

EU Building Standards – Teacher Competences

D5.1

Responsible: STUBA / USUST

Date: September 25, 2025



Co-funded by
the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Erasmus+ Project	Future Oriented VET for the Construction Sector in Ukraine in a Partnership for Excellence
Project ID	VETpartEX / Erasmus-EDU-2024-CB-VET / ID 101183275
Title of the document	WP5 D5.1 Competences EU-Standards
Author(s) (name, surname, institution)	Maryna Babenko, STUBA
Contributor(s) (name, surname, institution)	Rodion Kolyshko, IPQ Rolf Aslaksrud Kristiansen, EUROMASC
Submission date	25.09.2025
Reviewer(s) (name, surname, institution)	Michael Erz, BOT Marc Krüger, FHMS
Final publication date	25.09.2025
Revision after upload	-
Version	V1.0
Work package	WP 5
Work package leader	STUBA / USUST
Deliverable	D 5.1
Type	Report
Format	PDF
Distribution	Public
Summary:	This deliverable describes how Techer Competences for EU Building Standards were developed. It outlines the methodology, describes the implementation of the work, and presents the results in the appendix.



Table of Contents

1	Introduction	4
2	Methodology.....	4
3	Implementation.....	6
3.1	Scoping and Literature Review	6
3.2	Stakeholder Participation	9
3.3	Competence Matrix Development.....	11
3.4	Validation	15
4.	Results	15
	Appendix	16
	Appendix 1: List of Relevant EU Standards and Frameworks Referenced	16
	Appendix 2: Teacher Topic List	18
	Appendix 3: Stakeholder Interview Summary	20
	Appendix 4: Teacher Competence Matrix - EU Standard.....	65

1 Introduction

This deliverable, titled “EU Building Standards – Teacher Competences,” is part of the VETpartEX project, co-funded by the Erasmus+ Programme (KA2: Cooperation for innovation and the exchange of good practices). The main objective of this deliverable is to define and structure the key competences required for VET teachers to effectively integrate EU building standards into their teaching practices. This task supports the overall project goal: to modernize vocational education and training (VET) in Ukraine by aligning teaching content and methods with European construction standards and green skills priorities. The objectives of D5.1 are:

- Identify EU building standards and environmental directives relevant for VET curricula.
- Define a competency framework for teachers, focusing on energy efficiency, sustainable construction, and technical standardization.
- Support curriculum reform in Ukraine by aligning teaching with EU approaches.

2 Methodology

The methodological design followed a structured four-phase process intended to identify, validate, and contextualize key competencies of VET teachers in the construction sector. Each phase incorporated both qualitative and comparative elements to ensure replicability across EU contexts.

Step 1: Scoping and Literature Review

A systematic desk review was conducted to identify relevant EU legislative and technical frameworks. Documents reviewed included the Eurocodes (structural design standards), the Energy Performance of Buildings Directive (EPBD), the Construction Products Regulation (CPR), the EU Green Deal, and the Circular Economy Action Plan. Each source was analyzed for relevance to VET curriculum integration, with specific attention to sustainability, safety, and standardization requirements. Additionally, European competence frameworks such as EQF, ESCO, DigCompEdu, GreenComp, and EQAVET were mapped against Ukrainian vocational standards (ДСТУ-Н Б EN). The review also explored how non-EU countries align their systems with EU norms, providing lessons for Ukraine’s harmonization process. This stage helped establish the foundation for the competence matrix and highlighted gaps in the Ukrainian context.

Step 2: Stakeholder Participation

To contextualize findings, structured participation was carried out with three groups: VET teachers, curriculum designers, and construction industry representatives. Semi-structured interviews and focus groups were organized both in Ukraine and in EU partner countries. The participation ensured that technical standards were not only identified on paper but also tested against the realities of classroom teaching and workplace expectations. Teachers provided feedback on challenges in teaching EU standards within Ukrainian schools, while industry stakeholders highlighted skills shortages and market expectations. Curriculum designers added insights into how standards could be practically integrated into modular VET programs. This triangulation ensured the competence framework was both policy-aligned and practice-oriented.

Step 3: Competence Matrix Development

Based on insights from the literature and stakeholder participation, the draft Teacher Competence Matrix was developed. Competences were grouped into four major domains: technical literacy, environmental awareness, health & safety, and digital skills (Annex 1). Each competence was described in terms of knowledge, skills, and attitudes, and linked to relevant EU policies and frameworks. The draft was circulated among partner institutions for peer review, allowing for adjustments to ensure coherence across EU and Ukrainian contexts. Examples from Germany, Slovakia, and Ukraine were integrated to demonstrate real-life applicability. This iterative process made the matrix a living tool, adaptable to different contexts yet grounded in European policy priorities.

Step 4: Validation

Validation involved two main steps: peer review and pilot testing. Partner universities and institutions reviewed the draft matrix for accuracy, coherence, and relevance to EU and Ukrainian contexts. Following this, pilot sessions were organized in selected Ukrainian VET schools, where teachers tested the competence matrix in practice. Feedback collected through questionnaires and debriefing sessions highlighted which competences were clear and which required further explanation or simplification. Adjustments were made accordingly, ensuring the final version was both academically sound and practical for implementation. The validation phase confirmed the matrix's usability as a planning and training tool, strengthening its credibility for adoption in teacher training programs.

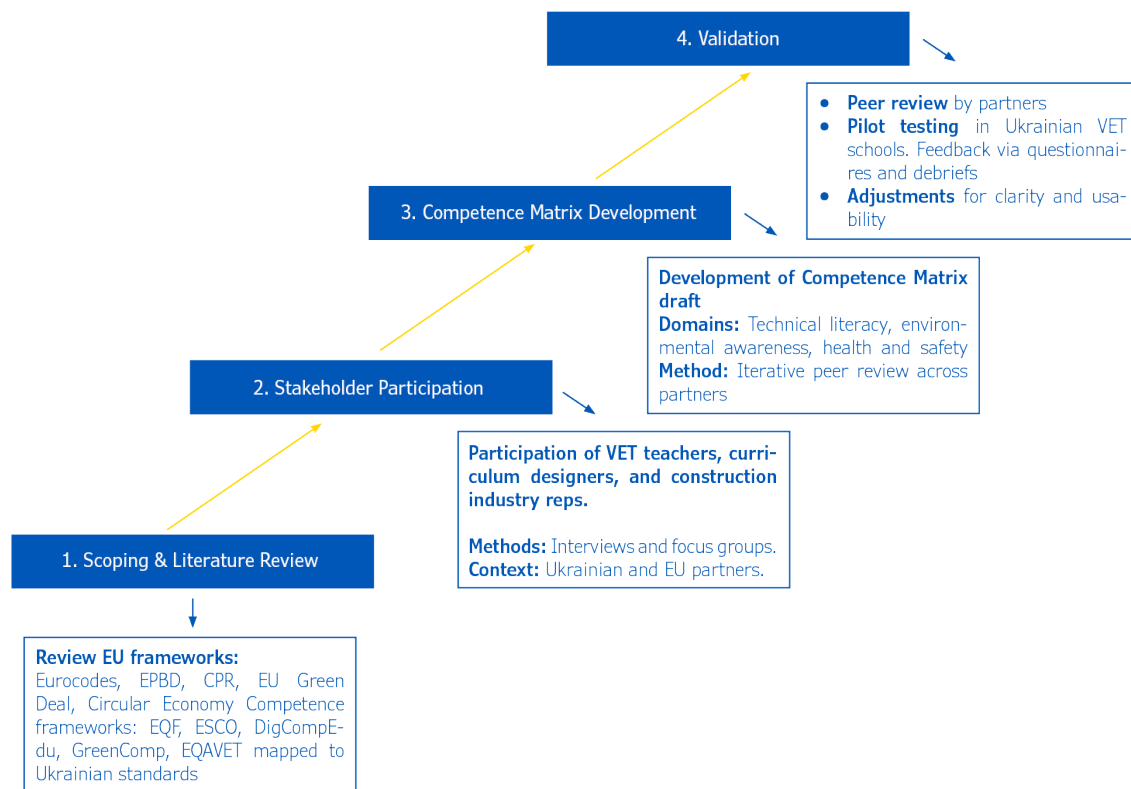


Figure 1: Competence Building Process

3 Implementation

In this chapter, we describe how we developed the basis for the teacher competency matrix. The next step explains how we identified the sectoral challenges in Ukraine and assessed the Ukrainian need for vocational teacher training.

3.1 Scoping and Literature Review

The first step involved a review of European regulations and frameworks, including the Construction Products Regulation (CPR)¹, the Energy Performance of Buildings Directive (EPBD)², and Eurocodes³. Special attention was given to how these standards influence material choices, energy use, health and safety, and digital design methods in the construction

¹ https://single-market-economy.ec.europa.eu/sectors/construction/construction-products-regulation-cpr_en

² https://energy.ec.europa.eu/topics/energy-efficiency/energy-performance-buildings/energy-performance-buildings-directive_en

³ <https://eurocodes.jrc.ec.europa.eu/>

industry. Parallel to this regulatory mapping, the team analysed competency reference models such as European Qualifications Framework (EQF)⁴, European Skills, Competences, Qualifications and Occupations (ESCO)⁵, Digital Competence Framework for Educators (DigCompEdu)⁶, and European Sustainability Competence Framework (GreenComp)⁷. For the development of training programmes and courses as the practical delivery of training, the principles stemming from the European Quality Assurance for Vocational Education and Training framework (EQAVET)⁸ will be implemented.

Despite Ukraine not being a member of the EU, all standards and frameworks mentioned above influence Ukrainian legislation. While Eurocodes standards are formally adopted via ДСТУ-Н Б EN standards⁹ and have ten counterparts in Ukrainian State Construction Standards¹⁰, Construction Products Regulation (CPR – EU 305/2011, now 2024/3110) is not directly applicable in Ukraine, as it is an EU regulation. However, Ukraine has voluntarily aligned many technical standards and certification procedures with CPR principles, especially through harmonized standards and conformity assessment practices. The new CPR (2024/3110) introduces digital product passports, sustainability criteria, and stricter market surveillance - these are not yet transposed, but may influence future reforms, especially under EU accession commitments.

As for the Energy Performance of Buildings Directive (EPBD – EU/2024/1275), Ukraine has partially transposed earlier versions of EPBD via the Law on Energy Efficiency of Buildings¹¹ and related bylaws.

The revised EPBD (2024) sets ambitious goals, such as achieving zero-emission buildings by 2030. Ukraine is not yet legally bound to these goals but is actively considering them as part of its reconstruction and EU integration roadmap. An internal consultation process was launched among project partners to identify the most relevant thematic blocks for teachers, including topics such as standardization, digital construction tools (e.g., Building Information

⁴ <https://europass.europa.eu/en/europass-digital-tools/european-qualifications-framework>

⁵ <https://esco.ec.europa.eu/en/about-esco/what-esco>

⁶ <https://publications.jrc.ec.europa.eu/repository/handle/JRC107466>

⁷ https://joint-research-centre.ec.europa.eu/greencomp-european-sustainability-competence-framework_en

⁸ https://employment-social-affairs.ec.europa.eu/policies-and-activities/skills-and-qualifications/working-together/eqavet-european-quality-assurance-vocational-education-and-training_en

⁹ https://e-construction.gov.ua/files/new_doc/3021970461207562209/2023-01-24/a9685b73-f98d-455d-b963-e1c08e8406eb.pdf

¹⁰ <https://dbn.co.ua/index/eurocode/0-29>

¹¹ <https://zakon.rada.gov.ua/laws/show/2118-19#Text>

Modelling (BIM)¹², material compliance, green building certifications (LEED¹³, BREEAM¹⁴, DGNB¹⁵), waste management, safety at work, and the EU Green Deal¹⁶. Feedback from previous surveys, national workshops, and expert interviews shows that the Ukrainian construction industry has undergone significant stress between 2020 and 2025, compounded by economic fluctuations, labour migration, geopolitical disruptions, and regulatory transformation. Drawing from a cross-section of domestic research and expert analysis, this overview identifies five persistent structural challenges inhibiting sectoral resilience and growth.

- 1) The rising cost of construction remains a formidable barrier to market development. Escalating prices for energy and building materials—many of which are imported—have inflated overall project expenses, narrowing the margin for profitability and discouraging investment. This trend is exacerbated by ongoing inflation and the volatility of global supply chains, particularly during wartime conditions¹⁷.
- 2) The chronic outflow of skilled labour undermines the operational capacity of construction firms. The search for better employment conditions abroad has led to a notable reduction in the availability of qualified engineers, technicians, and workers. This not only slows project implementation but also diminishes quality control and innovation within domestic construction practices¹⁸.
- 3) The investment climate continues to be characterized by instability. Fluctuating policy frameworks, weak institutional guarantees, and limited access to affordable financing deter both foreign and domestic investors. Despite efforts to attract capital for reconstruction and infrastructure modernization, uncertainty around long-term returns and governance structures remains a critical obstacle¹⁹.

¹² https://www.dialux.com/en-GB/dialux-and-bim?gad_source=5&gad_campaignid=21610699330&gclid=EAiaIQobChMI6pCV-Im1jgMVegqiAx1GrTrEEAAYBCAAEgL6nfD_BwE

¹³ <https://www.usgbc.org/leed>

¹⁴ <https://breeam.com/>

¹⁵ <https://www.dgnb.de/en>

¹⁶ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

¹⁷ https://iie.org.ua/wp-content/uploads/2020/06/ivanov-monohrafiia-2020_compressed.pdf

¹⁸ <https://kbu.org.ua/news/pro-ostanni-tendentsii-ta-perspektyvy-budivelnoho-rynku-ukrainy-pid-chas-business-day-kbu>

¹⁹ https://iie.org.ua/wp-content/uploads/2020/06/ivanov-monohrafiia-2020_compressed.pdf

3.2 Stakeholder Participation

The VETpartEX project has identified a clear need to upgrade the professional competences of Ukrainian VET teachers to align with EU standards in construction education. This discrepancy should be further substantiated and specified above (with references to relevant sources). Teachers require upskilling in technical knowledge of EU regulations such as the Construction Products Regulation (CPR), Energy Performance of Buildings Directive (EPBD), and Eurocodes. There is a strong demand for training in digital tools, particularly Building Information Modelling (BIM), as well as the use of online platforms for accessing standards, environmental data, and instructional content. Teachers also need structured guidance in integrating sustainability topics into their lessons, including circular economy principles, waste management, and green building certification systems (e.g., BREEAM, LEED, DGNB).

A further critical area is the development of transversal skills, including environmental responsibility, digital literacy, and EU labour market awareness. Addressing these needs through targeted professional development will be essential for modernizing Ukrainian VET and supporting the country's integration with European vocational education standards.

According to the objectives of the project the Centre of Excellence should be established with deep level of proficiency of Ukrainian VET teachers and workshop instructors both in core subjects and pedagogical competences. As the occupational standards (if they exist) form the ground for the curricula and training programs²⁰ both in public and municipal VET institutions, it is necessary to address the existing occupational standards for the construction sector. As of today, there are 12 occupational standards in the construction sphere, from which 9 relate to the occupational sphere 21. From these 9 occupational standards only two - Building insulation system installer and electro gas welder – relate to the occupations common for the VET schools participating in the Project. Obviously, this is not enough to fully understand the core competences that Ukrainian VET teachers and workshop instructors need to master during the upcoming trainings at EU universities.

To gain a better understanding of the expectations and needs of the target audience from the planned training, a survey among the VET teachers and workshop instructors has been conducted from June to July 2025. The survey was based on the description of the training modules that are to be delivered during the training in STUBA. In total 36 teachers and workshop instructors participated in the survey and identified the needs and expectations

²⁰ Law on education (2017) https://zakon.rada.gov.ua/laws/show/2145-19?find=1&text=професійний#w1_11

²¹ Register of the National Qualification Agency ([Відомості про професійні стандарти](#))

from the training that are listed in Annex 2. These expectations and needs are also shared by the main partners with whom all VET schools cooperate: the regional offices of KNAUFF, Sniezhka, Henkel, Feidal coatings and others.

The reform of Ukraine's VET system introduces a competence-based approach aligned with the National Qualifications Framework (NQF), which mirrors the structure of the European Qualifications Framework (EQF). Harmonization with EU standards requires VET teachers to master outcome-oriented pedagogies and integrate general, professional, and digital competences into teaching. However, the previous survey results²² show that while 64% of Ukrainian VET teachers rated communication competences as "very important," only 36% prioritized the use of educational theories or modern teaching methods. This suggests a continued dominance of traditional, content-based instruction models.

The decentralization of curriculum design provides educators with flexibility to adapt learning to regional labour markets and individual student needs, yet many teachers still view curricula primarily as fixed instruments rather than dynamic pedagogical tools. The survey revealed a gap between the systemic goals of integrated theory-practice learning and the limited collaboration between "theory" and "practice" teachers, who often work in isolation. Only 29% of teachers saw e-learning support as a key priority, indicating limited integration of digital transformation goals into daily practice.

At the same time, management teams at VET schools expressed strong alignment with reform goals, emphasizing the need for competence-based learning, greater autonomy for students, and closer industry cooperation. To bridge the gap between policy and practice, teacher training should focus on developing professional capacities in interdisciplinary planning, student-centred methodologies, and blended learning design. This would equip VET educators to act as facilitators of process-oriented learning and ensure curricular harmonization with EU standards in both form and function.

Results showed that teachers require:

- Technical knowledge of EU standards (CPR, EPBD, Eurocodes).
- Environmental competence (waste management, sustainable materials, certification systems).
- Pedagogical innovation (competence-based, project-oriented learning, industry collaboration).

²² Future Oriented VET for the Construction Sector in Ukraine in a Partnership for Excellence Identification and Specification of VET Teacher Training competences

- Transversal skills (communication, teamwork, EU labour market awareness).

The survey also highlighted a gap in integrating sustainability and European certification frameworks into Ukrainian VET courses, despite high interest in practice-oriented training.

3.3 Competence Matrix Development

Based on the approach described above, the four competence areas in Annex 3 were selected to reflect the core skill sets required for modern vocational training in the construction and materials sector, while ensuring alignment with EU priorities. Technical literacy enables learners to interpret and apply European standards, ensuring quality and regulatory compliance. Environmental awareness addresses the urgent need for sustainable site practices and life cycle thinking, directly supporting EU Green Deal and Circular Economy objectives. Health and safety safeguards workers and end-users, embedding the principles of EU occupational safety directives into daily practice. Digital skills empower trainees to use databases, modelling tools, and traceability systems for efficient material evaluation and project management. Together, these areas create a coherent framework that links curricula to European sustainability, education, and workforce development policies.

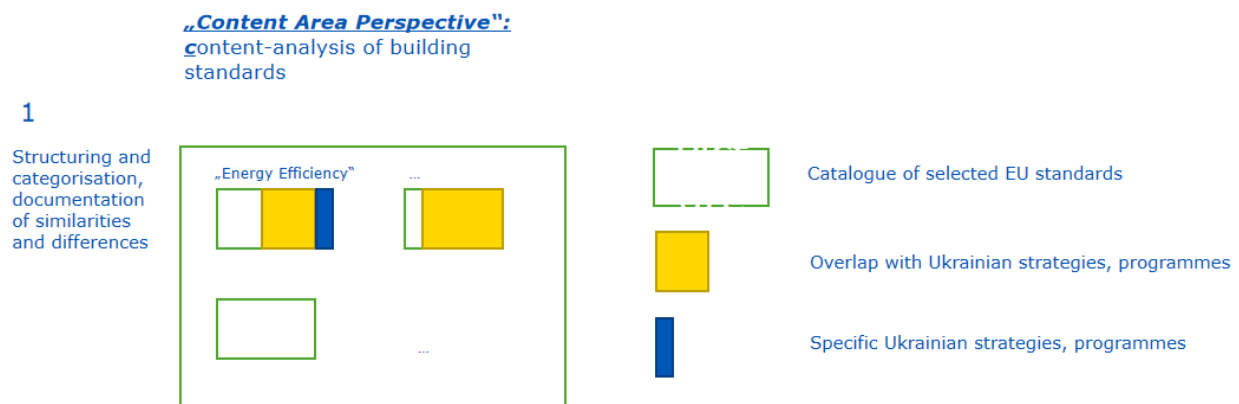


Figure 2: Strategy for the Identification

Technical knowledge of EU building standards, combined with strong digital and environmental competences, forms the core foundation for future-oriented vocational education in the construction sector. In the context of the VETpartEX project, these areas were identified as critical for empowering VET teachers to prepare learners for the green and digital transitions outlined in EU policies. Teachers must first develop a solid understanding of key EU regulations such as the Construction Products Regulation (CPR), Energy Performance of Buildings Directive (EPBD), and related standards like the Eurocodes, EN, and ISO frameworks. These

regulations define essential technical performance indicators - such as thermal conductivity, fire resistance, and material sustainability - that must be translated into practical, teachable content in vocational classrooms.

Understanding product certification, CE marking, and technical documentation is increasingly relevant as building materials and systems become more regulated across the EU single market. Teachers are expected to guide students in interpreting material datasheets, environmental product declarations (EPDs), and conformity assessments.

As shown by the survey of teachers in participating VET schools (Annex 4), the most needed competences and skills include understanding sustainable material selection, waste reduction strategies, and the principles of a circular economy as applied on construction sites. Teachers also must be familiar with international green building certifications such as BREEAM, LEED, and DGNB, and how these influence design, material use, and building operations. By embedding these standards and approaches into training programs, VET institutions help ensure graduates are prepared for roles in a climate-conscious labour market.

To effectively deliver this content, teachers require not just awareness but a methodological grasp of how to teach it - integrating real-life case studies, site visits, simulations, and industry collaborations. Furthermore, environmental competence is not limited to technical understanding; it includes the ability to install values of responsibility, stewardship, and innovation in learners. In this sense, VET teachers become facilitators of a broader cultural shift toward sustainability in the built environment.

There are common competence domains across most or all occupations analysed. These domains are consistently present across all seven occupations, forming the backbone of sector-wide competence architecture, particularly:

Competence Domain	Present In All Occupations	Description
Professional	✓	Core operational skills: execution of tasks specific to each trade
Communication	✓	Use of technical terminology, team collaboration, stakeholder interaction
Mathematical	✓	Measurement, estimation, geometric interpretation

Energy/Environmental	✓	Waste management, eco-materials, energy-efficient methods
Digital	✓	Use of devices, software, BIM, technical data sources
Civic & Legal	✓	Awareness of labor rights, regulatory frameworks, site compliance
Personal/Social	✓	Collaboration, adaptability, teamwork, and leadership

Table 1: Common competence domains across most or all occupations analysed

There are also frequent but not universal competence domains identified in the curricula, educational and occupational standards, namely:

Competence Domain	Mostly Present	Description
Entrepreneurial	☑ 5 out of 7	Business planning, service pricing, client communication
Cultural	🗺 3 out of 7	Restoration, heritage conservation, stylistic adaptation (mostly plasterer, painter, tiler)

Table 2: Frequent but not universal represented competence domains in curricular

These domains are crucial for upskilling towards market alignment and national restoration goals but remain underrepresented outside artisan-heavy occupations. The analysis conducted allows to propose the following generalisation ideas for curriculum improvement, in particular:

Idea 1: Transversal Competence Core

Create a unified competence backbone across all curricula, covering:

- Technical execution
- Communication
- Digital fluency (with BIM integration)
- Environmental responsibility
- Entrepreneurial awareness This would ensure cross-occupation transferability and smoother teacher training alignment.

Idea 2: Specialisation Modules

Introduce specialization tracks based on gaps:

- Digital Planning & BIM (expand to all roles)
- Legal & Policy Integration (especially in roles with retrofit and certification responsibility)

Idea 3: Competence Matrix Layering

Design training layers by qualification levels rather than isolated trades:

- Level 3–4: Operational fluency, eco-awareness
- Level 5–6: Coordination, planning, site leadership
- Level 6–7: Restoration mastery, client and stakeholder participation, strategic development

The VETpartEX Teacher Competence Matrix provides a structured framework to guide this process. It maps technical knowledge, environmental literacy, and digital fluency to specific EU policies and frameworks. Continuous professional development is necessary to keep teachers updated as EU standards evolve.

In summary, harmonizing Ukrainian standards with EU ones entails building a multidimensional skillset among VET teachers. This will enable the delivery of EU-compliant construction education, ensure labour market relevance, and contribute to Ukraine’s green transition. The outcome is a more competent teaching workforce equipped to prepare learners for sustainable, modern construction careers in a European context.

Analysis revealed five persistent challenges:

- Rising construction costs due to energy/material imports.
- Skilled labour migration.
- Weak investment climate and policy instability.
- Limited uptake of digitalisation in construction.
- Regulatory misalignment with EU and bureaucratic barriers.

3.4 Validation

The validation of the competence matrix followed a two-step process to ensure both academic soundness and practical applicability. First, partner universities and institutions conducted a peer review, carefully examining the draft for accuracy, coherence, and relevance to both EU and Ukrainian contexts. Building on this foundation, pilot testing was carried out in selected Ukrainian VET schools, where teachers applied the matrix in real classroom settings. Feedback was gathered through questionnaires and debriefing sessions, highlighting which competences were well understood and which required further clarification or simplification. These insights guided targeted adjustments, resulting in a final version of the matrix that is clear, user-friendly, and ready for integration into teacher training programmes.

4. Results

The Teacher Topic List as shown in Annex 2 was developed based on a scoping and literature review. It was developed as a strategic tool to guide the integration of EU building standards into VET in Ukraine and partner countries. Its purpose is to define the key competences that VET teachers in Ukraine need to effectively teach sustainable construction aligned with European directives and practices. The sources used are listed in the footnote and summarized in Annex 1.

This deliverable establishes a foundational step in equipping VET educators with the tools and knowledge needed to bring EU-aligned construction education to Ukrainian vocational schools. The defined competencies in Annex 4 will guide the design of teaching materials, teacher training modules, and assessment frameworks in the next stages of the project. Coordination with local ministries and teacher training institutions will be essential for long-term adoption and impact.

Appendix

Appendix 1: List of Relevant EU Standards and Frameworks Referenced

Technical & Construction Standards

- **EN 1990–1999 (Eurocodes):** Structural design standards covering actions on structures, concrete, steel, timber, masonry, geotechnics, seismic design, and more.
- **EN ISO 52000 series:** Standards related to the energy performance of buildings framework.
- **EN 15804:** Sustainability of construction works – Environmental Product Declarations (EPDs) – Core rules for the product category of construction products.
- **EN 13501-1:** Fire classification of construction products and building elements.
- **EN ISO 6946:** Building components and building elements – Thermal resistance and thermal transmittance – Calculation method.

Regulatory & Legal Frameworks

- **Construction Products Regulation (CPR) – Regulation (EU) No 305/2011:** Lays down harmonized conditions for the marketing of construction products.
- **Energy Performance of Buildings Directive (EPBD) – Directive (EU) 2018/844:** Supports energy-efficient renovations and new construction standards.
- **Directive 2010/31/EU:** Previous version of EPBD, still cited for foundational energy requirements.
- **Construction Sites Directive – 92/57/EEC:** Establishes minimum safety and health requirements at temporary or mobile construction sites.
- **Waste Framework Directive – Directive 2008/98/EC:** Governs waste management in the EU, including construction and demolition waste.

Sustainability & Environmental Standards

- **EU Green Deal (2019):** Strategic framework, not a standard, but foundational for integrating sustainability and climate neutrality goals.
- **Circular Economy Action Plan (2020):** Part of the Green Deal, influencing construction waste and material reuse standards.
- **BREEAM, LEED, DGNB Certification Frameworks:** International certification systems promoting sustainability across building life cycles.

Education & Competence Frameworks

- **EQF – European Qualifications Framework:** Reference framework for comparing qualifications and defining competence levels.
- **ESCO – European Skills, Competences, Qualifications and Occupations:** EU classification system to bridge education and labor market demands.
- **EQAVET - European Quality Assurance for Vocational Education and Training framework:** EQAVET supports quality assurance in Vocational Education and Training across Europe. Through a continuous improvement cycle, it helps systems and providers enhance education and training.
- **DigCompEdu – Digital Competence Framework for Educators:** Guides educators in integrating digital tools into teaching.
- **GreenComp – European Sustainability Competence Framework:** Supports integration of environmental skills into educational outcomes.

Appendix 2: Teacher Topic List

Competence Area	Specific Competence	Description	Related EU Topics	Framework Alignment
1. Technical Literacy	Understanding EU Building Standards	Ability to interpret and apply EN, ISO, Eurocodes, CPR, EPBD	Standardization, CPR, EPBD	EQF, ESCO
	Material Specification & Compliance	Knowledge of CE-marking, EPDs, and technical requirements of construction materials	Construction Materials, BIM	EQF, DigCompEdu
2. Environmental Awareness	Green Building Principles	Understanding of circular economy, energy efficiency, and low-carbon design	EU Green Deal, Renovation Wave	GreenComp, EQF
	Sustainable Certification Literacy	Familiarity with LEED, BREEAM, DGNB systems	Green Certification Systems	EQF
3. Health & Safety Competence	Safety Standards & Protocols	Teaching legal compliance with EU safety directives (e.g. 92/57/EEC), PPE, risk assessment	H&S Regulations	ESCO
	Waste Management	Ability to guide responsible site waste	Waste Framework Directive	EQF, GreenComp

		practices (reuse, sorting, compliance)		
4. Digital Skills	Use of BIM and Digital Tools	Applying digital resources to manage standards, materials, and site logistics	BIM, Digital Platforms	DigCompEdu
	Data-Informed Teaching	Using databases and LCA tools to support material and energy-related decisions	Digital Construction	DigCompEdu

Appendix 3: Stakeholder Interview Summary

These stakeholder interviews should be placed in detail in relation to the EU standards mentioned above and current development strategies in Ukraine to derive the curricular development needs and the content orientation of the training for teachers.

Anticipated competences to be acquired by Ukrainian participants after the Training 2

Module 1: Importance of standardization in construction			
	Description	Possible disciplines where the knowledge could be used	Competences
	<p>This block will explore how standardization in construction ensures safety, quality, and interoperability across materials, methods, and systems. It will highlight key European and international standards (such as EN, ISO, and Eurocodes) that guide design, execution, and performance of buildings. Participants will learn how standardization supports</p>		

	<p>innovation, reduces costs, and facilitates cross-border collaboration in the EU's single market. Real-world case studies will demonstrate the risks of non-compliance and the benefits of harmonized practices. Finally, the session will emphasize the role of vocational teachers and professionals in embedding standard-based thinking into education and industry practice.</p>		
KR		<p>- Basics of Construction - Basics of Construction Drawing - Materials Science / Basics of Materials Science - Modern Production Technology</p>	<p>- Understanding the role of standards in ensuring quality, safety and efficiency in construction - Ability to navigate international construction standards (EN, ISO)</p>
		<p>Safety at work</p>	<p>- Awareness of the importance of regulatory regulation in the field of safety on construction sites</p>
		<p>On-the-job training</p>	<p>- Applying standards in practice while performing real construction tasks -</p>

			Developing a mindset focused on compliance with regulations
		Designing and constructing technical objects	Ability to implement standards requirements into design solutions
Dnipro		Welding equipment and technology; Materials science; Construction drawing, tolerance and technical measurements	<p>General professional competencies</p> <ul style="list-style-type: none"> • Understands the role of standardization in ensuring the quality, safety and compatibility of construction works and materials. • Is guided by national and European construction standards (DSTU, EN, ISO, Eurocodes). • Analyzes technical documentation in accordance with the requirements of the standards. • Applies knowledge of standards in the process of planning, performing and evaluating construction works. <p>Professional competencies</p> <ul style="list-style-type: none"> • Is able to assess the compliance of materials and technologies with established standards.

			<ul style="list-style-type: none"> • Uses standardized methods of quality control of works and materials. • Identifies risks associated with non-compliance with construction standards. • Works in accordance with the principles of uniform norms in a cross-border environment (for example, within the EU market).
Rivne		<p>Metrology and standardization; Special technology; Construction materials science); Fundamentals of architectural design; Construction economics;</p>	<p>International standards in construction and the principles of their operation; Understand the dynamics of the labour market and the role of standardization in innovation and the economy</p>
Odesa		<p>Bricklayer: Stonework technology Painter: Painting technology Plasterer: Plastering technology Facade tiler: Facing technology Facade insulation installer: Special technology</p>	<p>For a tiler: Competence in surface preparation and application of facing materials; For a facade insulation installer: Competence in installation of external thermal insulation systems; Bricklayer Competence in</p>

			masonry; Painter Competence in painting surfaces; Plasterer Competence in applying plaster layers
Lutsk		Materials Science Construction Drawing Metrology and Standardization Welding Technology Plumbing Technology Construction Technology and Organization	<p>General professional competencies</p> <ul style="list-style-type: none"> • Understands the role of standardization in ensuring the quality, safety and compatibility of construction works and materials. • Is guided by national and European construction standards (DSTU, EN, ISO, Eurocodes). • Analyzes technical documentation in accordance with the requirements of the standards. • Applies knowledge of standards in the process of planning, performing and evaluating construction works. <p>Professional competencies</p> <ul style="list-style-type: none"> • Is able to assess the compliance of materials and technologies with established standards.

			<ul style="list-style-type: none">• Uses standardized methods of quality control of works and materials.• Identifies risks associated with non-compliance with construction standards.• Works in accordance with the principles of uniform norms in a cross-border environment (for example, within the EU market). Key (universal) competencies• Demonstrates critical thinking regarding sources of technical information and regulatory documentation.• Works effectively in a team, adhering to standards of professional ethics and responsibility.• Uses digital tools (BIM, online standards databases) to search and analyze regulations. Willing to engage in continuous learning to
--	--	--	--

			adapt to changes in the regulatory field of construction.
Module 2: EU Green Deal			
	<p>This block will introduce the EU Green Deal as the European Union’s strategic roadmap to achieve climate neutrality by 2050. It will cover its core pillars—such as clean energy, circular economy, sustainable buildings, and biodiversity—and their implications for construction and industry. Participants will explore how the Green Deal influences legislation like the Energy Performance of Buildings Directive (EPBD) and Renovation Wave initiative. The session will highlight opportunities and</p>		

	<p>responsibilities for vocational sectors in supporting the transition to a low-carbon economy. Emphasis will also be placed on how green skills and environmental awareness are becoming essential competencies for future professionals in construction and beyond.</p>		
KR		<p>Basic information about construction / Basic information about buildings and structures</p>	<p>Understanding the impact of EU climate policy on the construction industry - Awareness of the principles of sustainable development and their impact on the design and execution of works</p>
		<p>Modern production technology</p>	<p>Ability to integrate the principles of circular economy and energy efficiency into production processes - Formation of "green" approaches to planning and execution of works</p>

		Materials Science / Fundamentals of Materials Science	Ability to choose environmentally friendly materials and assess their impact on the environment
		Safety at work	Awareness of the role of environmental safety on the construction site - Formation of eco-responsible professional thinking
		On-the-job training	Practical application of the principles of the Green Deal in professional activities - Implementation of environmentally friendly solutions in the daily practice of the craftsman
		Design and construction of technical objects	Ability to take into account energy efficiency and low-carbon design requirements in the development of technical documentation
Dnipro		Fundamentals of energy efficiency; Occupational safety; Fundamentals of ecology	<p>General professional competencies</p> <ul style="list-style-type: none"> • Ability to apply knowledge of modern energy-saving materials and technologies.

			<ul style="list-style-type: none">• Ability to analyze and assess the energy consumption of buildings.• Ability to develop and implement measures to increase the energy efficiency of construction sites.• Understanding the regulatory framework in the field of energy efficiency.• Ability to identify hazardous and harmful production factors.• Knowledge of the basics of environmental legislation.• Understanding the principles of interaction of construction sites with the environment.• Ability to assess environmental risks of construction projects.• Knowledge of the principles of sustainable development in construction. <p>Professional competencies</p>
--	--	--	---

			<ul style="list-style-type: none">• Monitoring compliance with energy-saving requirements during construction and operation.• Monitoring compliance with safety rules and occupational health standards at the site.• Selection and use of environmentally friendly construction materials.• Organization of construction waste disposal. <p>Key (universal) competencies</p> <ul style="list-style-type: none">• Search, analysis and use of information on the latest energy-efficient technologies.• Constantly updating knowledge on changes in legislation and energy-saving technologies.• Ability to innovate and find effective solutions to reduce energy costs.• Awareness of the importance of preserving nature and one's own
--	--	--	--

			<p>health through a responsible attitude to the environment.</p> <ul style="list-style-type: none"> • Search for innovative environmental solutions in construction. <p>Tracking new trends in "green" construction and environmental technologies.</p>
Rivne		<p>Fundamentals of ecology; - Fundamentals of energy efficiency; Construction economics; Fundamentals of architectural design; Energy conservation in construction</p>	<p>Understanding the main directions of the EU Green Deal and their impact on construction</p> <p>Analysis of the impact of the Green Deal on legislation</p> <p>Developing green skills and environmental awareness in students</p>
Lutsk		<p>Safety at work Fundamentals of ecology and energy efficiency</p>	<p>General professional competences</p> <ul style="list-style-type: none"> • Understands the goals and strategic directions of the EU Green Deal, in particular climate neutrality by 2050. • Is familiar with key European initiatives in the field of sustainable

			<p>construction (EPBD, Reconstruction Wave, circular economy).</p> <ul style="list-style-type: none">• Determines the impact of EU environmental policy on the field of construction, materials and design. <p>Professional competences</p> <ul style="list-style-type: none">• Is able to implement the principles of energy-efficient and sustainable construction at all stages of the production process.• Uses environmentally sound solutions and materials in accordance with modern eco-standards.• Analyzes the energy efficiency of buildings in accordance with the requirements of the EPBD directive.• Assesses the impact of construction activities on the environment and suggests ways to reduce it. <p>Key (universal) competences</p> <ul style="list-style-type: none">• Demonstrates environmental awareness and readiness to act in
--	--	--	--

			<p>the interests of sustainable development.</p> <ul style="list-style-type: none"> • Ready to work in the context of the transition to a low-carbon economy and apply green technologies. • Able to think critically and make informed decisions taking into account environmental aspects. • Uses digital and information resources to monitor carbon footprint, energy consumption, etc. <ul style="list-style-type: none"> • • Ready for interdisciplinary cooperation to implement the goals of the Green Deal in their professional activities.
Module 3: Health & safety requirements			
	<p>This block will focus on the critical importance of health and safety regulations in the construction industry to prevent</p>		

	<p>accidents and ensure worker well-being. It will provide an overview of key EU directives such as the Construction Sites Directive (92/57/EEC) and relevant national implementation practices. Participants will explore typical site hazards, risk assessment processes, and the role of personal protective equipment (PPE) and safety protocols.</p> <p>The session will also highlight the role of VET teachers in promoting safety awareness and preparing students for legally compliant, responsible professional practice.</p>		
KR		Safety at work	Knowledge of European and national safety requirements on construction sites - Ability to identify risks and develop measures to reduce them

		On-the-job training	Developing practical skills in adhering to workplace safety protocols - Correct use of personal protective equipment (PPE) in real-world conditions
		Technology of stone / plastering / painting / facing works / installation of insulation systems	Integration of safety rules into the process of performing each stage of work - Ability to self-control and responsible attitude towards compliance with safety regulations
		Basic information about construction / buildings and structures	Understanding the importance of safety in the organization of the construction process - Familiarization with the technical conditions for the safe operation of buildings and structures
		Design and construction of technical objects	Ability to take into account aspects of occupational safety already at the stage of designing the technological process
Dnipro		Safety at work	General professional competences

			<ul style="list-style-type: none">• Understands the importance of health and safety in construction as a basis for professional responsibility.• Is familiar with the key provisions of Directive 92/57/EEC on safety at construction sites and national legislation (in particular, DSTU, NPAOP).• Identifies typical risks and hazards characteristic of different types of construction work. <p>Professional competences</p> <ul style="list-style-type: none">• Is able to conduct a basic assessment of occupational risks in the workplace.• Follows safety procedures and implements emergency protocols.• Correctly uses and maintains personal protective equipment (PPE).• Recognizes safety signs and instructions on the site and acts accordingly.
--	--	--	--

			<ul style="list-style-type: none"> • Performs daily self-monitoring of compliance with occupational hygiene and safety standards. Key (universal) competencies • Demonstrates a responsible attitude towards the safety of one's own work and colleagues. • Develops team interaction skills, taking into account risks to health and life. • Operates with the concepts of "preventive thinking" and "safety culture" in one's professional behavior. Is ready to constantly update knowledge about regulatory requirements and best practices in occupational safety.
Rivne		Life safety; Fundamentals of labor protection; Labor protection; Fundamentals of labor legislation Fundamentals of law	Ensuring compliance with health and safety regulations on construction sites; identifying typical hazards and conducting risk assessments. Raising

			students' awareness of safety and responsible professional practice
Odesa		Safety at work for all professions; Industrial training and practical training for all professions	General safety rules in construction, briefings, first aid, personal protection, prevention of occupational diseases. Daily application of safety rules during work. Constant briefing.
Lutsk		Safety at work	<p>General professional competences</p> <ul style="list-style-type: none"> • Understands the importance of health and safety in construction as a basis for professional responsibility. • Is familiar with the key provisions of Directive 92/57/EEC on safety at construction sites and national legislation (in particular, DSTU, NPAOP). • Identifies typical risks and hazards characteristic of different types of construction work. <p>Professional competences</p>

			<ul style="list-style-type: none">• Is able to conduct a basic assessment of occupational risks in the workplace.• Follows safety procedures and implements emergency protocols.• Correctly uses and maintains personal protective equipment (PPE).• Recognizes safety signs and instructions on the site and acts accordingly.• Performs daily self-monitoring of compliance with occupational hygiene and safety standards. <p>Key (universal) competencies</p> <ul style="list-style-type: none">• Demonstrates a responsible attitude towards the safety of one's own work and colleagues.• Develops team interaction skills, taking into account risks to health and life.• Operates with the concepts of "preventive thinking" and "safety
--	--	--	---

			<p>culture" in one's professional behavior.</p> <ul style="list-style-type: none"> • • Is ready to constantly update knowledge about regulatory requirements and best practices in occupational safety.
<p>Module 4: BREEAM, LEED & DGNB certification frameworks</p>			
	<p>This part of materials will introduce the leading international sustainability certification systems: BREEAM (UK), LEED (USA), and DGNB (Germany). It explains how these frameworks assess the environmental, economic, and social performance of buildings throughout their lifecycle. Participants will compare certification categories such as energy use, materials, water</p>		

	<p>efficiency, and indoor environmental quality. The lecture will also cover the benefits of green certification for investors, designers, and end-users. Finally, participants will learn how these systems influence sustainable construction practices and how to integrate certification awareness into vocational training.</p>		
<p>Module 5: Waste management at the building site</p>			
	<p>This part addresses the principles and practices of effective construction and demolition (C&D) waste management. It will outline the legal obligations under EU Waste Framework Directive and national policies promoting resource efficiency</p>		

	<p>and circular economy. Topics include waste sorting, reuse, recycling, and on-site minimization strategies.</p> <p>The session will also highlight how VET professionals can teach responsible site behavior and environmental compliance.</p>		
KR		Safety at work	Understanding environmental requirements for safe waste management - Developing skills for safe collection, sorting and disposal of construction waste
		On-the-job training	Practical skills to implement sorting and reuse of materials on site - Skills to assess material residues and make decisions about recycling or disposal
		Basic information about construction / buildings and structures	Awareness of the role of environmental responsibility in modern construction - Knowledge of the impact of improper disposal on the environment

		Technology of stone / plastering / painting / facing works / installation of insulation systems	Ability to select materials based on their potential for reuse - Rational use of materials with waste minimization during preparation and application stages
		Materials Science / Mastering the Basics of Materials Science / Modern Production Technology	Recognizing recyclable materials - Understanding the life cycle of materials and the principles of the circular economy
Dnipro		Safety at work; Fundamentals of Ecology; Fundamentals of Industry Economics and Entrepreneurship; Industrial Training	<p>General professional competencies</p> <ul style="list-style-type: none"> • Understands the legal and environmental requirements for the management of construction and demolition waste in accordance with European and Ukrainian legislation. • Is guided by the principles of waste management: prevention, reuse, recycling, energy recovery, disposal. • Recognizes the importance of resource efficiency and a circular approach in construction.

			<p>Professional competencies</p> <ul style="list-style-type: none">• Is able to sort construction waste by type.• Applies practices for the reuse of materials in construction.• Implements simple measures to reduce waste generation during construction work.• Uses appropriate packaging, labeling and schemes for temporary storage and removal of waste.• Maintains basic documentation and reporting on waste management in accordance with requirements. <p>Key (universal) competencies</p> <ul style="list-style-type: none">• Forms environmental responsibility for one's own activities and their impact on the environment.• Works in a team with environmentally friendly practices on the construction site.
--	--	--	---

			<ul style="list-style-type: none"> • Takes initiative in implementing environmental innovations in daily work. <p>Willing to constantly update knowledge about circular solutions and environmental waste management tools.</p>
Rivne		Fundamentals of ecology, Technology and organization of construction production;	Innovative methods of construction waste management Analysis of legislation on construction waste management Implementation of sorting, reuse, recycling and minimization of construction waste
Odesa		Special technology for all professions Industrial training and industrial practice for all professions	Core competencies by profession
Lutsk		Safety at work; Construction Technology and Organization Special Technology (for all professions) Industrial Training Lessons for All Professions	<p>General professional competencies</p> <ul style="list-style-type: none"> • Understands the legal and environmental requirements for the management of construction and

			<p>demolition waste in accordance with European and Ukrainian legislation.</p> <ul style="list-style-type: none">• Is guided by the principles of waste management: prevention, reuse, recycling, energy recovery, disposal.• Recognizes the importance of resource efficiency and a circular approach in construction. <p>Professional competencies</p> <ul style="list-style-type: none">• Is able to sort construction waste by type (inert, hazardous, mixed, etc.).• Applies practices for the reuse of materials on the construction site.• Implements simple measures to reduce waste generation during construction work.• Uses appropriate packaging, labeling and schemes for temporary storage and removal of waste.
--	--	--	--

			<ul style="list-style-type: none"> • Maintains basic documentation and reporting on waste management in accordance with requirements. <p>Key (universal) competencies</p> <ul style="list-style-type: none"> • Develops environmental responsibility for own activities and their impact on the environment. • Works in a team with compliance with environmentally safe practices on the construction site. • Shows initiative in implementing environmental innovations in everyday work. • Is ready to constantly update knowledge about circular solutions and environmental waste management tools.
<p>Module 6: Requirements for construction materials & components</p>			
	<p>This block will explore the technical, environmental, and</p>		

	<p>safety requirements that construction materials and components must meet under EU regulations. It covers essential standards such as the Construction Products Regulation (CPR), which ensures that products placed on the EU market are reliable, consistent, and CE-marked. Key performance criteria—like mechanical strength, fire resistance, thermal insulation, and environmental impact—will be examined. The lecture also addresses how digital tools and databases (e.g. EPDs and BIM) support material selection and compliance. Learners will understand how proper material specification contributes to building quality,</p>		
--	---	--	--

	user safety, and sustainability goals.		
KR		Materials Science / Fundamentals of Materials Science / Mastering the Fundamentals of Materials Science	Ability to evaluate building materials according to European requirements - Knowledge of material classification according to technical, environmental and safety parameters - Understanding of CE marking, EPD and principles of sustainable material selection
		Construction Drawing / Construction Drawing Basics	Ability to read technical documentation taking into account material specifications - Display materials with the required characteristics on drawings
		Technology of installation of insulation systems / Technology of stone / facing / painting / plastering works	Ability to correctly select materials for work in accordance with CPR, EPD, CE requirements - Skills in working with materials that meet modern standards for strength, thermal insulation, fire resistance and environmental impact

		Modern Production Technology / Industrial Training	Practical application of environmentally responsible and certified materials - Skills in assessing the conformity of building materials in real production conditions
		Basic information about construction / about buildings and structures	Understanding the relationship between material quality, building safety, and durability - Developing a systematic approach to material selection for responsible construction
Dnipro		Materials science	<p>General professional competences</p> <ul style="list-style-type: none"> • Understands the EU legislative requirements for construction materials and the meaning of the CE marking. • Is familiar with the main technical characteristics and quality indicators of construction materials. • Recognizes the role of appropriate material selection in ensuring the

			<p>safety, reliability and sustainability of construction.</p> <p>Professional competences</p> <ul style="list-style-type: none">• Is able to analyze technical passports and declarations of material characteristics (DoP) in accordance with the CPR.• Uses data from digital platforms to select materials according to environmental and technical criteria.• Assesses the compliance of construction materials and products with the requirements of standards and regulations.• Applies the principles of sustainable materials science in the selection of alternative or secondary resources.• Determines the environmental impact of construction materials during the life cycle (LCA). <p>Key (universal) competences</p>
--	--	--	---

			<ul style="list-style-type: none"> • Demonstrates critical thinking when selecting materials, taking into account technical, environmental and economic factors. • Uses digital tools to search, analyze, and compare materials. • Takes responsibility for the quality and safety of construction products as a participant in the production process. <p>Is willing to constantly update knowledge about modern materials, standards, and innovations.</p>
Rivne		Construction Materials Science, Special Technology;	Quality requirements for construction materials. Marking and storage of construction materials. Application of the Construction Products Regulation (CPR) and understanding CE marking. Ensuring construction quality and safety through the correct specification of construction materials.

Odesa		Materials science for all professions; Industrial training and industrial practice for all professions	Core competencies by profession
Lutsk		Materials Science,	<p>General professional competences</p> <ul style="list-style-type: none"> • Understands the EU legislative requirements for construction materials, in particular the provisions of the CPR (EU 305/2011) and the meaning of the CE marking. • Is familiar with the main technical characteristics and quality indicators of construction materials (strength, durability, thermal insulation, fire resistance, environmental impact). • Recognizes the role of appropriate material selection in ensuring the safety, reliability and sustainability of construction. <p>Professional competences</p>

			<ul style="list-style-type: none">• Is able to analyze technical passports and declarations of material characteristics (DoP) in accordance with the CPR.• Uses data from digital platforms (EPD, BIM) to select materials according to environmental and technical criteria.• Assesses the compliance of construction materials and products with the requirements of standards and regulations.• Applies the principles of sustainable materials science in the selection of alternative or secondary resources.• Determines the environmental impact of construction materials during the life cycle (LCA). <p>Key (universal) competencies</p> <ul style="list-style-type: none">• Demonstrates critical thinking when choosing materials, taking into
--	--	--	---

			<p>account technical, environmental and economic factors.</p> <ul style="list-style-type: none"> • Uses digital tools to search, analyze and compare materials. • Demonstrates responsibility for the quality and safety of construction products as a participant in the production process. • Is ready to constantly update knowledge about modern materials, standards and innovations.
<p>Module 7: Case studies of green buildings in the EU</p>			
	<p>This block will present real-world examples of green building projects across the European Union that demonstrate sustainable design, energy efficiency, and innovative construction methods. Case studies will include award-</p>		

	winning buildings certified under BREEAM, LEED, and DGNB, as well as exemplary projects aligned with EU Green Deal targets. Each case will highlight key features such as renewable energy integration, passive design, low-carbon materials, and water-saving technologies.		
KR		Basic information about construction / Basic information about buildings and structures	Understanding of sustainable design principles - Ability to analyze real-world examples of environmentally efficient construction - Identification of architectural and engineering solutions that promote energy efficiency
		Materials Science / Fundamentals of Materials Science / Mastering the Fundamentals of Materials Science	Ability to determine the environmental properties of building materials (low carbon footprint, reusability) - Assessment of materials compliance with

			sustainable construction requirements
		Technology of installation of insulation systems / Technology of stone / facing / painting / plastering works	Practical use of energy-efficient technologies and materials in the execution of works - Knowledge of methods for integrating passive design, thermal insulation and water conservation
		On-the-job training / Technology of modern production	Demonstration and implementation of examples of European green building practices in workshops and real-world settings - Development of environmental awareness in future professionals
		Mastering the basics of electrical engineering / Electrical engineering	Knowledge of the basic principles of integrating renewable energy sources into the design and use of buildings - Understanding the impact of electrical systems on the overall energy efficiency of buildings
Dnipro		Materials Science Fundamentals of Ecology	General professional competences

			<ul style="list-style-type: none">• Understands the concept of "green building" as a component of European climate policy and the objectives of the EU Green Deal.• Is guided by the principles of sustainable architectural design and energy efficiency.• Recognizes the role of innovation and an interdisciplinary approach in modern construction. <p>Professional competences</p> <ul style="list-style-type: none">• Analyzes real examples of green buildings in the EU in terms of solutions for energy, materials, water, comfort and environmental impact.• Identifies and explains the features of such approaches as passive design, integration of renewable energy sources, low-carbon technologies, water collection and reuse systems.
--	--	--	---

			<ul style="list-style-type: none">• Compares different types of green solutions, adapting them to the Ukrainian context.• Uses critical thinking to assess the benefits and challenges of implementing green technologies in construction projects. <p>Key (universal) competencies</p> <ul style="list-style-type: none">• Develops environmental awareness and motivation to use sustainable solutions in future professional activities.• Is ready for intercultural and interdisciplinary exchange of experience in the field of sustainable construction.• Is able to work with digital to study examples of green objects.• Shows initiative in finding and implementing environmental solutions in their own projects.
--	--	--	--

			<p>Is open to learning based on EU best practices and global green standards</p> <p>General professional competencies</p> <ul style="list-style-type: none">• Understands the concept of "green construction" as a component of European climate policy and the goals of the EU Green Deal.• Is oriented in the principles of sustainable architectural design and energy efficiency.• Recognizes the role of innovation and an interdisciplinary approach in modern construction. <p>Professional competencies</p> <ul style="list-style-type: none">• Analyzes real examples of green buildings in the EU in terms of solutions for energy, materials, water, comfort and environmental impact.• Compares different types of green solutions, adapting them to the Ukrainian context.
--	--	--	---



			<ul style="list-style-type: none">• Uses critical thinking to assess the benefits and challenges of implementing green technologies in construction projects. <p>Key (universal) competencies</p> <ul style="list-style-type: none">• Develops environmental awareness and motivation to use sustainable solutions in future professional activities.• Is ready for cross-cultural and interdisciplinary exchange of experience in the field of sustainable construction.• Is able to work with digital to study examples of green objects.• Shows initiative in finding and implementing green solutions in their own projects. <p>Is open to learning based on EU best practices and global green standards.</p>
--	--	--	--

Rivne		Operation of buildings and structures); Energy efficiency in construction.	Analysis and evaluation of green building projects. Understanding the principles of sustainable design, energy efficiency and innovative construction methods Applying the acquired knowledge in the educational process to demonstrate successful examples
Odesa		Special technology for all professions Industrial training and industrial practice for all professions	Core competencies by profession
Lutsk		Construction Technology and Organization Materials Science Fundamentals of Ecology and Energy Efficiency	<p>General professional competences</p> <ul style="list-style-type: none"> • Understands the concept of "green building" as a component of European climate policy and the objectives of the EU Green Deal. • Is guided by the principles of sustainable architectural design and energy efficiency.

			<ul style="list-style-type: none">• Recognizes the role of innovation and an interdisciplinary approach in modern construction. <p>Professional competences</p> <ul style="list-style-type: none">• Analyzes real examples of green buildings in the EU in terms of solutions for energy, materials, water, comfort and environmental impact.• Identifies and explains the features of such approaches as passive design, integration of renewable energy sources, low-carbon technologies, water collection and reuse systems.• Compares different types of green solutions, adapting them to the Ukrainian context.• Uses critical thinking to assess the benefits and challenges of implementing green technologies in construction projects.
--	--	--	--

			<p>Key (universal) competencies</p> <ul style="list-style-type: none">• Develops environmental awareness and motivation to use sustainable solutions in future professional activities.• Is ready for intercultural and interdisciplinary exchange of experience in the field of sustainable construction.• Is able to work with digital resources (BIM models, video tours, interactive maps) to study examples of green objects.• Shows initiative in finding and implementing environmental solutions in their own projects.• Is open to learning based on EU best practices and global green standards (LEED, BREEAM, DGNB).
--	--	--	---

Appendix 4: Teacher Competence Matrix - EU Standard

 Co-funded by the European Union	EU project				
	ECVET Points: ECTS Credits:				
EQF Level: 6	UA	CZ	DE	NO	SK
NQF Level:			6		
Units of Learning Outcomes	U1	Importance of standardization in construction			
	U2	EU Green Deal			
	U3	Health & Safety requirements			
	U4	BREEAM, LEED & DGNB Certification frameworks			
	U5	Waste management at the building site			
	U6	Requirements for construction materials & components			
<p>Disclaimer: This is one of the actions of the VETpartEX project which has been co-funded with support from the European Union. This document reflects the views only of the project partners, and the Commission cannot be held responsible for any use which may be made of the information contained therein.</p>					

Importance of standardization in construction	Unit	Competence	
		Knowledge	Skills
<p>This unit explores how standardization in construction ensures safety, quality, and interoperability across materials, methods, and systems. It will highlight key European and international standards (such as EN, ISO, and Eurocodes) that guide design, execution, and performance of buildings. Participants can standardization supports innovation, reduces costs, and facilitates cross-border collaboration in the EU's single market. Finally, the session will emphasize the role of vocational teachers and professionals in embedding standard-based thinking into education and industry practice. Real-world case studies will demonstrate the risks of non-compliance and the benefits of harmonized practices.</p>	U1	<p>Teachers know how standardization in construction ensures safety, quality and interoperability between materials, methods and systems and can present this to their students in class.</p>	
		<ul style="list-style-type: none"> • Basics of Construction • Basics of Construction Drawing • Basics of Materials Science • Modern Production Technology • Basics of architectural design • Construction economics • Metrology and Standardization 	<ul style="list-style-type: none"> • Use standards in ensuring quality, safety and efficiency in construction • navigate international construction standards (EN, ISO) • Apply standards in the process of planning, performing and evaluating construction works • Implement standards requirements into design solutions • Analyse technical documentation in accordance with the requirements of the standards • Use standardized methods of quality control of works and materials • Identify risks associated with non-compliance with construction standards.

EU Green Deal	Unit	Competence	
		Knowledge	Skills
<p>This unit introduces the EU Green Deal as the European Union’s strategic roadmap to achieve climate neutrality by 2050. It will cover its core pillars—such as clean energy, circular economy, sustainable buildings, and biodiversity—and their implications for construction and industry. Participants will explore how the Green Deal influences legislation like the Energy Performance of Buildings Directive (EPBD) and Renovation Wave initiative. The session will highlight opportunities and responsibilities for vocational sectors in supporting the transition to a low-carbon economy.</p>	U2	<p>Teachers can assess how green skills and environmental awareness are developing into essential competencies for future professionals in the construction industry and beyond. Furthermore, they are willing to utilize these competencies in their educational work.</p>	
		<ul style="list-style-type: none"> • Modern production technology • Basics of Materials Science • Basics of energy efficiency in construction • Basics of ecology and energy efficiency • Energy conservation in construction • basics of environmental legislation (EU and Ukraine) • principles of sustainable development in construction 	<ul style="list-style-type: none"> • Implement the principles of energy-efficient and sustainable construction at all stages of the production process • integrate the principles of circular economy and energy efficiency into production processes • Consider energy efficiency and low-carbon design requirements in the development of technical documentation • analyse and assess the energy consumption of buildings. • develop and implement measures to increase the energy efficiency of construction sites. • Understand the regulatory framework in the field of energy efficiency. • identify hazardous and harmful production factors.

			<ul style="list-style-type: none"> • Understand principles of interaction of construction sites with the environment. • assess environmental risks of construction projects. • Select and use of environmentally friendly construction materials
--	--	--	---

Health & safety requirements	Unit	Competence	
		Knowledge	Skills
<p>This unit focuses on the critical importance of health and safety regulations in the construction industry to prevent accidents and ensure worker well-being. It will provide an overview of key EU directives such as the Construction Sites Directive (92/57/EEC) and relevant national implementation practices. Participants will explore typical site hazards, risk assessment processes, and the role of personal protective equipment (PPE) and safety protocols. The session will also highlight the role of VET teachers in promoting safety awareness and preparing students for legally compliant, responsible professional practice.</p>	U3	<p>Teachers are familiar with the relevant health and safety regulations, can study them in depth and can prepare them for their students in a professionally appropriate manner.</p>	
		<ul style="list-style-type: none"> • Safety at work • Life safety • Basics on labour protection • European and national safety requirements on construction sites • workplace safety protocols • key provisions of Directive 92/57/EEC on safety at construction sites and national legislation 	<ul style="list-style-type: none"> • Identify typical risks and hazards characteristic of different types of construction work • Use and maintain personal protective equipment (PPE) at the construction side • Follow safety procedures and implements emergency protocols • Recognize safety signs and instructions on the site and act accordingly.

			<ul style="list-style-type: none"> Perform daily self-monitoring of compliance with occupational hygiene and safety standards.
--	--	--	---

BREEAM, LEED & DGNB certification frameworks	Unit	Competence	
		Knowledge	Skills
<p>This unit introduces the leading international sustainability certification systems: BREEAM (UK), LEED (USA), and DGNB (Germany). It explains how these frameworks assess the environmental, economic, and social performance of buildings throughout their lifecycle. Participants will compare certification categories such as energy use, materials, water efficiency, and indoor environmental quality. The unit will also cover the benefits of green certification for investors, designers, and end-users. Finally, participants will learn how these systems influence sustainable construction practices and how to integrate certification awareness into vocational training.</p>	U4	<p>Teachers know certification categories such as energy use, materials, water efficiency, and indoor environmental quality, can compare them, and can prepare them for their students in a professionally appropriate manner.</p>	
		<ul style="list-style-type: none"> Principles and criteria of BREEAM, LEED, DGNB Certification categories: energy, water, materials, indoor quality, sustainability performance Benefits of green certification for investors, designers, and users 	<ul style="list-style-type: none"> Compare and analyze sustainability certification frameworks Integrate certification awareness into teaching and practice Assess how certification influences sustainable construction practices

Waste management at the building site	Unit	Competence	
		Knowledge	Skills
<p>This unit addresses the principles and practices of effective construction and demolition (C&D) waste</p>	U5	<p>Teachers are familiar with basic practices for effective construction and demolition waste management and the associated legal framework and</p>	

<p>management. It will outline the legal obligations under EU Waste Framework Directive and national policies promoting resource efficiency and circular economy. Topics include waste sorting, reuse, recycling, and on-site minimization strategies. The unit will also highlight how VET professionals can teach responsible site behaviour and environmental compliance.</p>		<p>can prepare them for their students in a professionally appropriate manner.</p>	
		<ul style="list-style-type: none"> • Safety at work • Basics of Materials Science • Basics of Ecology • Basics of Industry Economics and Entrepreneurship • Technology and organization of construction production • Impact of improper disposal on the environment • life cycle of materials and the principles of the circular economy • Legal requirements for the management of construction and demolition waste in accordance with European and Ukrainian legislation • principles of waste management 	<ul style="list-style-type: none"> • sort and reuse of materials on site • assess material residues and make decisions about recycling or disposal • use materials with waste minimization during preparation and application stages • Use appropriate packaging, labelling and schemes for temporary storage and removal of waste • Maintain basic documentation and reports on waste management in accordance with requirements.

Requirements for construction materials & components	Unit	Competence	
		Knowledge	Skills
<p>This module explores the technical, environmental, and safety requirements that construction materials and components must meet under EU regulations. It covers essential standards such as the</p>	U6	<p>Teachers are familiar with the most important technical, ecological and safety requirements that building materials and components must meet according to EU regulations, can transfer these to the vocational context and use them in teaching for their students.</p>	

<p>Construction Products Regulation (CPR), which ensures that products placed on the EU market are reliable, consistent, and CE-marked. Key performance criteria—like mechanical strength, fire resistance, thermal insulation, and environmental impact—will be examined. The unit also addresses how digital tools and databases (e.g. EPDs and BIM) support material selection and compliance. Learners will understand how proper material specification contributes to building quality, user safety, and sustainability goals.</p>		<ul style="list-style-type: none"> • Basics of Materials Science • Basics of Construction Drawing • Modern Production Technology • material classification according to technical, environmental and safety parameters • CE marking, EPD and principles of sustainable material selection • main technical characteristics and quality indicators of construction materials 	<ul style="list-style-type: none"> • read technical documentation considering material specifications • Display materials with the required characteristics on drawings • select materials for work in accordance with CPR, EPD, CE requirements • analyse technical passports and declarations of material characteristics (DoMC) in accordance with the CPR • Use data from digital platforms to select materials according to environmental and technical criteria. • Assess compliance of construction materials and products with the requirements of standards and regulations. • Apply the principles of sustainable materials science in the selection of alternative or secondary resources. • Determine the environmental impact of construction materials during the life cycle (LCA).
--	--	---	---