



International Profile of Professional Competences

E.CO technician



ECVET-Lab. Implementation and Validation of the Non-Formal Training on Sustainability
for Environmental Testing Laboratories workers 2016-1-ES01-KA202-024977



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Description of the competence profile of the ECVET-Lab

INTRODUCTION

The main aim of the project is the transfer of European good practices, the development and improvement of the quality of training and professional competences/qualifications of employees within the new Lab technician profile with eco-principles, with the use of training modules based on standards of professional competences, learning outcomes and ECVET system – all supported by IT tools for competences management. Training issues of the project refer to the development of the concept of “green economy”, which constitutes a response to the global problem of environmental degradation which is caused by expansive, economic human activity. As experience of the project partners and analyses conducted before the project show, the European Union has no arranged methodical model to describe requirements within the scope of professional competences of employees in defined occupations functioning in the labour market. Each country has its own way of describing standards of professional competences or equivalent documents, which constitute a reference point to build a curriculum to be offered in vocational education and training. Therefore, within the ECVET-Lab project, an attempt of developing a unified methodology of establishing the standard of professional competences was undertaken, which considered European instruments related to the development and quality of qualifications (EQF/NQF, ECVET) in its descriptive layer.

The project assumes that the standard of professional competences is a standard describing professional competences necessary to perform tasks included in the occupation, accepted by representatives of professional associations and industry organisations, employers, employees and other key social partners. Therefore, the aim was to develop a methodology that was accepted by the project partner’s countries

(and also feasible to be accepted by other EU countries). Its principal assumption is that the standard of professional competences being developed according to its indications should consider the specificity of a local market and at the same time it should be able to be applied internationally. The unified methodology considers the defining process of descriptors of professional competences (knowledge, skills, and social competences) in the way making them constitute coherent principles of defining scopes of training modules with consideration of ECVET-Lab points and respectively – scopes of competency tests.

The standard is a document describing a set of professional competences/qualifications required for professional tasks performance typical for the occupation EWMTO according to requirements given by the economy as employer's requirements in an international dimension, accepted by representatives of professional associations and industry organisations, employers, employees and other key social partners with consideration of learning outcome units.

The aim of this activity was to carry out a multi-level methodological and factual evaluation of the description of the standard (quality strategy) that enabled a possibly wide international consultation of the final version of the standard. Therefore, the evaluation was carried out in all project partner countries considering their own national contexts. The procedures of the evaluation process were according to the methodology for the development of standards of professional competences.

Synthesis of the occupation

The E.Co lab technician promotes environmental operations in the workplace and supports the compliance with legal provisions within the scope of ecological environment in the laboratory.

Description of the competence profile of the Eco technician in the laboratory

E.Co technician implements professional tasks in the workplace in accordance with environmental protection procedures in the laboratory. Within the scope of their job, he/she performs basic professional tasks that an employer has granted them, while he/she dedicates some part of working time to operations related to environmental protection. E.Co is not a separate occupation, but he/she is focusing on a set of competences that were identified as necessary in the context of eco-labs. An E.Co technician's job aims at performance of professional tasks in workplaces with particular care for the compliance with provisions and standards concerning environmental protection in the lab. Its scope of duties includes updating and promoting knowledge concerning environmental protection in order to minimise the negative environmental impact of the business. Thereby, he/she coordinates work concerning waste management in the enterprise (collection, segregation and disposal/sale of industrial, municipal and hazardous waste). E. Co implements the principles of reasonable management of environmental protection resources and energy in the enterprise, while using environmental management standards valid in all

EU countries. He/she monitors the conditions under which pollutants are manufactured, as well as functioning of facilities and systems of waste storage in the enterprise. Supporting the process of developing environmental competences of the enterprise workers constitutes an additional occupational task for E. Co technician.

E.Co technician is working in the laboratory, but some tasks are performed in offices. The implementation of most tasks requires the use of facilities/devices/systems to store industrial waste and hazardous substances. Tasks performed in offices require the use of a computer connected to the Internet. E.Co technician works usually in small teams under supervision.

Professional competences of the Eco technician cannot be usually acquired through formal education, but through ECVET-lab training, which is specifically developed for this purpose. The ECVET-Lab international certificate confirms professional competences acquired within the educational process. At individual level, a ECVET Lab Certificate will be granted to the workers trained through ECVET Lab programme given that they pass the final exam.

Professional Tasks

PT-1. Identification of opportunities for new/updated knowledge concerning environmental protection and employer's obligations within this scope.

PT-2. Planning and conducting regular checks in the facilities, devices and systems for resource efficiency and environmental protection.

PT-3. Preventing or reducing the number of contaminants in the laboratory and their negative impacts on the environment.

PT-4. Engaging with people and organizational units of the lab responsible for environmentally-friendly activities

List of Professional Competences

PC-1. Promotion of environmental awareness in the laboratory (PT-1, PT-4)

PC-2. Supporting operations for environmental control in the enterprise (PT-2, PT-3, PT-4)

SC – Social competences. (PT-1 - PT-4)

Correlation of professional tasks with professional competences

Professional Tasks	Professional Competences	
	PC-1	PC-2
PT-1. Identification of opportunities for new/updated knowledge concerning environmental protection, and employer's obligations within this scope	X	
PT-2. Planning and conducting regular checks of facilities, devices and systems for resource efficiency and environmental protection		X
PT-3. Preventing or reducing the number of contaminants in the laboratory and their negative impact on the environment		X
PT-4. Engaging with people and organizational units of the lab responsible for environmentally-friendly activities	X	X

Descriptors defining levels of the European Qualifications Framework (EQF)¹

Professional competences of the E.Co meet the requirements of descriptors at level 4 in the European Qualifications Framework (EQF): A person working in this occupation:

1. In terms of knowledge: knows factual and theoretical knowledge in broad contexts within technologies being used, actual regulations and procedures within the occupation of Technician/Organizer of waste management in an enterprise; in particular areas knows facts, rules, complex concepts, theories and relations within the conditions of waste management.
2. In terms of skills: has a range of skills required to accomplish not very complex tasks without an instruction working as a technician in waste management; can solve not easy, untypical problems in changing work conditions; can manage self-learning process in an organized form; can understand and formulate complex statements as well as basic messages in a foreign language.
3. In terms of social competences is ready to:
 - Take responsibility connected with participating in different communities and playing different social roles.
 - Act independently and cooperate in organized conditions.
 - Assess both own activities and activities of people being supervised.
 - Take responsibility for results from own activities and activities of people being supervised.

¹ Recommendation of the European Parliament and of the Council of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning.

Description of Professional Competences

PC-1. Promotion of environmental awareness in the enterprise (PT-1, PT-4)	
KNOWLEDGE – Knows and understands...	SKILLS – Can..
<ul style="list-style-type: none"> • Main global environmental issues (environmental problems, benefits of a good environmental management and consequences of a lack of it) • Main impacts of laboratory activities. Principles of environmental management • Benefits of Good and Best practices which can be applied in laboratories • Types of industrial and municipal waste in the laboratory • Types of hazardous substances • Principles of preventing waste production and pollution emission • Principles of proceeding in emergency situations and planning preventive actions • Funding sources of projects within the scope of environmental protection in the laboratory • Funding sources of employee training within the scope of environmental protection in the enterprise • Technical solutions reducing negative environmental impact of the laboratory • Waste labelling principles • Types of air, water and soil pollution • Waste management principles • Noise impact 	<ul style="list-style-type: none"> • Explain basic environmental issues • Explain causes of environmental issues • Indicate environmental pollution sources in the laboratory • Identify environmental pollution sources in the laboratory • Explain the benefits of Good and Best practices applied in the laboratory • Present proposals to improve situations and planning preventive actions environmental protection practices in the laboratory • Inform the management on new technical solutions reducing or eliminating the environmental pollution emission • Recommend training offers for employees • Explain basic ecological notions. • Foresee life and health hazards • Assess the quality condition of air, water based on valid classifications • Indicate sources of pollutions or noise emission • Present proposals to improve environmental protection practices in the laboratory • Use open educational resources related to the environmental protection
SOCIAL COMPETENCIES – Is able to...	
<ul style="list-style-type: none"> • Bear responsibility for results of promoting environmentally-friendly operations in the laboratory • Follow the sustainable development principles and foster lab staff follow these principles in their operations' performance • Initiate operations for the benefit of developing environmentally-friendly competencies of enterprise employees • Promote employees' awareness within the scope of responsibility for environmental impact damages • Cooperate collectively for the benefit of developing environmental operations in the laboratory • Independently inspire practices related to reduction of impacts and improvement of 	

<p>environmental management in the laboratory</p> <ul style="list-style-type: none"> • Adjust their behaviour to occurred circumstances resulting from environmental management in the laboratory • Accept responsibility for own education within the scope of legal provisions and environmental protection principles (good and best practices)
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PC-2. Supporting operations for environmental control in the enterprise (PT-2, PT-3, PT-4)

KNOWLEDGE – Knows and understands...	SKILLS – Can..
<ul style="list-style-type: none"> • EU legal requirements within the scope of environmental protection • Structure of national environmental regulation • Principles of environmental control measures • Environmental management standards • Good and Best Practices implemented in laboratories • Principles of environmental monitoring • Methods for pollution prevention • Principles of emergency preparedness and response • Methods for environmental improvement and innovation in the laboratory • Understand the business benefits of environmental control measures and innovation • Types of waste in the laboratory • Technical requirements within the scope of waste storage in the laboratory • Environmental protection training in the laboratory • Procedures in the case of exceeding acceptable environmental pollution levels • Principles of functioning and operation of measuring instruments 	<ul style="list-style-type: none"> • Apply environmental protection provisions valid in the European Union • Proceed according to the environmental management standards • Apply good practices and propose best practices • Apply procedures within the scope of laboratory's environmental impact • Conduct inspections of facilities, devices and systems to store waste in the laboratory • Inform superiors on exceeding indications of measuring instruments • Contribute to the implementation of environmental control measures • Contribute to environmental monitoring • Carry out and record site checks to monitor environmental performance • Inform superiors of environmental • Implement pollution prevention measures • Respond to environmental emergencies • Research and present recommendations for environmental improvement and innovation in the laboratory • Communicate the business benefits of environmental control measures and innovation to colleagues

SOCIAL COMPETENCIES – Is able to...

<ul style="list-style-type: none"> • Accept responsibility for own education within the scope of legal provisions and environmental protection principles • Implement good practices • Propose the implementation of Best practices • Solve problems using well known sources of information, with consideration of institutional determinants • Control employees' operations within the scope of compliance with the environmental

- protection law in the laboratory
- Co-operate collectively for the benefit of developing environmental operations in the enterprise

Profile of key competences (validity assessment of key competences for a job)

Key competences refer to lacking competences required by employers. Next to professional competences, employers indicate lacks in more general competences, which tend to be called key competences in the literature on the subject.

As key competences, one should understand "connection of knowledge, skills and attitudes corresponding with a given situation. Key competences include competences needed by all persons for self-fulfilment and personal development, being an active citizen, social integration and employment."²

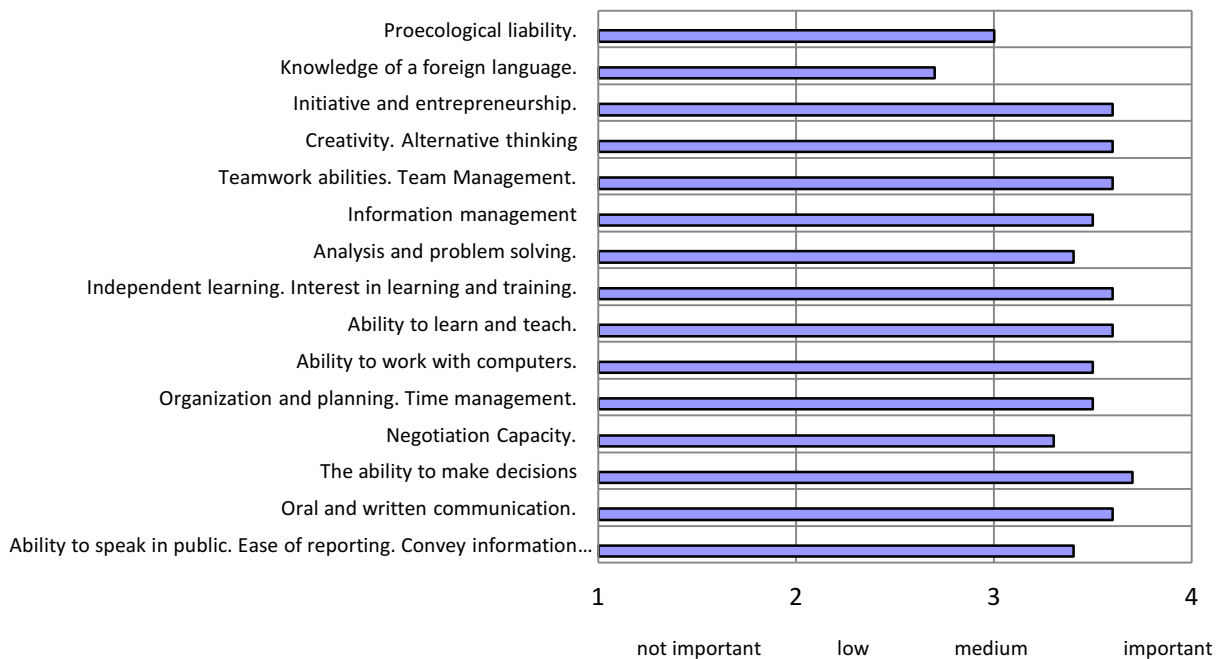


Figure 1 presents the validity assessment of key competences of the E.Co technician

GLOSSARY

Occupation. Set of tasks (set of operations) selected as a result of social labour division performed constantly or with small changes by particular persons and requiring relevant qualifications or competences (knowledge, skills and social competences), acquired as a result of education or practice. Occupation performance constitutes the source of income.

Specialisation. It results from labour division within an occupation. It includes a part of operations with similar character (related to performed function or subject of labour), requiring deepened or additional knowledge and skills acquired because of additional training or practice.

Professional task. Logical section or stage of work within an occupation, with clearly defined beginning and end, selected due to type or kind of performing occupational operations connected with one aim, ending with a product, service or decision.

Professional competences. Everything that a worker knows, understands and is able to perform, relevantly to a situation in a workplace. They are described with three sets: of knowledge, skills and social competences.

Key competences. Connection of knowledge, skills and attitudes relevant to a situation. Key competences are competences required by all persons for self-fulfilment, personal development, being an active citizen, social integration and employment.

Professional qualifications. Set of learning outcomes (resources of knowledge, skills and social competences), acquisition of which has been formally approved by entitled institution.

European Qualifications Framework. Set of reference adopted in the European Union, enabling to compare qualifications acquired in various states. Eight levels of qualification defined by learning outcomes requirements have been distinguished in the European Qualifications Framework.

National Qualifications System. All state operations related to confirmation of learning outcomes for the needs of labour market, civil society and individual development of learning persons.

Knowledge. Resource of facts, principles, theories and experiences related to each other and acquired by a learning person.

Skills. Ability of applying knowledge and practised efficiencies to perform tasks and solve problems.

Social competences. Skills, talents and features necessary for autonomous, collective and responsible participation in social and professional life

Good Practice. Related to the minimum/basic level of compliance, which give the desired functional result.

Best Practice. Related to giving an added value by exceeding expectations, indicating an optimum level of compliance.