GENERAL PRINCIPLES OF NEARLY ZERO-ENERGY BUILDINGS

CERTIFICATION SCHEME FOR UPSKILLING OF CONSTRUCTION TECHNICIANS IN BULGARIA

The certification course "Basic principles of nZEB", developed by EnEffect within the INSTRUCT project financed by the Horizon 2020 programme of the EU under Grant Agreement 894756, is targeted to professionals with qualification “Construction Technician” (EQF 3), but also applicable for other specialties at EQF 2-4.

The specialized training on energy efficiency for construction technicians offers several significant benefits, both for the technicians themselves and for the construction industry as a whole:

Enhanced Skills and Knowledge: Energy efficiency training equips construction technicians with up-to-date knowledge and techniques related to energy-efficient building practices. They learn about the latest technologies, materials, and methodologies that can significantly reduce energy consumption in buildings.

Improved Work Performance: With specialized training, construction technicians can apply energy-efficient practices effectively during construction and renovation projects. They can identify opportunities for energy savings, implement energy-efficient solutions, and ensure that buildings meet or exceed energy performance standards.

Reduced Energy Costs: Energy-efficient buildings consume less energy, leading to lower utility bills for building owners and occupants. Construction technicians who are trained in energy efficiency can contribute to building designs that optimize energy usage, resulting in long-term cost savings.

Environmental Benefits: Energy-efficient buildings contribute to a reduced carbon footprint and overall environmental impact. Trained construction technicians play a vital role in promoting sustainable construction practices that help combat climate change and conserve natural resources.

Compliance with Regulations: Many regions have building codes and regulations that mandate certain energy efficiency standards. Specialized training ensures that construction technicians are familiar with these requirements and can implement them appropriately, avoiding potential legal and financial consequences for non-compliance.

Career Advancement Opportunities: Technicians with expertise in energy efficiency are highly sought after in the construction industry. Employers value these skills, which can lead to increased job opportunities and potential for career advancement.

Market Demand: As awareness of environmental sustainability and energy efficiency grows, there is a rising demand for construction projects that prioritize energy efficiency. Trained technicians can position themselves to meet this demand and work on cutting-edge, eco-friendly projects.

Customer Satisfaction: Energy-efficient buildings are attractive to customers due to their reduced operating costs and improved comfort. Construction technicians trained in energy efficiency can deliver projects that meet clients' expectations and create more satisfied customers.

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors’ view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

Reputation and Competitiveness: Companies that prioritize energy efficiency and sustainability gain a positive reputation in the market. Construction firms with trained technicians can use their expertise to market themselves as leaders in eco-friendly construction, giving them a competitive edge.

Long-Term Sustainability: Energy efficiency is not just a passing trend; it is a crucial aspect of sustainable construction. By investing in specialized training for energy efficiency, construction technicians contribute to the long-term sustainability of the construction industry and the built environment.

The current training scheme **is accustomed to the requirement of the Bulgarian qualification framework**, developing the knowledge, skills and competences of building technicians graduated **before 2021**, which marks the introduction **of specialized units of learning outcomes related to energy efficiency in the state educational standards**. **It is also applicable to other specialists, and due to its modular structure, can also be adapted to the needs of recent graduates of professional high schools of construction and architecture.**

The course includes 10 modules that form an initial understanding of the basic principles of passive and near-zero energy building from a building physics perspective, enabled by design for optimal solar gains, with a focus on:

1) Location, orientation and shape
2) Thermal insulation
3) Windows and shading
4) Airtightness
5) Thermal bridges
6) Ventilation with heat recovery
7) Heating and cooling
8) Integration of renewable energy installations
9) Renovation of existing buildings
10) Economic viability.

The topics are underpinned by the following units of learning outcomes (ULOs), which are distributed in two levels: 1) ULOs, providing shared knowledge base related to the achievement of nZEBs for all professions within area of education "Architecture and construction" and professional direction 582 "Construction", and 2) specialized knowledge for the specific profession 582010 "Construction technician".

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors' view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

Topic	Authority and responsibility	Skills	Knowledge
Location, orientation and shape	- ***competence*** in building envelope installations (solar shading, ventilation system, window positioning)	- ***practical skills*** to explain effective design with respect to solar gains and use of shading devices	- ***knowledge*** of the impact of spatial orientation on building performance - ***knowledge*** of the influence of shape and compactness on building performance
	- competence in design of building envelope and passive solar systems with regards to choice of building elements and systems	***-range of practical skills*** necessary to explain the importance of building envelope design and building systems	- ***theoretical knowledge*** of the impact of spatial orientation on building performance - ***theoretical knowledge*** of the influence of shape and compactness on building performance - ***theoretical knowledge*** of Heat Transfer – Principles of thermal conduction, convection and radiation and transfer of energy - ***theoretical knowledge*** of passive solar systems, building envelope and thermal mass and their effect on the energy performance
Thermal insulation	- ***responsibility*** and self-management in correct installation of insulation elements and systems - ***responsibility*** in (self) quality control	- ***practical skills*** related to types of insulation materials and building envelope systems - necessary for selecting and using methods, tools and materials for adequate installation of insulation - ***skills*** related to the issues of quality control process in detecting issues related to poor execution - ***practical skills*** related to potential construction mistakes and risks - ***practical skills*** related to cross- craft work	- ***Knowledge*** on the principle of the unbroken thermal envelope - ***knowledge*** on types of insulating materials- overview of available products and their properties - ***knowledge*** of the main physical properties of insulating materials - ***knowledge*** on elements comprising building envelope systems and their main properties - ***knowledge*** on importance of correct installation of insulation materials and risks related to it - ***knowledge*** of other related crafts to insulation installation

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors' view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

	- ***independence*** in executing installation of insulation materials for different building systems - ***coordination*** of works related to proper construction and installation of building systems with regards to building regulations and product guidelines - ***self- evaluation*** and consideration of other disciplines on site	- ***practical skills*** necessary for recognition of individual building systems, related solutions and potential problematic areas - ***practical skills*** to providing solutions and fixing problems resulting from poor craftsmanship - ***practical skills*** required for seeking interdisciplinary solutions	- ***theoretical knowledge*** on the importance of insulation to health and safety in a building - ***theoretical knowledge*** on the principle of the unbroken thermal envelope; relevance of diffusion-impermeable and diffusion-permeable solutions with regards to external and internal insulation - ***theoretical knowledge*** on types of insulating materials- overview of available products and their advantages and disadvantages - ***theoretical knowledge*** of the main physical properties of insulating materials including hydro and thermal performance and fire resistance - ***theoretical knowledge*** on elements comprising building envelope systems and their main properties such as u- value, fire resistance, acoustics - ***theoretical knowledge*** on different practices and methods for correct installation of insulation materials - ***theoretical knowledge*** on typical mistakes in insulation installation and resulting construction risks - ***theoretical knowledge*** on performing quality assurance for thermal insulation installation - ***theoretical knowledge*** on interdisciplinary work
Windows and shading		- ***practical skills*** required to correctly install windows in the building facade without disrupting the principle of unbroken thermal envelope - ***practical skills*** necessary for distinguishing different types of windows with regards to their performance and position in the building facade - ***practical skills*** required to apply appropriate methods and materials for airtightness during window installation	- ***knowledge*** on main characteristics of glazing and windows - ***knowledge*** on variety of window systems and their importance to building energy performance through correct installation - ***knowledge*** on shading possibilities, importance and concepts

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors' view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

	- taking ***responsibility*** for drawing details for optimized window features - incl. reduction of thermal bridges, optimization of vapor flow, waterproofing and others - Taking ***responsibility*** for the correct selection of the windows, recognition of the parameters of the selected products (U-values, g-values etc.), as well as the correct installation of the systems - Taking ***responsibility*** for the correct selection of high-quality shading devices, selection according to required parameters, recognizing the correct shading devices in suitable exposures	- ***practical skills*** required to ensuring continuity with the insulation layer by install windows in the correct position in the thermal envelope - ***practical skills*** to achieve proper connection between the windows and doors to the airtight and windtight layers. *Practical skills* in recognition different types of airtight and windtight layers and adapting to the suitable sealing systems and *practical skills* in micro adjustment of windows during airtight test in order to reduce air leakage - ***practical skills*** to ensure an optimal flow of solar energy to the premises, taking into account summer and winter mode, window sizes, orientation and installation method - ***practical skills*** in recognizing the different types of shading devices and their best application in terms of building orientations - ***practical skills*** required for adjustment external shading devices	***- specific knowledge*** on the physical characteristics and performance of windows with regards to energy efficiency and comfort in buildings - ***specific knowledge*** on the general requirements for windows relevant for ensuring energy efficiency and comfort such as airtight construction, solar gain parameters, visual comfort and orientation, ventilation possibilities ***- knowledge on existing digital tools*** and methods for evaluating and designing
Airtightness	***- competence*** in specifying steps and procedures related to airtightness ***- competence and responsibility*** in tasks for correct installation of airtight layers including correct installation and ensuring continuity in the building envelope - ***competence*** in choice of materials and performance of the individual layers within the building envelope - ***responsibility*** in detecting flaw in execution of the airtight layer of the building, communicating the issues and proposing alternatives	***- theoretical skills*** necessary for explaining the underlying differences between airtightness, windtightness and vapor control - ***theoretical skills*** necessary to distinguish between the different properties of the airtight layer - ***practical skills*** required to explain the test procedures for airtightness in a building - ***practical skills*** necessary to ensure a continuous airtight layer by sealing building envelope penetrations	- ***general knowledge*** on the concept of airtightness and its impact on the performance of the building - ***general knowledge*** on the concepts of vapor control and their effect on the performance of the building -***general knowledge*** on the performance, difference and physical properties of airtight layer, vapor control layer and wind barrier - ***knowledge*** on the importance of a continuous airtight layer and associated installation methods ***- knowledge*** on the connection between airtight layer, vapour control layer, wind barrier and ventilation of the building

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors' view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

			- ***Knowledge*** on importance of vapour control layer related to physics of condensation, mould formation and the reasons for occurrence and the solutions to it
	- ***theoretical knowledge*** on key physical properties of airtight layer and relationship between other layers in the building envelope - ***theoretical knowledge*** on physical performance of the airtight layer with regards to pressure, temperature, relative humidity - specialized knowledge on the correct installation of the vapor control layer within the building structure - theoretical ***knowledge*** on the impact of occurring condensation on health and comfort and resulting damage to the building skin and structure - ***specialized knowledge*** on the various materials and their physical ability to absorb, diffuse and retain moisture - ***specialized knowledge*** on constructing a wall with inner insulation, related condensation risks and solutions	- range of ***practical skills*** necessary for an execution strategy involving choice of materials, correct application of airtight layers and use of tools - ***practical skills*** required to identify air leaks through the building envelope using alternative methods for detecting ***practical skills*** required to apply variety of materials and methods necessary for achieving high level airtightness at problematic areas in the building envelope - ***practical skills*** necessary for the explanation of physical values connected to airtightness (n50< 1.0 ac/hr) - ***practical and communication skills*** necessary for communicating issues related to airtightness on the building site with other crafts - ***practical skills*** for differentiating between performance properties of various vapor control layers - ***practical skills*** required to detecting potential problematic areas and surfaces within the building envelope	- ***competence and autonomy*** in processes related to airtightness and performing tests - ***autonomy*** in correct installation of vapor control layer with regards to permeability and diffusion properties of the layer - ***responsibility*** in observing the correct application of materials and workflow and autonomy in using various tools and methods for detecting and preventing air leaks - ***autonomy*** in coordination with other crafts on the building site
Thermal bridges	- ***responsibility*** in recognizing potential risk of thermal bridge and undertaking necessary actions for avoiding it - ***responsibility*** in using the correct materials and methods for minimisation of thermal bridges	- ***practical skills*** required for distinguishing between different types of thermal bridges and reason for their occurrence - ***practical skills*** necessary for dealing with minimisation and prevention of thermal bridges including correct use of materials, tools and methods - ***practical skills*** required to correct installation of products for prevention and minimisation of thermal bridges in building construction	- ***knowledge*** on thermal bridges and causes (heat transfer and loss) - ***knowledge*** on damage occurring from thermal bridges and impact on the building performance. - ***general knowledge*** of solutions to thermal bridges- prevention and minimisation - ***knowledge*** on other relevant building processes for thermal bridges
	- ***autonomy*** in recognizing thermal bridges in drawings and offered construction methods - ***responsibility*** in observing the correct application of materials and workflow and autonomy in using	- ***practical skills*** in detecting critical points in the building envelope with regards to the appearance of thermal bridges	- ***deeper knowledge*** on the causes for thermal bridges- typical areas where they occur in a building and common reasons

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors' view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

	various tools and methods for detecting and preventing air leaks - **responsibility** in coordinating and communicating potential risks for constructing a thermal bridge	- ***ability*** in analysing and evaluating the presence of thermal bridges and the potential condensation risk - ***practical skills*** in solving thermal bridge by minimising heat loss through surfaces - ***practical skills*** in communicating thermal bridge related issues on the building site with the other crafts	- ***theoretical knowledge*** on the surface temperatures at thermal bridges due to heat loss and resulting damage to the building performance - ***theoretical knowledge*** on moisture building and potential health issues related to the existence of thermal bridges - ***specialized knowledge*** on solutions for preventing and minimising thermal bridges - ***specialized knowledge*** on avoiding thermal bridges around windows, balconies and other building envelope elements
Ventilation with heat recovery	- ***responsibility*** for ensuring the ventilation systems remain clean prior to commissioning. - ***responsibility*** for maintaining the systems in their entirety after installation, before applying finishing coatings. - ***responsibility*** for executing airtight penetrations of systems through the building envelope. - ***responsibility*** not to cover inspection openings, control systems or maintenance systems. - ***ability*** to read drawings and digital models	- ***cognitive and practical skills*** needed to create a schematic layout of essential components in a residential MVHR system. - ***cognitive and practical skills*** needed to strategically route ducts throughout the project, avoiding excessive pressure losses that could lead to higher fan energy consumption and potential noise concerns due to increased turbulence. - ***cognitive and practical skills*** required to identify heating and ventilation systems and understand factors that could impact the installation's integrity.	- ***general knowledge*** on facts, principles, processes, and general concepts regarding the advantages of incorporating a controlled ventilation system in a DER. - ***general knowledge*** on facts, principles, processes, and general concepts related to heat recovery from exhaust air and tempering fresh air. - ***general knowledge*** on facts, principles, processes, and general concepts concerning the use of MVHR in DER, including noise levels, electrical energy requirements for fans, and its impact on reducing heating and/or cooling demand. - ***general knowledge*** on facts, principles, processes, and general concepts surrounding the two most common ducting arrangements used in residential ventilation systems (trunk-and-branch and octopus) and their impact on the need for sound attenuators. - ***general knowledge*** on facts, principles, processes, and general concepts regarding the preferred duct types to ensure smooth airflow and avoid sagging or kinking. - ***general knowledge*** on key components such as heat exchanger, ducting, filters, supply and exhaust registers, condensate drain and post heater - ***general knowledge*** on various tools and digital applications for the design of building ventilation systems

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors' view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

Heating and cooling	- ***responsibility*** to avoid interfering with existing heating and cooling systems. - ***responsibility*** not to obstruct inspection openings, control, or maintenance systems. - ***responsibility*** to protect the filters hygienically before commissioning the system, safeguarding them from potential contaminants and moisture/humidity. - ***responsibility*** for completion of tasks related to ensuring that the duct network can be easily cleaned in the future should the need arise.	- ***cognitive and practical skills*** required to identify heating and ventilation systems and potential threats to the installation's integrity. - ***cognitive and practical skills*** required to coordinate the installation process encompassing heating and cooling systems. ***cognitive and practical skills*** required for effectively insulating the two air ducts connecting to the exterior through the thermal envelope to minimize any negative impact of thermal bridging.	- ***knowledge*** on fundamental facts, principles, processes, and general concepts regarding water systems in heating and cooling. - ***knowledge*** on basic facts, principles, processes, and general concepts concerning refrigerant-driven systems in heating and cooling, including highly efficient heat pump installations, VRV/VRF, and other similar systems. - ***knowledge*** on highly efficient heating and cooling systems, their primary components, and underlying principles.
Integration of renewable energy installations		- ***cognitive skills*** to describe the impact of the building envelope on the potential utilization of renewable energy sources (RES).	- ***general knowledge*** on available renewable and eco-friendly energy sources. - ***knowledge*** on potential integration of renewable energy technologies into buildings. - ***general knowledge*** on existing HVAC technologies utilizing renewable energy sources. - ***general knowledge*** on drawing requirements for building equipment incorporating renewable sources. - ***general knowledge*** on short-term energy storage systems. - ***general knowledge*** on long-term energy storage solutions. - ***general knowledge*** on how building construction impacts the efficiency of various solar installations. - ***general knowledge*** of sound propagation and noise emission from different renewable energy installations, and the influence of building cladding and insulation on sound transmission.
Renovation of existing buildings	**- *responsibility*** to install and utilize appropriate materials and products for SBS DER, ensuring proper thermal insulation and airtightness without compromising the measures at different stages. - ***responsibility*** for ensuring the airtightness during the implementation of different steps and measures. -***responsibility*** for creating conditions to facilitate the	- ***cognitive skills*** required to articulate the benefits and unique obstacles associated with step-by-step refurbishment. - ***cognitive skills*** to recognize opportunities for energy savings. - ***cognitive and practical skills*** in comprehending and elucidating the common challenges faced in existing	- *knowledge* on potential for energy savings in reference to the national and international (e.g. EnerPHit) renovation standards. - *knowledge* on reference levels of thermal protection for all measures / building components. - *knowledge* on impact of the existing constructive system on the building renovation opportunities. - ***knowledge*** on economic efficiency of the different

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors' view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

	proper functioning of the building's heating and ventilation systems.	buildings when aiming for ambitious energy standards.	steps. - ***knowledge*** on integration of RES installations, storage systems and building automation. **- *knowledge*** on advantages of renovating existing buildings using nZEB suitable components with reference to the specific problems of old buildings.
	- ***self-management*** and/or ***management and supervision*** within the identification of the necessary DER steps in drawings and buildings and estimation of their suitability / economic efficiency / comfort benefits and impact. - ***responsibilit***y for communicating the project proposal, the connections between the different measures and steps and the time schedule to the different specialities / stakeholders.	- range of ***cognitive and practical skills*** required to carefully assess the on-site implementation of DER steps and RES integration.	- ***knowledge*** on the basis of decision-making. - ***knowledge*** on assessment on a case by case basis: tools and instruments. - ***knowledge*** on added cost of DER (based on the different steps and their sequence). - ***knowledge*** on Step-by-step retrofit plans. - ***knowledge*** on details and products suitable for SBS DER (at the forefront of knowledge).
Economic viability	- ***Ability*** to comprehend and analyse economic viability assessments with accountability.	- ***Skill*** to define economic viability. - ***Skill*** to comprehend the outcomes of economic viability assessments.	- ***Knowledge*** on definition of economic viability. - ***Knowledge*** on existing methods to assess economic viability of renovation project.
	- ***Ability*** to accurately interpret the budget while considering economic viability. - ***Ability*** to select building materials with optimal economic viability. - ***Ability*** to execute recommended cost-effective measures.	- ***cognitive skills*** to define economic viability. - ***cognitive and practical skills*** to comprehend the results of economic viability assessment.	- ***Knowledge*** of economic viability definition. - ***Specialised knowledge*** on existing methods to assess economic viability of renovation project. - ***Specialised knowledge*** in LCA (Life Cycle Assessment) principles.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors' view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

Target group

Qualified specialists under specialty 582010 "Construction technician" from the area of education "Architecture and construction" and professional direction 582 "Construction", considering the following occupational profiles:

3112-3004 Technician, civil construction (constructor);

3112-3007 Technician, Investor Control;

3112-3009 Technician, construction and architecture;

3112-3010 Construction technician, design and technical department;

3123-3001 Technical supervisor construction;

Graduate profile

The graduate is a qualified professional graduated from the professional high schools of architecture and civil engineering in Bulgaria with professional diploma under specialisation “Construction technician” corresponding to EQF level 3 or above. The training course is also suitable for students or graduates from the „Construction of Buildings and Facilities” specialty in the universities of architecture and civil engineering, as well as for students in other specialties in the professional areas of Architecture and Civil Engineering.

The graduate is capable of independent work and has the required knowledge and skills to oversee the implementation of the construction activities following the working design documentation. He/she has enough knowledge and comprehension of reading technical documentations and construction details. He/she is responsible for designing workflows for the manufacture, assembly, disassembly and repair of building envelope components. He/she is able to apply acquired knowledge and practical skills in problem solving, he can work independently or in a team. He/she has is manually skilled in working with both traditional building materials and products and prefabricated building components. He/she wants to continue his/her education, is constantly interested in the development of building concepts, materials and technologies.

TEACHING FRAMEWORK

On-site application of EPC-integrated BRP	Number of hours	Of which		
		Self-learning	Classroom	Practice
Location, orientation and shape	**1**	0,5	0,5	
Thermal insulation	**3**	1	1	1
Windows and shading	**3**	1	1	1
Airtightness	**4**	1	1	2
Thermal bridges	**2**	1	1	
Ventilation with heat recovery	**2**	0,5	1	0,5
Heating and cooling	**1**	0,5	0,5	
Integration of renewable energy installations	**1**	0,5	0.5	

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors’ view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).

On-site application of EPC-integrated BRP	Number of hours	Of which		
		Self-learning	Classroom	Practice
Renovation of existing buildings	**2**	**1**	1	
Economic viability	**1**	**0,5**	0,5	
Total	**20**	**7,5**	**8**	**4,5**

Necessary equipment and facilities

Study room: Classrooms should have: a workplace for each student (desk and chair), a workplace for the trainer (desk and chair), a study board, cabinets, screens and stands for hanging blackboards, a writing board, other teaching aids and didactic technique; teaching aids - demonstration mock-ups and models, real samples, visualising boards, educational videos, multimedia equipment - computers, projectors and relevant visualisation software products.

Equipment for practical training: workshop spaces with workbenches and storage for tools and equipment, demonstration mock-ups and models of building components (walls, windows, roofs, etc.), safety equipment (helmets, boots, aprons, safety goggles, ear protection, gloves, high-visibility vests, first aid kits, fire extinguishers), basic working tools (modelling and utility knifes, scissors, insulation cutters, cutting boards, cutting pads, measurement devices, cohesive band, mounting foam, etc.), insulation materials, airtightness tapes and membranes, ventilation, heating and cooling equipment (mock-ups or actual samples).

Requirements to trainers and available trainers

Individuals with completed higher education in the relevant specialty can teach a subject or module of professional training.

By subject or module of the professional training, for which there is no corresponding professional direction in the Classifier of the areas of higher education and professional fields, adopted by Resolution No. 125 of 2002 of the Council of Ministers (Government Gazette No. 64 of 2002), persons without higher education and without the professional qualification "teacher" can teach if they have acquired a third degree of professional qualification in the specialty "Construction Technician" under the conditions and in accordance with the Law on Vocational Education and Training.

It is recommended that trainers take a course every three years to update their professional knowledge, skills and competencies.

Available trainers: Zdravko Genchev, Alexander Genchev, Alexander Stankov, Stanislav Andreev, Ralitsa Yordanova

Further reading

ЕнЕфект, 2010, Десет книги за зелената архитектура, София
ЕнЕфект, 2010, 99 успешни практики, София
ЕнЕфект, 2010, Зелен витрувий, София
Да строим зелено: http://buildingreen.net/, отварян октомври 2022
http://www.fit-to-nzeb.com/, отварян октомври 2022
http://www.train-to-nzeb.com/, отварян октомври 2022

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 894756. It reflects only the authors' view. The European Community is not liable for any use that may be made of the information contained herein. Responsibility for the information and views expressed in the therein lies entirely with the author(s).