical learning in classroom/online learning- 2 hours		Important	1,0

MODULE 3: Introduction to PV technology				
LEARNING HOURS	**Theoretical**	**10**	**ECVET – equivalent points**	**10**
	Practical	**5**		
3.1. The Basics of Solar Engineering				
The trainee is familiar with the different types and elements of PV modules and systems The trainee is familiar with grid-connected and off-grid systems	Theoretical learning in classroom/online learning – 2 hours		Essential	2.00
3.2. Energy Storage Technologies				
The trainee is able to: • Understand the basics of energy storage technologies • Understand how batteries are coupled to PV systems and perform basic calculations • Understand basic safety issues related to storage and identify potential risks related to batteries operating under certain conditions	Theoretical learning in classroom/online learning – 2 hours		Essential	2.00

3.3. Grid-connected PV systems with or without battery storage			
The trainee is able to: • Understand the need for storage in grid-connected PV systems; understand PV array sizing • Identify major features of PV modules and inverters • Understand battery sizing & PV array sizing in off-grid systems • Configure grid-connected and off-grid systems	Theoretical learning in classroom/online learning – 2 hours	Essential	2.00
3.4. PV system performance			
The trainee is: • Familiar with the basics of the design of PV systems • Able to use free software to evaluate PV system performance • Acquainted with the basics of PV monitoring systems	Theoretical learning in classroom/online learning –2 hours	Essential	2.00
3.5. Installing, inspecting and maintaining PV systems			
The trainee is: • Aware of best practices and pitfalls to avoid • Familiar with the basic rules of electrical and structural issues • Aware of common mistakes and failures during PV installation • Able to install the different system components of a PV system • Perform a PV system inspection • Identify, seek and suggest solutions in case of malfunctions • Identify common mistakes and failures during routine maintenance • Suggest ways to avoid mistakes and failures during routine maintenance	Theoretical learning in classroom/online learning – 2 hours	Essential	2.00

MODULE 4: PV systems in buildings				
LEARNING HOURS	**Theoretical**	**5**	**ECVET – equivalent points**	**5**
	Practical	**5**		
4.1. Types of PV modules, elements of PV-systems				
The trainee is familiar with the different types and elements of PV modules and systems	Theoretical learning in classroom/online learning – 1hour		Important	1,00

The trainee is familiar with grid-connected and off-grid systems			
4.2. Mounting and building integration options for PV systems in buildings			
The trainee learns about the mounting and building integration options for PV-systems in buildings based on on-site-visit.	Theoretical learning in classroom/online learning- 1 hours Practical 3 hours	Essential	2,0
4.3 Design parameters and performance factors, examples			
The trainee is familiar with the practical design parameters The trainee is familiar with the performance factor of PV-panels The trainee visit a installation of PV-panels as example The trainee is familiar with some simulaton software for site analysis e.g. PV*SOL	Theoretical learning in classroom/online learning – 2 hours Practical 2 hours	Important	1,0
4.4. Storage systems			
The trainee is familiar with the solar battery technology and knows other storage systems for electricity The trainee is familiar with the requirements for installation of small–scale applications for the production of hydrogen from PV systems	Theoretical learning in classroom/online learning- 1 hours	Important	1,0

MODULE 5: Introduction to Solar-thermal Energy				
LEARNING HOURS	**Theoretical**	**10**	**ECVET – equivalent points**	**5**
	Practical	**5**		
5.1. Solar energy. Types of solar-thermal installations and components				
The trainee is able to: • Define solar-thermal technologies, explain basic solar thermal terms and principles • Classify solar thermal systems based on temperature requirements • Classify the solar water heating (SWH) systems for domestic applications; describe the basic structure and operation of common types of DSWH, and their components	Theoretical learning in classroom/online learning – 2 hours		Important	1,00

5.2. Measurement systems			
The trainee is able to: • Identify the stages composing the solar thermal system's life cycle and work process • Characterize the SWH system's installation phases and the work of solar installers • Perform the following tasks: preparing for installation, evaluating the installation site, building the system, putting the system into operation, servicing and maintaining the system	Theoretical learning in classroom/online learning – 3 hours	Essential	2.00
5.3. Basic Configurations of Solar-thermal installations			
The trainee is able to: • Explain design principles and the technical specifications for designing and improving small scale SWH systems • Given versions of basic SWH technologies (incl. passive & active, direct & indirect), interpret their documented functioning, performance and efficiency • Select SWH components based on datasheets for a given purpose • Summarize the general sizing process • Explain the principles of cost evaluation of a SWH system • Use basic solar thermal simulation software to conceive or modify a simple SWH system	Theoretical learning in classroom/online learning – 7 hours	Essential	2.00

MODULE 6: Solar thermal systems in buildings				
LEARNING HOURS	**Theoretical**	**10**	**ECVET – equivalent points**	**4**
	Practical	**5**		
6.1. Solar thermal systems for single-family houses				
The trainee is familiar with: • The thermosyphon system. Heat storage – basic concepts; • The hydraulic circuit – pipes and heat transfer fluid; • The solar collector & different anchoring types; • The auxiliary system; • The regulation & control system; • Design & calculation of installations; prevention of risks;	Theoretical learning in classroom/online learning – 5 hours Practical – 3 hours		Essential	2,00

• Solar thermal installations for DHW and space heating in a single-family house.			
6.2. Solar thermal systems for buildings			
The trainee is familiar with: • The solar collector field; • Types of installations and schemes; • Monitoring plan, preventive and corrective maintenance.	Theoretical learning in classroom/online learning – 5 hours Practical – 2 hours	Essential	2,00

MODULE 7: Energy Communities				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
7.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
7.2 Examples of energy communities				
The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 1 hour		Important	1,0
7.3 How to create an energy community – engagement of stakeholders, business plans				
The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 1 hour		Essential	2,0
7.4 Implementation and exploitation				
The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –1 hour		Important	1,0
Virtual lab – serious game – giving advice to clients how to create an energy community	Online – 1 hour			

MODULE 8: Working with clients, soft skills, digital skills				
LEARNING HOURS	**Theoretical**	**5**		**3**

	Practical	**2**	**ECVET – equivalent points**	
8.1. Working with clients				
The trainee learns how the give advice for energy efficiency and RES systems The trainee is familiar with the analysis of user behaviour	Theoretical learning in classroom/online learning – 1hour		Important	1,00
8.2. Soft skills				
The trainee is familiar with communicative skills, emotional intelligence and networking The trainee can think critically and is able to make decisions The trainee is familiar with diversity, inclusiveness and social responsibility	Theoretical learning in classroom/online learning – 2 hours Practical – 1 hour		Important	1,00
8.3. Digital skills				
The trainee is familiar with the ability to access and analyse media messages as well as create, reflect and take action The trainee is familiar with digital skills and more specific with Digicomp 2.2	Theoretical learning in classroom/online learning – 2 hours Practical – 1 hour		Important	1,00

Title of the course	Up-skilling for PV and Solar-thermal installers for NZEB
EQF level	3 & 4
Target group	Electrical installers who wish to upgrade their competences in NZEB
Learning Hours	40
ECVET-equivalent Points	17

MODULE 1: Introduction and Legislation				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3.5
	Practical	0		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in classroom/online learning – 1hour		Basic	0,50

1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators			
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours	Important	1,0
1.3 National legislation related to EE and RES in buildings			
The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours	Essential	2,0

MODULE 2 : Understanding the integrated concept of NZEBs and Zero emission Buildings				
LEARNING HOURS	**Theoretical**	**3**	**ECVET – equivalent points**	**1.5**
	Practical	**0**		
2.1. Energy efficiency				
The trainee is familiar with the energy efficiency of building's systems The trainee is familiar with the influences of RES in the energy efficiency of buildings The trainee is familiar with energy management systems	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
2.2. RES in buildings				
The trainee is familiar with solar related issues - amount of radiation, modelling, solar irradiance, irradiance measurements and analysis The trainee is familiar with biomass, production and working	Theoretical learning in classroom/online learning- 2 hours		Important	1,0

MODULE 3: PV systems in buildings				
LEARNING HOURS	**Theoretical**	**5**	**ECVET – equivalent points**	**5**
	Practical	**5**		

3.1. Types of PV modules, elements of PV-systems			
The trainee is familiar with the different types and elements of PV modules and systems The trainee is familiar with grid-connected and off-grid systems	Theoretical learning in classroom/online learning – 1hour	Important	1,00
3.2. Mounting and building integration options for PV systems in buildings			
The trainee learns about the mounting and building integration options for PV-systems in buildings based on on-site-visit.	Theoretical learning in classroom/online learning- 1 hours Practical 3 hours	Essential	2,0
3.3 Design parameters and performance factors, examples			
The trainee is familiar with the practical design parameters The trainee is familiar with the performance factor of PV-panels The trainee visit a installation of PV-panels as example The trainee is familiar with some simulaton software for site analysis e.g. PV*SOL	Theoretical learning in classroom/online learning – 2 hours Practical 2 hours	Important	1,0
3.4. Storage systems			
The trainee is familiar with the solar battery technology and knows other storage systems for electricity The trainee is familiar with the requirements for installation of small–scale applications for the production of hydrogen from PV systems	Theoretical learning in classroom/online learning- 1 hours	Important	1,0

MODULE 4: Solar thermal systems in buildings				
LEARNING HOURS	**Theoretical**	**5**	**ECVET – equivalent points**	**4**
	Practical	**5**		
4.1. Solar thermal systems for single-family houses				
The trainee is familiar with: • The thermosyphon system. Heat storage – basic concepts; • The hydraulic circuit – pipes and heat transfer fluid; • The solar collector & different anchoring types;	Theoretical learning in classroom/online learning – 3 hours Practical – 3 hours		Essential	2,00

• The auxiliary system; • The regulation & control system; • Design & calculation of installations; prevention of risks; • Solar thermal installations for DHW and space heating in a single-family house.			
4.2. Solar thermal systems for buildings			
The trainee is familiar with: • The solar collector field; • Types of installations and schemes; • Monitoring plan, preventive and corrective maintenance.	Theoretical learning in classroom/online learning – 5 hours Practical – 2 hours	Essential	2,00

MODULE 5: Energy Communities				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
5.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
5.2 Examples of energy communities				
The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 1 hour		Important	1,0
5.3 How to create an energy community – engagement of stakeholders, business plans				
The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 1 hour		Essential	2,0
5.4 Implementation and exploitation				
The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –1 hour		Important	1,0
Virtual lab – serious game – giving advice to clients how to create an energy community	Online – 1 hour			

MODULE 6: Working with clients, soft skills, digital skills				
LEARNING HOURS	**Theoretical**	**5**	**ECVET – equivalent points**	**3**
	Practical	**2**		
6.1. Working with clients				
The trainee learns how the give advice for energy efficiency and RES systems The trainee is familiar with the analysis of user behaviour	Theoretical learning in classroom/online learning – 1hour		Important	1,00
6.2. Soft skills				
The trainee is familiar with communicative skills, emotional intelligence and networking The trainee can think critically and is able to make decisions The trainee is familiar with diversity, inclusiveness and social responsibility	Theoretical learning in classroom/online learning – 2 hours Practical – 1 hour		Important	1,00
6.3. Digital skills				
The trainee is familiar with the ability to access and analyse media messages as well as create, reflect and take action The trainee is familiar with digital skills and more specific with Digicomp 2.2	Theoretical learning in classroom/online learning – 2 hours Practical – 1 hour		Important	1,00

2.6. Curricula for training HVAC- installers, EQF level 3-4

Title of the course	New skills for HVAC- installers for NZEB
EQF level	3 & 4
Target group	HVAC installers who wish to upgrade their competences in NZEB
Learning Hours	75
ECVET-equivalent Points	26.5

MODULE 1: Introduction and Legislation				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3.5
	Practical	0		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in		Basic	0,50

	classroom/online learning – 1hour		
1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators			
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours	Important	1,0
1.3 National legislation related to EE and RES in buildings			
The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours	Essential	2,0

MODULE 2: Understanding the integrated concept of NZEBs and Zero Emission Buildings				
LEARNING HOURS	**Theoretical**	**5**	**ECVET – equivalent points**	**3**
	Practical	**0**		
2.1 Energy efficiency – energy efficiency of building's systems & energy management – energy management – ventilation – heat pumps				
The trainee is familiar with the energy efficiency of building's systems The trainee is familiar with the influences of RES in the energy efficiency of buildings The trainee is familiar with energy management systems	Theoretical learning in classroom/online learning – 2 hours		Important	1,0
2.2 RES in buildings: – Solar-related issues (solar irradiance, geometry, solar potential, modelling, irradiance measurements, and analysis) – Biomass				
The trainee is familiar with the use of RES in buildings The trainee is familiar with the different solar related issues	Theoretical learning in classroom/online learning – 3 hours		Essential	2,0

The trainee is familiar with biomass, production and working			

MODULE 3 : Geothermal installations				
LEARNING HOURS	**Theoretical**	**18**	**ECVET – equivalent points**	**6**
	Practical	**7**		
3.1. Theory of planning geothermal systems				
The trainee: • Has acquired knowledge of HVAC and building distribution systems; • Is familiar with thermal energy balance, geothermal heat pumps, design techniques and tools; • Is acquainted with the geological principles and earth heat exchange; • Is able to select the optimal architecture.	Theoretical learning in classroom/online learning – 6 hours Practical -3 hours		Essential	2,0
3.2. Installation of geothermal systems				
• Installation of a heat pump • Building distribution system installations • Chemicals	Theoretical learning in classroom/online learning – 6 hours Practical – 2 hours		Essential	2,0
3.3. Supervision and maintenance of geothermal systems				
• Maintenance, malfunction investigation and repair • Maintenance and repair of system components (non-heat pump) • Energy audits – principles and classification	Theoretical learning in classroom/online learning – 6 hours Practical – 2 hours		Essential	2,0

MODULE 4: Heat pumps in buildings				
LEARNING HOURS	**Theoretical**	**10**	**ECVET – equivalent points**	**6**
	Practical	**5**		
4.1. Low surface geological principles and earth exchange basics				

The trainee knows the basics of shallow geothermal energy (up to 150 m) and the operation of a geothermal heat pump The trainee is familiar with soil properties and can look them up and interpret them (e.g. heatmap) Trainee is familiar with the components of a heat pump, more specific a ground heat pump The trainee is familiar with the concept of passive cooling and can apply it to a geothermal heat pump The trainee is familiar with the local and European legislation The trainee is familiar with future prospects in shallow geothermal energy the trainee is ability to install a heat pump, bring into services and can maintenance the heat pump	Theoretical learning in classroom/online learning – 4 hours Practical -2 hours	Essential	2,0
4.2. Structure of heat pumps and different types of heat pumps			
The trainee knows de working principles of different types of heat pumps the trainee is ability to install and start up a heat pump The trainee is ability to the the maintenance of heat pumps	Theoretical learning in classroom/online learning – 3 hours Practical – 1 hour	Essential	2,0
4.3. Installation of geothermal systems			
The trainee is familiar with the drilling techniques Practical visit of a drilling The trainee is familiar with the supervision and maintenance of geothermal systems	Theoretical learning in classroom/online learning – 3 hours Practical – 2 hours	Essential	2,0

MODULE 5: Application of RES systems for cooling and heating of buildings				
LEARNING HOURS	**Theoretical**	**12**	**ECVET – equivalent points**	**5**
	Practical	**3**		
5.1. PV systems, biomass and solar thermal systems				

The trainee is familiar with the construction and the working of a solar system with solar collectors The trainee is familiar with the construction and the working of a PV-system The trainee is familiar with the construction and operation	Theoretical learning in classroom/online learning – 4 hours Practical – 1 hour	Important	1,00
5.2. Installation and dismantling operations of HVAC equipment for RES systems			
The trainee is familiar with the installation of a HVAC equipment	Theoretical learning in classroom/online learning – 4 hours Practical – 1 hour	Essential	2.00
5.3 Methods for calculation and selection of a suitable RES based HVAC system			
The trainee is familiar with the calculation methods and selection of RES based HVAC system The trainee is familiar with calculation tools	Theoretical learning in classroom/online learning – 4 hours Practical – 1 hour	Essential	2.00

MODULE 6: Energy Communities				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
6.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
6.2 Examples of energy communities				
The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 1 hour		Important	1,0
6.3 How to create an energy community – engagement of stakeholders, business plans				
The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 1 hour		Essential	2,0
6.4 Implementation and exploitation				

The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –1 hour	Important	1,0
Virtual lab – serious game – giving advice to clients how to create an energy community	Online – 1 hour		

MODULE 7: Working with clients, soft skills, digital skills				
LEARNING HOURS	**Theoretical**	**5**	**ECVET – equivalent points**	**3**
	Practical	**2**		
7.1. Working with clients				
The trainee learns how the give advice for energy efficiency and RES systems The trainee is familiar with the analysis of user behaviour	Theoretical learning in classroom/online learning – 1hour		Important	1,00
7.2. Soft skills				
The trainee is familiar with communicative skills, emotional intelligence and networking The trainee can think critically and is able to make decisions The trainee is familiar with diversity, inclusiveness and social responsibility	Theoretical learning in classroom/online learning – 2 hours Practical – 1 hour		Important	1,00
6.3. Digital skills				
The trainee is familiar with the ability to access and analyse media messages as well as create, reflect and take action The trainee is familiar with digital skills and more specific with Digicomp 2.2	Theoretical learning in classroom/online learning – 2 hours Practical – 1 hour		Important	1,00

2.7. Curricula for up-skilling training of HVAC- installers, EQF level 3-4

Title of the course	Up-skilling for HVAC installers for NZEB
EQF level	3 & 4
Target group	HVAC installers who wish to up-skill their competences in NZEB
Learning Hours	45
ECVET-equivalent Points	20.5

MODULE 1: Introduction and Legislation				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3.5
	Practical	0		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators				
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours		Important	1,0
1.3 National legislation related to EE and RES in buildings				
The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0

MODULE 2: Understanding the integrated concept of NZEBs and Zero Emission Buildings				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3
	Practical	0		

2.1 Energy efficiency – energy efficiency of building's systems & energy management – energy management – ventilation – heat pumps			
The trainee is familiar with the energy efficiency of building's systems The trainee is familiar with the influences of RES in the energy efficiency of buildings The trainee is familiar with energy management systems	Theoretical learning in classroom/online learning – 2 hours	Important	1,0
2.2 RES in buildings: – Solar-related issues (solar irradiance, geometry, solar potential, modelling, irradiance measurements, and analysis) – Biomass			
The trainee is familiar with the use of RES in buildings The trainee is familiar with the different solar related issues The trainee is familiar with biomass, production and working	Theoretical learning in classroom/online learning – 3 hours	Essential	2,0

MODULE 3: Heat pumps in buildings				
LEARNING HOURS	**Theoretical**	**9**	**ECVET – equivalent points**	**6**
	Practical	**3**		
3.1. Low surface geological principles and earth exchange basics				
The trainee knows the basics of shallow geothermal energy (up to 150 m) and the operation of a geothermal heat pump The trainee is familiar with soil properties and can look them up and interpret them (e.g. heatmap) Trainee is familiar with the components of a heat pump, more specific a ground heat pump The trainee is familiar with the concept of passive cooling and can apply it to a geothermal heat pump The trainee is familiar with the local and European legislation	Theoretical learning in classroom/online learning – 3 hours Practical -1 hour		Essential	2,0

The trainee is familiar with future prospects in shallow geothermal energy the trainee is ability to install a heat pump, bring into services and can maintenance the heat pump			
3.2. Structure of heat pumps and different types of heat pumps			
The trainee knows de working principles of different types of heat pumps the trainee is ability to install and start up a heat pump The trainee is ability to the the maintenance of heat pumps	Theoretical learning in classroom/online learning – 3 hours Practical – 1 hour	Essential	2,0
3.3. Installation of geothermal systems			
The trainee is familiar with the drilling techniques Practical visit of a drilling The trainee is familiar with the supervision and maintenance of geothermal systems	Theoretical learning in classroom/online learning – 3 hours Practical – 1 hour	Essential	2,0

MODULE 4: Application of RES systems for cooling and heating of buildings				
LEARNING HOURS	**Theoretical**	**10**	**ECVET – equivalent points**	**5**
	Practical	**3**		
4.1. PV systems, biomass and solar thermal systems				
The trainee is familiar with the construction and the working of a solar system with solar collectors The trainee is familiar with the construction and the working of a PV-system The trainee is familiar with the construction and operation	Theoretical learning in classroom/online learning – 2 hours Practical – 1 hour		Important	1,00
4.2. Installation and dismantling operations of HVAC equipment for RES systems				
The trainee is familiar with the installation of a HVAC equipment	Theoretical learning in classroom/online learning – 4 hours Practical – 1 hour		Essential	2.00
4.3 Methods for calculation and selection of a suitable RES based HVAC system				

The trainee is familiar with the calculation methods and selection of RES based HVAC system The trainee is familiar with calculation tools	Theoretical learning in classroom/online learning – 4 hours Practical – 1 hour	Essential	2.00

MODULE 5: Energy Communities				
LEARNING HOURS	**Theoretical**	**4**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
5.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
5.2 Examples of energy communities				
The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 1 hour		Important	1,0
5.3 How to create an energy community – engagement of stakeholders, business plans				
The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 1 hour		Essential	2,0
5.4 Implementation and exploitation				
The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –1 hour		Important	1,0
Virtual lab – serious game – giving advice to clients how to create an energy community	Online – 1 hour			

MODULE 6: Working with clients, soft skills, digital skills				
LEARNING HOURS	**Theoretical**	**3**	**ECVET – equivalent points**	**3**
	Practical	**2**		
6.1. Working with clients				

The trainee learns how the give advice for energy efficiency and RES systems The trainee is familiar with the analysis of user behaviour	Theoretical learning in classroom/online learning – 1 hour	Important	1,00
6.2. Soft skills			
The trainee is familiar with communicative skills, emotional intelligence and networking The trainee can think critically and is able to make decisions The trainee is familiar with diversity, inclusiveness and social responsibility	Theoretical learning in classroom/online learning – 1 hour Practical – 1 hour	Important	1,00
6.3. Digital skills			
The trainee is familiar with the ability to access and analyse media messages as well as create, reflect and take action The trainee is familiar with digital skills and more specific with Digicomp 2.2	Theoretical learning in classroom/online learning – 1 hours Practical – 1 hour	Important	1,00

2.8. Curricula for up-skilling trainers

Title of the course	Up-skilling for HVAC installers for NZEB
EQF level	3 & 4
Target group	Trainers who wish to up-skill their competences in NZEB
Learning Hours	25
ECVET-equivalent Points	24.5

MODULE 1: Introduction and Legislation				
LEARNING HOURS	Theoretical	5	ECVET – equivalent points	3.5
	Practical	0		
1.1 Information about the project NS4nZEBs				
The trainee is familiar with the ideas and main objectives of this Project	Theoretical learning in classroom/online learning – 1hour		Basic	0,50
1.2 EU policies and directives related to EE and RES in buildings ○ A Renovation Wave for Europe ○ DIRECTIVE (EU) 2023/1791 of 13 September 2023 on energy efficiency ○ DIRECTIVE (EU) 2023/2413 of 18 October 2023 ○ DIRECTIVE (EU) 2024/1275 of 24 April 2024 on the energy performance of buildings ○ Smart readiness indicators				
The trainee is familiar with EU policies, directives and future trends related to EE and RES in buildings	Theoretical learning in classroom/online learning- 2 hours		Important	1,0
1.3 National legislation related to EE and RES in buildings				
The trainee is familiar with the National legislation related to EE and RES in buildings	Theoretical learning in classroom/online learning – 2 hours		Essential	2,0

MODULE 2: Understanding the integrated concept of NZEBs and Zero Emission Buildings				
LEARNING HOURS	**Theoretical**	**5**	**ECVET – equivalent points**	**3**
	Practical	**0**		
2.1 Energy efficiency – energy efficiency of building's systems & energy management – energy management – ventilation – heat pumps				
The trainee is familiar with the energy efficiency of building's systems The trainee is familiar with the influences of RES in the energy efficiency of buildings The trainee is familiar with energy management systems	Theoretical learning in classroom/online learning – 2 hours		Important	1,0
2.2 RES in buildings: – Solar-related issues (solar irradiance, geometry, solar potential, modelling, irradiance measurements, and analysis) – Biomass				
The trainee is familiar with the use of RES in buildings The trainee is familiar with the different solar related issues The trainee is familiar with biomass, production and working	Theoretical learning in classroom/online learning – 3 hours		Essential	2,0

MODULE 3: Energy Communities				
LEARNING HOURS	**Theoretical**	**5**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
3.1 What is an energy community – definition and benefits				
The trainee is familiar with the definition and the benefits of energy communities	Theoretical learning in classroom/online learning – 1hour		Essential	2,00
3.2 Examples of energy communities				
The trainee is familiar with different examples of energy communities /case studies/	Theoretical learning in classroom/online learning- 1 hour		Important	1,0

3.3 How to create an energy community – engagement of stakeholders, business plans			
The trainee is familiar with the organization of an energy community	Theoretical learning in classroom/online learning – 2 hours	Essential	2,0
3.4 Implementation and exploitation			
The trainee is familiar with the process of implementation and exploitation of an energy community	Theoretical learning in classroom/online learning –1 hour	Important	1,0
Virtual lab – serious game – giving advice to clients how to create an energy community	Online – 1 hour		

MODULE 4: Organization management of Work activities, Organisational and financial issues, working with clients, soft skills, digital skills				
LEARNING HOURS	**Theoretical**	**8**	**ECVET – equivalent points**	**6,0**
	Practical	**1**		
4.1. Organizational Management of Work activities				
The trainee is familiar with defining tasks, time and operating modes The trainee is familiar with conducting work phases based on project specifications The trainee is familiar with document management of procurement and activities The trainee is familiar with budget management	Theoretical learning in classroom/online learning – 1hour		Important	1,00
4.2. The process of building's refurbishment				
The trainee understand modern and effective procedures for the renovation of the building The trainee is familiar with-up-to-date renovation methods	Theoretical learning in classroom/online learning – 2hour		Important	1,00
4.3. Organisational and financial issues				
The trainee is familiar how to reduce the carbon footprint The trainee is familiar with the EU GPP training toolkit The trainee is familiar with life cost analysis (LCC) and knows how to identify the cost of an investment	Theoretical learning in classroom/online learning – 2hour		Important	1,00
4.4. Working with clients				

The trainee learns how the give advice for energy efficiency and RES systems The trainee is familiar with the analysis of user behaviour	Theoretical learning in classroom/online learning – 1hour	Important	1,00
4.5. Soft skills			
The trainee is familiar with communicative skills, emotional intelligence and networking The trainee can think critically and is able to make decisions The trainee is familiar with diversity, inclusiveness and social responsibility	Theoretical learning in classroom/online learning – 1hour	Important	1,00
4.5. Digital skills			
The trainee is familiar with the ability to access and analyse media messages as well as create, reflect and take action The trainee is familiar with digital skills and more specific with Digicomp 2.2	Theoretical learning in classroom/online learning – 1hour	Important	1,00
Serious game	1 practical hour		

3. Certification Schemes

3.1. Scheme's Technical Committee

As long as this certification scheme is active, a Technical Committee is supporting it. The members of Technical Committee have experience, knowledge, skills and capabilities of a higher level than those of the trainees and also are fully aware of the legislative and regulatory framework relative to this specific professional activity.

The Technical Committee consists of seven members (one from each partner organization) who are experienced engineers or experts of the relevant technical field. The Technical Committee is responsible for the validation of scheme's examination mechanism. Namely, the members have the obligation to evaluate and analyze the first examination results from the pilot phase (Work Package 5 of NS4nZEBs project) as well as to decide if the examination mechanism needs improvement or revision. During the first examinations, If problems are identified such as candidates' complaints and/or objections to the wording or ambiguity or misleading content of either the questions or the answers, then the members are obliged to reevaluate the content of Question Banks and to decide if there is any need for improvement. If so, the members rephrase

the text where necessary in order to be clear and unambiguous. The validation of examination mechanism by Technical Committee assures that the Question Bank is valid, objective and reliable and is suitable for use in future examinations.

As long as the certification scheme is active and certification exams are conducted periodically, the Organization must convene the members of the Technical Committee at least once a year to evaluate its performance and its examination mechanism. During these meetings, Committee members are examining the certification scheme's performance and are studying all the facts and data of implemented examinations during the previous year, like complaints and candidates' assessments, examiners' and invigilators' performance, resources' appropriateness, appeals over examination results, any leak from the examination mechanism, results regarding the cooperation with examination centers, etc. In addition, they are reviewing the existing examination mechanism for any improvement, if needed. Having examined all information and data, the members may take specific decisions and actions requiring modification and updating of the examination mechanism, if needed. The annual evaluation of the certification scheme and its examination mechanism by Technical Committee members assures that the certification scheme remains consistently valid, objective and reliable.

According to the aforementioned, the Technical Committee is responsible for supporting, deciding on and coordinating all matters and actions that concern the development, the implementation and the verification of the examination mechanism of the scheme, as well as for the proper implementation of the certification scheme, its monitoring, its control and review as well as its smooth operation and maintenance.

3.2. Prerequisites for applicants

All applicants wishing to participate in the scheme's examination mechanism must be adults or at least eighteen (18) years old and hold a qualification or a valid professional license, according to the national regulations/ legislation of the country in which they operate.

An additional prerequisite for the applicants to participate in the examination mechanism is that they have completed the respective modules developed during NS4nZEBs project.

Apart the above, the applicants wishing to participate in the examination for the Up-skilling Level shall have additionally a minimum of a two (2) years previous professional experience in the specific field. Applicants with a professional experience of less than two (2) years will be admitted for participation in the New Skills Level Certification.

The Organization which will organize the relevant course and certification has the responsibility to receive and review all candidates' applications and relevant evidence. A responsible person has to review the filled

in application and the supporting documents of each candidate for their accuracy and their completeness. In case there is any problem, e.g. the submitted documents do not satisfy the prerequisites of the scheme, then the candidate should be duly informed, prior to being given access to the training platform, in order to proceed to the necessary actions.

3.3. Examination Mechanism

3.3.1. General

The examination mechanism aims to evaluate if the candidate is aware of and is able to apply in specific cases, the knowledge, abilities and skills required for the respective certification. For the experienced candidates of Up-skilling Level, the examination mechanism consists of only theoretical examination while for those in the New Skills Level the examination mechanism consists of theoretical and practical examination (both conducted online).

3.3.2. Theoretical examination

The theoretical examination is conducted via the online training platform.

The theoretical examination consists of sixty (60) multiple choice questions (with one correct answer), of graded difficulty, randomly selected from the Examination Question Bank, and has a duration of one hour and a half (90 minutes). The questions' selection ratio with regards to difficulty is twenty (20) lower difficulty questions, twenty (20) medium difficulty questions and twenty (20) high difficulty questions. The pass mark for the New Skills Level is 50% and 30 correct answers while for the Up-skilling Level is 60% and 36 correct answers.

As the theoretical examination is conducted via electronic platform then due to the random selection of the quiz questions, each candidate's quiz might have different set questions, but all candidates' quizzes are comparable and of the same difficulty.

The exams are conducted via electronic platform, and as soon as each candidate completes their quiz, they informed immediately about its final result either positive or negative. Two attempts are allowed, the the higher result will be taken into account.

For the Up-skilling Level, if the candidate's results are positive then he/she will automatically receive a Europass Certificate Supplement, generated by the platform. For the New Skills Level he/she can proceed to the next stage - the practical examination. Upon the successful completion of both, the candidate will receive a Europass Certificate Supplement.

3.3.3. Practical examination

Candidates in the New Skills Level take the practical test online, after successfully completing the theoretical final test. The practical test consists of 20 practical tasks/questions (30 minutes), 10 of which (50%) the candidate has to do/answer correctly to achieve a positive result. Upon the successful completion of both the theoretical and the practical quizzes, the candidate will receive a Europass Certificate Supplement.

3.4. Certification

3.4.1. Issue and award of Certificate

Upon the successful completion of a module and the respective module test, the candidate receives a Digital Certificate (Microcredential) for the respective module.

All participants who have successfully completed the examination receive a Europass Certificate Supplement detailing the acquired knowledge and skills. The certified professional commits to the Code of Ethics of the Scheme.

3.4.2. Suspension and withdrawal of the Certificate

The suspension of the Certificate is temporary and has six months duration. The Certification Committee has the right to suspend the Certificate of a professional, in case there is an objective proof that he does not comply with his commitments and with the Code of Ethics of the Scheme. The certified professional is informed in written for the identified problems. In case the problems are not solved within a short time, then the Certificate is suspended for six months. If after the six months period, the problems have still not been solved, then the Organization withdraws the Certificate. In case of a withdrawal, the professional has no longer the right to participate to another examination of this Scheme.

Moreover, the Certification Committee has the right to suspend temporarily the Certificate of a professional, in case it receives a complaint about his professional competence by a consumer or an employer or another stakeholder. Specifically, if there is proof that the professional has violated his commitments or the Code of Ethics of the Scheme, the Certificate is withdrawn. Otherwise, the suspension is lifted and the Certificate becomes valid again.

3.5. Code of Conduct

The Certified professional, shall comply with the following during the execution of his duties:

- ✓ Act according to the code of conduct of his specific profession.

- ✓ Act fairly, professionally and ethically.
- ✓ Undertake professional obligations for which he is certified.
- ✓ Not use his certification for a specialty other than the one specified by the Certification Scheme for which he is certified.
- ✓ Not undertake professional obligations that he has not the ability or technical competence or authorization to implement.
- ✓ With his professional judgment, he shall not jeopardize human life or safety, not damage any property and not cause unreasonable environmental pollution.
- ✓ Not undermine in any way, directly or indirectly, the reputation or the reliability of another certified professional.
- ✓ Update constantly his professional knowledge, skills and abilities.
- ✓ Inform all interested parties for any change that might affect his ability to comply with his obligations and the requirements of the Scheme
- ✓ Cooperate fully in the investigation of any complaint that relates to possible violation of his commitments and of the Code of Conduct.

3.6. Confidentiality

The personal data of applicants and certified professionals remain confidential throughout the whole Certification process (from receiving the application until the issue of the certificate and its maintenance).

According to the requirements of ISO/IEC 17024 Standard and paragraph (§) 7.2, the Technical Certification Committee shall, upon request, provide information about the validity and the scope of the certificates issued. In case the Certification Committee is legally forced to reveal any confidential information, then the person interested is informed immediately.

3.7. Objections, Complaints and appeals

At any stage of the examination process, an interested party, (candidate, examinee, certified professional, employer, third party etc), may wish to question its results. In this case, the interested party has the option to submit its request to the Certification Committee. The latter is obliged to investigate the request, to implement corrective actions, if needed, and to communicate them to the complainant, within 30 calendar days.