



Lifelong Learning Programme

Project: **Electrical Engineers Vocational Education Transparency / ELEVET**
PROJECT NUMBER: 518429-LLP-1-2011-1-PL-LEONARDO-LMP

Project: Electrical Engineers Vocational Education Transparency / ELEVET

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WP4: Design of the transfer methodology of VET credits + **WP5: Operational Testing**

VET Framework and Credit Transfer

24/02/2014: Final Version



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WP4: Design of the transfer methodology of VET credits + WP5: Operational Testing
- "VET Framework and Credit Transfer" - final version (24 February 2014)

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Foreword

Vocational Education and Training in Europe contains a large number of levels, diplomas, certificates and qualifications. The mobility among people has increased and today many students want to undertake studies outside their own country. It is very important that the learning outcomes/competences they have achieved will be recognized and accepted.

European Credit Transfer System for Vocational Education and Training (ECVET) is designed to facilitate the transfer, accumulation and recognition of these learning outcomes/competences.

This ELEVET - VET Framework contains the main principles of ECVET and its implementation for electrical engineers vocational education and training.

ELEVET project intend to increase the transparency of competences between the partners (Denmark, Italy, Poland, Romania and Spain) and to strength the cooperation in electrical engineers vocational education and training.

0 - Preambul/motivation: differences between Academic and Professional Credits/Credentials

Both academic and professional [CB10] credits/credentials are indicative of some form of achievement, and both entitle the bearer to use certain initials after their name, but beyond that they are quite different. The most apparent difference is that with professional designations, whereas with academic credits/credentials, once the credits/credential is conferred one does not need to pay anything to the academic institution to have continued use of the academic credits/credential. Nonetheless, the differences are more fundamental than that.

The essential difference between professional and academic credits/credentials is that *professional credits/credentials are 'warrants of competence'* or 'warrant of expertise' whereas academic credits/credentials are not. With professional designations, the certifying body is warranting that the certified worker (tradesperson or professional) has the essential knowledge and skills of a specified domain necessary for safe and appropriate practice of the trade or profession. With academic credits/credentials, there is no such 'warrant of competence,' an academic credential means that someone has successfully completed a particular course of study not that one is competent to practice a trade or profession.

Because professional designations are 'warrants of competence,' it become important for certifying bodies to define specifically what certificants must be competent to do. Professional designations are always built upon a practice analysis which *defines what certified individuals need to know or be able to do.* Academic credits/credentials are rarely based upon formal and systematic practice analyses.

Although some educational institutions may make claims about the competence of their graduates, these are not 'warrants of competence' in any true sense. For one, academic institutions do not assume responsibility of the actions of their graduates. By contrast, professional do have some ongoing responsibility for the behaviour of their members. Professional associations and regulatory bodies are accountable for their certification processes. Professional associations and regulatory bodies must be able to demonstrate that they demonstrated due diligence in their certification process. This does not mean that errors cannot be made, but **professional associations and regulatory bodies must be able to demonstrate that their certification requirements and standards and assessment protocols provide reasonable protection to the public.**

This on-going warrant of competence or expertise, points to another key difference between academic and professional credits/credentials: recertification. Academic credits/credentials are good forever, even when the knowledge and skills are either long-forgotten or made entirely obsolete by the passage of time. By contrast, academic credits/credentials have no expiry date. Many professional designations now require recertification in one form or another. The idea is that certified individuals must maintain the level of competence required for competent practice. With such professional designations, individuals who fail to maintain their knowledge and skills up to standards, or who fail to document their efforts at



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maintaining their knowledge and skills, will lose their certification. In some professions, members are subject to peer review or professional inspections. The idea here is that the professional association or regulatory body goes beyond periodic recertification to ensure that certified individuals maintain their knowledge and skills current.

In addition to educational requirements, however, professional associations and regulatory bodies will require candidates to have some minimum amount of experience. Although some academic programs will include various practica and co-op terms, the experience requirements of professional and trade designations are typically much more extensive than academic programs.

Another difference between professional and academic credits/credentials is that, in any given jurisdiction, there is only one professional association or regulatory body that will issue a given professional credential. Academic credits/credentials, such as B.Comm., B.A., B.Sc., MBA, Ph.D., are granted by a number of different academic institutions each accredited to issue such credits/credentials.

Verifying an individual's claim that they have a professional designation is usually as simple as consulting a public register on line. Indeed, professional registers are, by law, public documents. One does not need any kind of authorization or release to verify a professional credential, and professionals cannot block the publication of such information.

1 - General issues

1.1 - General definition of a credit system

A credit system makes it possible to divide a qualification into units or into partial objectives the objectives of a programme of vocational and educational training. **Each unit** is defined [ECVT05] **in terms of knowledge, skills and competences (KSC)** and can be characterised by the relative level of the learning outcomes involved, which may be defined by a reference level and by its volume which may be expressed in points or other factors. Each unit may or may not^{a)} be awarded separately.

^{a)}Council Resolution of 19 December 2002 on the promotion of enhanced European cooperation in vocational education and training; JO C13,p.2-4, 18.1.2003

1.2 - PRELIMINARY DEFINITIONS

CREDIT POINTS - Credit points are one of the tools which are designed to facilitate the implementation of ECVET at national and European level. They are used by authorities, VET providers, competent bodies and learners to support arrangements for accumulation of recognition for learning outcomes towards a qualification and for transnational mobility. Credit points are allocated to the qualifications and to the units of which a qualification is made up [ECVT05].

Term	Definition/explanation [ECVT11]
Assessment of learning outcomes*	Methods and processes used to establish the extent to which a learner has attained particular knowledge, skills and competence.
Competence**	The proven ability to use knowledge, skills and personal, social and/or methodological abilities in work or study situations and in professional and personal development.
Competent institution*	Institution which is responsible for designing and awarding qualifications or recognising units or other functions linked to ECVET, such as the allocation of ECVET points to qualifications and units, assessment, validation and recognition of learning outcomes under the rules and practices of participating countries.
Credit accumulation	Process through which learners can acquire qualifications progressively by successive assessments of learning outcomes.

Term	Definition/explanation [ECVT11]
Credit for learning outcomes (credit)*	Set of learning outcomes of an individual which have been assessed and which can be accumulated towards a qualification or transferred to other learning programmes or qualifications.[ECVT11] <u>Note [ECVT05]:</u> Credit points are one of the tools which are designed to facilitate the implementation of ECVET at national and European level. They are used by authorities, VET providers, competent bodies and learners to support arrangements for accumulation of recognition for learning outcomes towards a qualification and for transnational mobility. Credit points are allocated to the qualifications and to the units of which a qualification is made up.
Credit transfer	Process through which learning outcomes achieved in one context can be taken into account in another context. Credit transfer is based on the processes of assessment, validation and recognition.
Formal learning***	Is learning that occurs in an organised and structured environment (e.g. in an education or training institution or on the job) and is explicitly designated as learning (in terms of objectives, time or resources). Formal learning is intentional from the learner's point of view. It typically leads to validation and certification.
Knowledge**	The outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that are related to a field of work or study.
Learning outcomes*	Statements of what a learner knows, understands and is able to do on completion of a learning process defined in terms of knowledge, skills and competence.
Learning (education and training) programme***	Inventory of activities, content and/or methods implemented to achieve education or training objectives (acquiring knowledge, skills and/or competences), organised in a logical sequence over a specified period of time.
Memorandum of Understanding	An agreement between competent institutions which sets the framework for credit transfer and accumulation. It formalises the ECVET partnership by stating the mutual acceptance of the status and procedures of competent institutions involved. It also establishes partnerships' procedures for cooperation.
Non-formal and informal learning****	<i>Non-formal learning</i> is not provided by an education or training institution and typically does not lead to certification. However, it is intentional on the part of the learner and has structured objectives, times and support. <i>Informal learning</i> results from daily activities related to work, family life or leisure. It is not structured and usually does not lead to certification. In most cases, it is unintentional on the part of the learner.
Qualification*	Formal outcome of an assessment and validation process which is obtained when a competent institution determines that an individual has achieved learning outcomes to a given standard.
(National) qualifications system**	All aspects of a Member State's activity related to the recognition of learning and other mechanisms that link education and training to the labour market and civil society. This includes the development and implementation of institutional arrangements and processes relating to quality assurance, assessment and the award of qualifications. A national qualifications system may be composed of several subsystems and may include a national qualifications framework.

Term	Definition/explanation [ECVT11]
(National) Qualification Framework**	An instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved, which aims to integrate and coordinate national qualifications subsystems and improve the transparency, access, progression and quality of qualifications in relation to the labour market and civil society.
Recognition of learning outcomes*	The process of attesting officially achieved learning outcomes through the awarding of units or qualifications.
Skills**	The ability to apply knowledge and use know-how to complete tasks and solve problems.
The Personal Transcript	Document containing information on credit (positively assessed learning outcomes) the learner has achieved. It is a record of his/her learning achievements.
Unit of learning outcomes (unit)*	Component of a qualification, consisting of a coherent set of knowledge, skills and competence, which can be assessed and validated.*[ECVT11]. It can be the smallest part of the qualification being evaluated, validated and/or certified.[ECVT05]. A unit can be specific to a single qualification or common to several qualifications.[ECVT05].
Validation of learning outcomes*	The process of confirming that certain assessed learning outcomes achieved by a learner correspond to specific outcomes which may be required for a unit or a qualification.
Vocational education and training provider***	Any organisation or individual providing education or training services. Education and training providers may be organisations specifically set up for this purpose, or they may be other, such as employers, who provide training as a part of their business activities. Training providers also include independent individuals who offer training services.

* Definition adopted as part of the ECVET Recommendation

** Definition adopted as part of the EQF Recommendation

*** Definition extracted from Cedefop (2008) Terminology of European education and training policy. Luxembourg: Office for Official Publications of the European Communities².

**** Definition from the DG EAC web-site on validation of non-formal and informal learning.

1.3 - DEFINITION OF ECVET [ECVT05]

ECVET is a European system of accumulation (capitalisation) and transfer of credits designed for vocational education and training in Europe. It enables the attesting and recording of the learning achievement/learning outcomes of an individual engaged in a learning pathway leading to a qualification, a vocational diploma or certificate.

It enables the documentation, validation and recognition of achieved learning outcomes acquired abroad, in both formal VET or in non-formal contexts. It is centred on the individual, based on the validation and the accumulation of his/her learning outcomes, defined in terms of the knowledge, skills and competences necessary for achieving a qualification.

ECVET is a system designed to operate at the European level, interfacing with national systems and arrangements for credit accumulation and transfer.



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1.4 - TECHNICAL PRINCIPLES OF ECVET

The European system of credit for VET is intended for individuals who, throughout their learning pathway, want to accumulate the benefit of the KSC they gradually acquire to obtain a qualification, a vocational diploma or certificate and/or to transfer their learning achievements between qualifications, between qualifications systems or between countries, in conformity to the national rules for assessment and examination procedures.

Its implementation is based on:

- progressive validation of the learning outcomes: the KSC acquired (in formal, nonformal contexts) are evaluated and validated. They are attested - where possible - by the progressive delivery of units and allocation of credit points for the respective units according to the performance or progress of the individual's learning;
- accumulation (capitalisation) of units and credit points for the units achieved, once allocated, the units and points are definitively acquired by the individuals;
- transfer of the learning outcomes: units and credit points obtained are transferable (for example from one VET provider to another and, where agreed, from one country to another);
- transparency and mutual trust between the partners: the authorities responsible for the qualifications or its implementation and/or the VET providers involved establish memorandum of understanding which sustains trust which is essential for the effective implementation of ECVET.

The technical principles and specifications of the system are defined at the European level. The system is not intended to replace existing national systems for credit accumulation and/or transfer.

The decision to implement ECVET, on a voluntary basis, the conditions for application and the necessary legislative and lawful provisions are taken by each country at the relevant institutional level.

It is a system which may operate in, across and between all countries, whether:

- a national system (or several systems) of accumulation and transfer of credit/units for VET and
- a national qualifications framework or any other equivalent system, are existing or not.

1.5 - ECVET FUNCTIONS

The ECVET system comprises two generic functions, which can operate simultaneously or not:

i) - **accumulation and capitalisation function:**

A credit system makes it possible for any person to accumulate, capitalise, transfer and put forward his/her achieved learning outcomes, to claim for their recognition and validation, throughout the individual learning pathway. For this purpose, recognition for the acquired units throughout the learning pathway which are validated, preserved, cumulated and may be gradually complemented until the qualification (certificate, diploma...) is achieved in conformity with applicable rules and examination procedures in the Member state.

At European level ECVET enables an individual in case of mobility to accumulate his/her learning outcomes achieved abroad.

ii) - **transfer function:**

A credit system makes it possible to establish the comparability and equivalence between learning which may be undertaken in different contexts and at different times. This means for example that training programmes are interchangeable or can replace each other and that validated learning outcomes can exempt a person of whole or part of a training programme and so on.

ECVET enables an individual to carry out learning in various situations and at various times while putting forward his/her achieved learning outcomes by receiving credit, to pass from one training situation to another, where



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agreed, from one system of VET to another (e.g. from a non formal situation of training to a formal one etc), while transferring and keeping the benefit of his/her achieved learning outcomes for accumulation until the qualification (certificate, diploma...) is achieved, especially in the case of transnational mobility.

1.6 - BENEFITS OF CREDIT SYSTEM

By its methodological logic and its requirements and beyond its direct purposes, any system of accumulation and transfer of credit represents a benefit for individual learners, qualification/certification systems, VET systems and providers, sectors and companies. ECVET promotes and facilitates the development of credit systems at the national level while providing for an added value of a system designed to be implemented and to be developed at the European level.

i) - For individuals

A credit system makes it possible for individuals to obtain a vocational diploma or certificate or any award qualification step by step, according to national rules. Thus, individuals (Young learners, adults, job seeker...) can obtain units at the most appropriated rate/rhythm. It improves the accessibility of qualifications and is a factor of motivation and encouragement for individuals to maintain their efforts and to follow and to lead their learning pathway up to the end. It enables them to conceive their individual training project and pathway, and to enrich their professional profile within a lifelong learning perspective.

At the European level, ECVET makes it possible for the individual to fully benefit from periods of transnational mobility.

ii) - For qualification systems

A unit based credit system facilitates the legibility and the comparability of knowledge, skills and competences which characterise qualifications. It thus supports in these respects the authorities, institutions and VET providers responsible for the design and implementation of qualifications, to design, organise and give information about qualifications in the perspective of a better legibility and a greater transparency.

Therefore, a credit system contributes to the improvement of the quality of processes of validation and more especially of validating vocational training. Such a system reinforces the links between the system of qualification and the labour market. It also enables the evaluation and the validation of non-formal learning outcomes.

iii) - For VET providers

The implementation of a credit system leads VET providers to define clear and precise learning objectives and, consequently, support them to design a more attractive and relevant VET supply and provision (programmes, contents, organisation...). It supports the adaptation of VET provision to learners following individualised, tailored and flexible pathway (for example organised in training modules) and innovative programmes.

At the European level, ECVET helps VET providers:

- to communicate about their training supply and provision;
- to co-operate at an international level;
- to manage, to plan and to organise mobility of individual learners;
- to design and to implement the guidance provision for mobile learners.

iv) - For sectors and companies

A credit system makes vocational training supply and provision more transparent for the economic actors (social partners, firms, branches, sectors...) and facilitates partnerships and interaction. It enables firms to select and design training courses and modules which answer to the training needs of their employees. It facilitates matching between the skill and competence needs of sectors and firms and the design of qualifications or VET provision. It may support the development of adult continuing training, at the level of sectors or firms.



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At the European level, ECVET makes vocational training supply and provision in other EU Member States more transparent for employers and companies. It enables them, on the basis of the units and credit points achieved, to understand the learning outcomes obtained in the learning field of other EU Member States.

2 - TECHNICAL PROVISIONS [ECVT05]

2.1 - UNITS

At the technical level, ECVET is based:

- on the division of qualifications into units;
- on the description of the contents of units (expected learning outcomes) in terms of knowledge, skills and competences (KSC).

The definition and the description of learning outcomes in terms of KSC and the organisation of the unit have to be done at national level by the competent body responsible for the relevant qualification and its implementation.

i) - *Characteristics of units*

A unit is characterised by the description of learning outcomes in terms of knowledge, skills and competences of which the unit is made up.

The characteristics of a unit are independent of all specific methods of training or learning approaches.

Units can be characterised according to the KSC associated with a whole qualification. It is possible to identify different types of units, for example: transverse or specific, general or specialised, optional or mandatory etc

Units can be interdependent (for example: ordered, hierarchical, progressive) or independent and autonomous.

In addition, units can be specifically related to a period of mobility, e.g. for skills and competence in foreign languages or intercultural competence.

Units must:

- be legible and understandable;
- be built up and organised in a coherent way;
- allow for evaluation and validation.

ii) - *Three main functions of the units*

- **Information for stakeholders**

A unit carries essential information about the qualification for the individuals as well as for the VET providers, because it presents part of the characteristics of the qualification in terms of knowledge, skills and competences

- **Assessment of learning outcomes**

A unit describes the expected learning outcomes of whole or part of the learning activities, carried out within a module, training programme etc. It specifies the requirements and the criteria of evaluation.

- **Validation of the learning outcomes**

When credit for a unit is allocated to an individual, it expresses in a concrete way the validation of acquired knowledge, skills and competences achieved by the learner. It also shows the progression of the individual in his/her learning pathway.

iii) - *Components of a unit*

A unit is made up of a coherent set of KSC, in relation to a vocational profile and/or future field of professional activity, and that is the subset of the full package of learning outcomes required for a qualification. KSC corresponding to a unit are



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expressed in a standard, a catalogue, a reference frame or any other type of document at national level. A set of common principles regarding qualitative and quantitative aspects of unit development is provided at European level by ECVET.

The formulation and the presentation of units can nevertheless vary according to the methods adopted by the competent body responsible for the qualification. They always give a set of information such as:

- the generic title of the unit,
- the list of KSC concerned,
- the learning outcomes contained in the unit [ECVT09],
- the procedures and criteria for assessment of these learning outcomes,
- the ECVET points associated with the unit,
- the validity in time of the unit, where relevant.

iv) - *Number and size of the units*

The total number of units composing a qualification and the size of each unit are fixed by the competent body responsible for the qualification (or certificate or diploma).

The number and the format of units depend on the level of complexity, proficiency and the diversity of knowledge, skills and competences required for the qualification concerned.

However :

- too great a number of units, atomising the qualification in a multitude of "micro-units", can only lead to loss of legibility of the system, and
 - too small a number of units can inhibit the accumulation of learning outcomes.
- So, it is possible to join units in sets of units or to divide units into sub-units.

v) - *Evaluation and validation of the learning outcomes*

Units are validated following the evaluation of the learning outcomes (on the basis of expected achievement of knowledge, skills and competence). The results of evaluation must be in conformity with the requirements of the qualification pursued by the individual, in accordance with the rules and agreed national provisions for the validation of learning outcomes.

According to the national legal and technical provisions, each unit, sub-unit or set of units may be assessed, validated and certified individually.

In the case of mobility, these rules and provisions are specifically mentioned in the memorandum of understanding agreed between the relevant authorities, institutions or VET providers.

vi) - *Accumulation (Capitalisation) of credit for units*

As units are achieved by individuals, credit for the units achieved is recorded, held and capitalised and accumulated towards the award of the relevant qualification.

Provisions are specified to establish the period of validity of awarded units which a person can use credit allocated to contribute to the requirements for a whole (where possible) or partial qualification. These provisions are determined by the competent body responsible for the qualification or its implementation.

Transferring credit for units enables the learner to keep the benefit of credit allocated for the achievement of units (after assessment of learning outcomes achieved in formal, non formal or informal context) while changing his/her learning pathway, his/her vocational specialisation in accordance with the rules provisions of the national system.

The transfer of credit for units can occur when individual learning pathways comprise periods of mobility, within or between different VET systems. The units for which credit is transferred are expressed in the "memorandum of understanding".



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vii) - *Units and formal VET provision*

A VET provider may design training programmes and studies corresponding to KSC required for a whole qualification and for each unit. For this purpose, a VET provider may take into account all of the relevant parameters such as content (or programme), pre-attainment, prior requirement, duration, rate/rhythm, alternation, individual workload envisaged...

The learning outcomes of a learner in non-formal learning can be compared with the expected outcomes (KSC) of a unit of a certain qualification in formal learning and so the KSC achieved in non-formal learning can be accepted for allocation of credit.

Thus, the course and studies can be organised in modules and, if necessary, be individualised.

2.2 - CREDIT POINTS (CREDITS)

The competent bodies, at relevant institutional level (at national level and, if appropriate, at international level) fix the number of credit points to be allocated to a qualification and to units.

The national qualification framework can include rules about credits.

Supplementary information can be provided about the volume of the learning activities associated with one or more typical learning pathways leading to the concerned qualification.

3 - IMPLEMENTATION OF ECVET IN ELEVET PROJECT

3.1 - Establishment of partnerships

The Partners are institutes/organizations/companies from five countries (Denmark, Italy, Poland, Romania and Spain). The partnership is based on earlier connections between the partners.

3.2 - Partners in ELEVET project

3.2.1 - Stowarzyszenie Elektryków Polskich (SEP) - Poland

The **Association of Polish Electrical Engineers (SEP)** is the largest Polish creative organization of a scientific and technical kind uniting electrical engineers of all specialties and people whose professional activity is connected with vastly understood electrical engineering from electronics to power engineering.

Since 1919 the Association has been continuously:

- inspiring Polish scientific activity along with the world scientific developments in the electricity domain;
- organizing international, local and regional conferences, symposia and meetings concerning problems of the electrical field, contests and exhibitions, outgoing economic missions to the international fairs;
- taking part in the establishment of standards and technical regulations;
- carrying out quality tests;
- taking care of students and young professionals by influencing the scope and the content of educational programs in the field of electrical engineering and funding scientific scholarships;
- taking care of upgrading the qualifications, technical culture and professional ethics in the electrical domain;
- publishing many professional magazines concerning problems of different electricity domains.

SEP has a specialized financial division headed by major accountant, which employs three full time persons. Direct supervision under funds is exercised by Vice-President-Treasurer of the SEP and by Secretary-General of SEP. Secretary General also manages the expenditures of SEP. An external inspection is performed annually. For the project SEP will also contract an independent auditor that will control the expenditures during the project and will certify the final financial report.



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SEP is member of:

- FISUEL: International Federation for the Safety of Electricity Users;
- EUREL: The Convention of National Societies of Electrical Engineers of Europe.

Web-site: <http://www.sep.org.pl/>

3.2.2 - Polska Izba Gospodarcza Elektrotechniki (PIGE) - Poland

Polish Economic Chamber of Electrotechnics is an organization of self-government and represents the following sectors of Polish industry and trade:

- manufacturers of cable and cable terminals;
- manufacturers of tools for electrotechnics;
- manufacturers of wiring accessories;
- manufacturers of electric motors and transformers;
- manufacturers of trays and protective pipes for cables;
- manufacturers of installation equipment, lightning protection system equipment and tools for electricians;
- manufacturers of luminaires and light sources;
- manufacturers of electrical apparatus;
- wholesalers and distributors of electrical equipment;
- electrical installation companies.

The Board supports the establishment of contacts between members, and domestic and foreign partners.

The Board is one of the National Chamber of Commerce and the organization Orgalime Brussels.

Web-site: <http://www.elektrotechnika.org.pl/>

3.2.3 - Societatea Inginerilor Energeticieni din Romania (SIER), Romania

SIER (Society of Power Engineers in Romania) is the national organisation representing power engineers in Romania. As such SIER as a mission of promoting innovation, safety, training and any other matter related to the profession. Main key activities are:

- Organization of conferences, symposiums, seminars, exhibitions, round tables, etc;
- Facilitation of exchanges of information and specialists with similar Romanian and foreign organizations;
- Facilitation of meetings between Romanian and foreign companies for the promotion of the products, equipment and services provided by companies operating in the power domain;
- Supporting the development of technical and scientific research;
- Providing consulting studies and analyses, technical assistance, training courses, expertise, norms and standards elaboration, on contract or convention basis.

SIE is member of EUREL (The Convention of National Societies of Electrical Engineers of Europe).

Web-site: <http://www.sier.ro/>

3.2.4 - Consorzio ELIS, Italy

CONSEL - ELIS Consortium for Secondary Professional Training - non profit entity for secondary vocational training - was constituted in 1992, following an ELIS initiative, in order to develop a long-term relationship with a variety of highly qualified companies.



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Today it is a consortium of more than 30 large companies (example: Poste Italiane, Autostrade per l'Italia, Enel, Fastweb, Telecom, Trenitalia, Vodafone, Eni, IBM, Ericsson, Nokia Siemens, etc) and 12 small and medium enterprises.

The main aim of CONSEL is to efficiently promote the encounter between work supply and demand. It promotes a greater integration between school, university and companies, proposing training in excellence courses oriented towards the acquisition of professional skills, while taking into account real occupational requirements.

Consel develops vocational training projects to improve people skills, support companies in pursuing their business strategy and better society, turning competition into competition.

CONSEL activities can be divided as follows: Social projects, HR Programs, Business Projects, I.C.T. trainings, Maintenance, Safety & Logistics training, Cisco Networking Academy.

Through business projects CONSEL specializes in research, selection and staff training namely in technological fields (I.C.T.).

Web-site: <http://www.elis.org/consel>

3.2.5 - SDE, Denmark

SDE is one of the largest technical colleges in Denmark. The college has 5,000 FTE students and the number of staff is about 830. The college consists of a vocational school, a senior high school and an academy of higher education. The vocational school covers nine branches (production, ICT, transport, logistics, construction, media, health, service and service industry).

The students of the VET school have a diverse cultural and educational background due to an allocation of different nationalities, ethnic minorities, different cultures in the area.

SDE has done a lot in order to integrate students with different backgrounds into vocational education e.g. mentor arrangements, flexible training models, cooperation with other schools, parents, enterprises and social partners. Further, the college has carried out comprehensive competence development of teachers and managers.

Since 1992, the college has participated in a large number of national and international projects as partner and in many cases as coordinator.

SDE has an international department, which is responsible for running the economical management of projects. In the proposed project the department manager Ole Bech Kristensen will provide a periodical financial report to the project manager and will check documentation and eligibility of occurred costs. The department will set up a dedicated project account system within the SDE administration so that all SDE expenditures can easily be retrieved, documented, and monitored.

Web-site: <http://www.sde.dk/>

3.2.6 - Confederación Española de Centros de Enseñanza (CECE), Spain

The Spanish Confederation of Education and Training Centres (CECE) is a non-profit employers' and professional organization founded in 1977. It represents a wide educational sector in Spain from nursery school to university level. It has more than 5.000 Education and Training Centres among its members.

CECE institutional roles are: the management of updating for educational agreements; the negotiation of the collective agreements for this sector; the representation of this sector in the collegiate boards with educational participation; institutional presence in the Spanish Employers Organisation (CEOE) and in some international organisations in which it takes an active role as well as the relationship and contacts with Education Public Authorities. CECE is member of the international organisations: EFVET (European Forum for Technical and Vocational Education and Training), ESHA (European School Headmaster Association) and ECNAIS (European Council of National Associations of Independent Schools).



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CECE gives support to his members in 5 areas: (1) organization of LLL courses for teachers; (2) implementation of technological innovation in its members; (3) internationalization of the members; (4) assistance in the implementation of the EFQM Excellence Model in its member institutions; (5) legal consultancy for the member institutions.

CECE's educational profile has widened with the constitution of its Foundation (Fundación Ángel Martínez Fuertes) in 1996 that centres its activities on social inclusion through training of unemployed persons, persons over 45, women, disabled persons, immigrants.

Web-site: www.cece.es

3.3 - Preparation of Partnership Agreement (Memorandum of Understanding)

The aim of ELEVET project was to develop:

- VET framework for electrical engineers;
- **50 units** for vocational education and training of electrical engineers; several of them - because their specific do not impose any preliminary knowledge, their topic being general ones, applicable to any kind of engineers/students - could also be applicable to electricians, because of that for each unit it will clearly specified what kind of studies and preliminary knowledge are imposed for admittance to attend to the unit under debate.

These units or only several of them can be accepted by partners and can be transferred from one country to another, in case they meet the real needs of labour market from the destination/partner country and it is allowed by the national legislation.

- Subsequently, based on the further experience gained, the **76 units** (courses) list (see Annex 1) will be updated/extended by the European ELEVET Certification Board at the proposal of Country Certification Partners.

A unit is a set of knowledge, skills and competence and it constitutes a part of a qualification. The unit can be the smallest part of a qualification that can be assessed, validated and certified. A unit can be specific to a single qualification or common to several qualifications. The unit should give information about the title, the knowledge, skills and competence which are contained in it. The unit also needs to have criteria for assessment of the corresponding learning outcomes.

The partners will prepare **56 units** with learning outcomes (units with curricula), from a total of **76 units** identified by the consortium - **the units are listed into Annex 1-Table 1.**

The selection of the **76 units** was based on:

- Best practices of partner countries,
- Report on consultation in Denmark, Italy, Poland and Romania;
- National Focus Group Reports from Denmark, Italy, Poland, Romania and Spain;
- National Feedbacks to "First Draft of VET FRAMEWORK and credit transfer" - ver.12.

The **56 units** with learning outcomes and assessment forms will be attached into Partner Agreement, (MoU).

After finalizing learning outcomes partners were able to make partnership agreement.

The preparation of Partnership Agreement with Unit is the most important stage of the implementation of ECVET to create transparency and mutual trust among partners and to secure that project can be implemented properly.

After intensive working sessions the partners agreed that the **ELEVET - VET Framework** is consisting in:

- a. **System name: ELEVET** (Electrical Engineers Continuous Vocational Education and Training) - Pan-European Vocational Education and Training System for Electrical Engineers.

- b. **Legislative framework of defining ELECVET System:**
- **European Credit System for Vocational Education and Training - ECVET.**
 - National legislation in countries that adopt **ELECVET System.**
- c. **Management and coordination of ELECVET System:**
- **European ELECVET Certification Board**, based on a *Memorandum of Understanding*.
 - **Country Certification Partners** (It will also be responsible to establish the minimal amount of the Examination Board members).
 - **Accredited VET Centres by the Country Certification Partner.**
- d. **Content of ELECVET System:**
- Initially, it will be a minimum of **76** units (courses), as defined in the **ELEVET Project**.
 - Subsequently, the number of units (courses) within **ELECVET System** will be established by **European ELECVET Certification Board** at the proposal of **Country Certification Partners**.
 - Training and certification of specialists in the field of knowledge, skills or competences will be similar for all involved/beneficiary countries of the **ELECVET System**.
- e. **Financing of ELECVET System:**
- **ELECVET System** is financial self-supporting by preparation (training) / certification fees and, eventually by sponsorships.
- f. **Characteristics of a Unit (= course):**
- Units (= *courses*) can have a various number of sub-units (= *modules*) depending on the subject matter, and a *Test/Exam for obtaining the Course Graduation Certificate*.
 - There are four **complexity levels** for each learning outcome/competence: **beginner, routine, advanced** and **experts** with the respective weights of **1, 2, 3** and **4** (see example from Chap.3.4).
 - The ELECVET ECVET credits will be in accordance with Chap.3.4.- *Methodology proposed for ELEVET - VET Framework (ELECVET System)*.
 - Curriculum, number of modules and Test/Exam for obtaining the Course Graduation Certificate for a course will be the same in all countries and will be approved by **European ELECVET Certification Board**. Depending on the characteristics and needs of a country, the curriculum can be supplemented with the approval of **Country Certification Partner**.
 - Each sub-unit (module) is recommended to be carried over two days (recommended: starting Friday at 14:00 up to Saturday 14:00), as 8 - 10 hours teaching and 2 hours for questions and discussions.
 - The module is divided into theoretical and practical sections (6-10 sections/module over 1-2 hours / section).
 - Each student will receive at the beginning of the module, a folder containing:
 - module program;
 - module curriculum;
 - lecturer notes prepared by lecturers;
 - other technical documents (copies of articles/papers from specialty literature, leaflets etc.);
 - user/student satisfaction questionnaire (which will be filled and submitted at the end of the module); it is provided as Annex 3.
 - Every day coffee breaks are provided, every 2 to 2.5 hours.
 - Teaching methods are summarized in three main categories:
 - knowledge transfer (lessons) - topics exposure by the lecturer with the help of slides and presentation of practical cases;
 - deepening/learning verification (discussions and questions) - by general discussion stimulated by the lecturer (also during the lesson) to verify knowledge transfer; the number of questions is minimum 100 - 150/module and this minimum will be common for all countries for assuring the same basic knowledge; all these questions (generated by all modules that compose the Course) will be the "Common Questions Data Base" for selecting the questions for the Test/Exam for obtaining the Course Graduation Certificate.
 - practical activities.
 - At the end of each section, lecturers perform a knowledge test to verify knowledge transfer.

- At the end of each module it is performed a survey regarding to student satisfaction that will help the lecturers and course organizers to monitor the quality of the module/course.
 - At the end of each module each student will receive a "Certificate of Attendance" at that module.
 - "Certificate of Attendance" is issued, registered, signed and stamped onsite, by the **VET Centre** that organizing the course under debate.
 - The length of time between 2 modules: recommended to be at least 2 weeks to enable students to deepen knowledge taught.
 - Two questionnaires have been prepared in order to check the usefulness of the course to its participants. The first questionnaire is destined to be filled before the class and the second one after the class. These questionnaires are provided as Annex 2 and 4.
- g. **The Test for obtaining the Course Graduation Certificate** is held once a year and contains 99 questions (with four possible answers of which only one is correct) with topics from all modules included in the Course Program. It is given 1 point for each correct answer. The Correction of the Graduation Test starts from 1 point. The maximum score you can get is 100 points. To complete the Graduation Test are allocated minimum 90 minutes.
- The Test is considered passed if the total score obtained by the candidate is at least 75 % of the maximum score that can get to this Graduation Test/Exam. The pass grades of the Graduation Test/Exam are:
 - A (if the score is above 90 points);
 - B (if the score is above 85 points up to 90);
 - C (if the score is equal or more then 75 up to 85).
 - Certificates of graduation are issued and registered by the *European ELECVET Certification Board* or by the *Country Certification Partner*.
 - Certificates of graduation will be signed jointly by the *European ELECVET Certification Board*, the *Country Certification Partner*, the **VET Centre** that organize the course under debate and, eventually, by a national body that governs/regulates and verifies the organization and implementation of the ECVET System (for example the VET / ECVET Regulator Authority or National Qualifications Authority) . The Certificate will be accompanied by a descriptive Annex that will specify the list of learning outcomes/competences and the number of ELECVET credit points.

General remarks:

i)- Because, now days occurred a lot of situations when the declared knowledge/skills/competence specified into certificates are not confirmed by reality, the accreditation framework of VET Centres addressed to electrical engineers has to contain enough elements to guarantee that also in fact, not only formally, that the VET Centres have the best qualified personal - recognized both by end beneficiaries and companies (e.g. Companies Recommendations, CVs, positive feedback received from a representative number of "Satisfactory Questionnaires", Professional Association Recommendations on the competences subject of respective vocational training and education).

Now days, Training Courses on the same competence are not unified into a manners that all VET Centres to offer a high level of professionalism on respective competence. This aspect lead to a market of Training Courses which is conquered by the chipper ones, being detrimental to the end beneficiary that does not know what kind of knowledge sets must require regarding to the content of a specialization course.

ii)- The regulatory framework and legislation, in each partner country, on the continued vocational/professional training of electrical engineers must be modified in the sense of assuring a vocational/professional training of electrical engineers (knowledge, skills and competences) in accordance with the real needs of labour market which that is constantly evolving and changing, both in terms of requirements, change speed and available resources (human, economic and material) and allowing the development of a VET/ECVET System based on highest professional foundation in the each competence under debate.

3.4 - Methodology proposed for ELEVET - VET Framework (ELECVET System)

When looking at the integration of ECVET and ECTS it is relevant to look into different parts of the education system i.e. initial vocational education and training, continuing training and higher education. Due to the nature and the target groups

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of this project, it is relevant to focus on the continuing training area, since we speak about retraining, upgrading and addition training of professionals (subsequently named as continuing training), who are already educated as electrical engineers and electricians. (Different notions are used due to national differences in perception in the participating countries of the project).

Based on [SDE13], methodology proposed for calculation of the number of **ECVET credit points**, as part of ELEVET System consists in:

- Using of the matrix with a double entry table, which enables to better describe, by detailing the learning outcomes and the learning activities.

	LEARNING OUTCOMES/COMPETENCES	LEARNING ACTIVITIES for "....."						ELEVET - ECVET Credit Points
		L ₁	L ₂	L ₃	L ₄	...	L _n	
SUB-UNITS OF LEARNING OUTCOMES/COMPETENCES	Sub-Unit 1/Module 1							
	LO1							
	LO2							
	LO3							
	Sub-Unit 2/Module 2							
	LO4							
	LO5							
	LO6							
	Sub-Unit 3/Module 3							
	LO7							
	LO8							
	LO9							
	Sub-Unit 4/Module 4							
LO10								
LO11								
LO12								
Sub-Unit "n"/Module "n"								
ELEVET - ECTS credit points								

- 10 hours of learning activities** to be allocated **2 (two) ELEVET- ECVET credit points**

This value was proposed by SIER and was selected taking into account that it was agreed by the ANC (RO: Autoritatea Națională pentru Calificări /EN: National Qualifications Authority) representative that attended at National Focus Group - Romania **and already assumed by all ELEVET Partners, since March 2013**, due to the nature and the target groups of ELEVET project, who are already educated as electrical engineers and not only. In the **peculiar case of ELEVET - VET Framework, due to the nature and the target groups of this project**, it is relevant to focus on the continuing training area, since we speak about retraining, upgrading and addition training of professionals (subsequently named as continuing training), **who are already educated as electrical engineers and not only**. (Different notions are used due to national differences in perception in the participating countries of the project).

- The total value of the ECVET credit points will be distributed on the learning outcomes/competences similar with example given into chapter 3.4, based on a weighted distribution in accordance with number of hours/minutes allocated, respective of the level (*beginner, routine, advanced* and *experts* with the respective weights of 1, 2, 3 and 4) associated at each learning outcome/competence.

- For a better understanding, based on [SDE13] and "First Draft of VET FRAMEWORK and credit transfer" (version from 2 September 2013), below is given an example based on Unit No.57: *Power Quality* (for details see Annex 1 and Curricula from *Handbook for trainers*). This overall learning outcome "*Power Quality*" is broken down into a number of 10 (ten) Sub-Units of learning outcomes, named Modules organised as shown in the table below.

The algorithm used inside of the below table is described after the table.

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	LEARNING OUTCOMES/COMPETENCES	LEARNING ACTIVITIES for "Power Quality"										ELENET-ECVET Credit Points	
		L1 (Module 1): Introduction to Power Quality. Voltage dips and short interruptions.	L2 (Module 2): Harmonics and interharmonics.	L3 (Module 3): Voltage fluctuations (flicker).	L4 (Module 4): Overvoltages and Transients.	L5 (Module 5): Reliability of electricity supply	L6 (Module 6): Earthing	L7 (Module 7): The influence of static converters on the supply network	L8 (Module 8): Compensation of reactive power. Voltage and current unbalance	L9 (Module 9): Distributed Energy Sources and Power Quality. Energy storage systems	L10 (Module 10): Utility Package (Aspects of power quality relating to the consumers. Frequency and Voltage Variations and Control. Quality of Supply in the Electricity Market. DSM. Contracts, tariffs and power quality. Rational use of energy.)		
UNITS OF LEARNING OUTCOMES/COMPETENCES	Sub-Unit /Module 1: Introduction to Power Quality. Voltage dips and short interruptions. (Total per Module: 615 min = 10 hours and 15 min)											<i>m_i</i> = 2.05	
	LO1: Identification of the disturbance nature (120 min, advanced level)	x											0.35
	LO2: Disturbance source identification (120 min, advanced level)	x											0.35
	LO3: Disturbance assessment by means of measuring (120 min, advanced level)	x											0.35
	LO4: Evaluation of technical and economic effects of disturbance (120 min, expert level)	x											0.47
	LO5: Proposing remedial measures (90 min, expert level)	x											0.35
	LO6: Formulation of contract provisions between the supplier and consumer of electric power on the basis of the existing standards and regulations (45 min, expert level)	x											0.18

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	LEARNING OUTCOMES/ COMPETENCES	LEARNING ACTIVITIES for "Power Quality"									ELECVET-ECVET Credit Points	
Sub-Unit /Module 2: Harmonics and interharmonics. (Total per Module: 570 min = 8 hours and 30 min)											<i>m₂</i> = 1.90	
	LO1: Identification of the distortion nature <i>(120 min, advanced level)</i>			x								0.35
	LO2: Distortion source identification <i>(120 min, advanced level)</i>			x								0.35
	LO3: Disturbance assessment by means of measuring <i>(105 min, advanced level)</i>			x								0.31
	LO4: Evaluation of technical and economic effects of disturbance <i>(60 min, expert level)</i>			x								0.24
	LO5: Proposing remedial measures <i>(120 min, expert level)</i>			x								0.47
	LO6: Formulation of contractual clauses between the supplier and consumer of electric power on the basis of the existing standards and regulations <i>(45 min, expert level)</i>			x								0.18
Sub-Unit /Module 3: Voltage fluctuations (flicker). (Total per Module: 520 min = 8 hours and 40 min)											<i>m₃</i> = 1.73	
	LO1: Identification of nature and source of voltage fluctuations <i>(180 min, advanced level)</i>			x								0.52
	LO2: Disturbance assessment by means of measuring <i>(120 min, advanced level)</i>			x								0.35

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LEARNING OUTCOMES/COMPETENCES	LEARNING ACTIVITIES for "Power Quality"										ELEVET-ECVET Credit Points	
LO3: Evaluation of technical and economic effects of disturbance (95 min, expert level)				x								0.37
LO4: Proposing remedial measures (80 min, expert level)				x								0.31
LO5: Formulation of contractual clauses between the supplier and consumer of electric power on the basis of the existing standards and regulations. (45 min, expert level)				x								0.18
Sub-Unit /Module 4: Overvoltages and Transients. (Total per Module: 585 min = 9 hours and 45 min)											<i>m₄</i> = 1.95	
- LO1 – Basic aspects related to overvoltages – definitions, origin, standards, related problems (135 min, advanced level)					x							0.45
- LO2 – Insulation coordination (150 min, advanced level)					x							0.50
- LO3 – Risk and risk management (45 min, advanced level)					x							0.15
- LO4 – Protection measures selection (130 min, advanced level)					x							0.43
- LO5 – Protection measures installation (125 min, advanced level)					x							0.42
Sub-Unit /Module 5 - Reliability of electricity supply (Total per Module: 555 min = 9 hours and 15 min)											<i>m₅</i> = 1.85	
LO1: He/She has retained	x									x		1.85

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	LEARNING OUTCOMES/ COMPETENCES	LEARNING ACTIVITIES for "Power Quality"										ELEVET-ECVET Credit Points
	basic aspects relating to the concepts of continuity and reliability in electricity supply, along with information and practical tools on grids schemes allowing them to choose the power supply schemes and the emergency and backup sources. (555 min, advanced level)											
Sub-Unit /Module 6 – Earthing (Total per Module: 520 min = 8 hours and 40 min)											<i>m₆</i> = 1.73	
	LO1: He/She has learned the basic aspects related to earthing systems/installations (definitions, standards, related problems, ground resistivity, earthing electrodes and earthing conductors) along with some practical information on earthing system design methods and on apparatus for measuring parameters of the earthing system/installations. (520 min, advanced level)						x					1.73
Sub-Unit /Module 7 - The influence of static converters on the supply network (Total per Module: 555 min = 9 hours and 15 min)											<i>m₇</i> = 1.85	
	LO1: Analysing of converter influence on supply network (185 min, advanced level)							x				0.5045
	LO2: Technical and economic evaluation of							x				0.6727

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	LEARNING OUTCOMES/COMPETENCES	LEARNING ACTIVITIES for "Power Quality"										ELEVET-ECVET Credit Points
	remedial measures (185 min, expert level)											
	LO3: Application of power electronic equipment in transmission and distribution systems (185 min, expert level)							x				0.6727
Sub-Unit /Module 8 - Compensation of reactive power. Voltage and current unbalance (Total per Module: 555 min = 9 hours and 15 min)												<i>m₈</i> = 1.85
	LO1: Sizing of capacitor banks used for power factor correction, control / stabilization of voltage level, phases balancing (95 min, advanced level)								x			0.30
	LO2: Has knowledge regarding the means of elimination of the overvoltages and overcurrents during switching processes of capacitors banks (95 min, advanced level)								x			0.30
	LO3: Sizing passive harmonic filters (95 min, advanced level)								x			0.30
	LO4: Proposing other schemes/systems for compensation of reactive power (95 min, expert level)								x			0.40
	LO5: Evaluation and measurement of unbalances (95 min, advanced level)								x			0.30
	LO6: Has knowledge regarding to balancing								x			0.25

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LEARNING OUTCOMES/COMPETENCES	LEARNING ACTIVITIES for "Power Quality"										ELEVET-ECVET Credit Points	
principles and methods (80 min, advanced level)												
Sub-Unit /Module 9 - Distributed Energy Sources and Power Quality. Energy storage systems (Total per Module: 525 min = 8 hours and 45 min)											<i>m₉</i> = 1.75	
LO1: Has knowledge regarding to DG, DER, RES (135 min, expert level)										x		0.45000
LO2: Has knowledge regarding to National and International Standards on the integration of Distributed Energy Sources/ DER into electric power systems (130 min, expert level)										x		0.43333
LO3: Has knowledge regarding to Distributed Energy Sources integration into the electricity distribution grid/system (130 min, expert level)										x		0.43333
LO4: Has knowledge regarding to energy storage systems. (130 min, expert level)										x		0.43333
Sub-Unit /Module 10 - Utility Package (Total per Module: 630 min = 10 hours and 30 min) (Aspects of power quality relating to the consumers. Frequency and Voltage Variations and Control. Quality of Supply in the Electricity Market. DSM. Contracts, tariffs and power quality. Rational use of energy.)											<i>m₁₀</i> = 2.10	
LO1: Has knowledge regarding to utilities power quality, frequency and voltage variations and control; (130 min, expert level)											x	0.43333
LO2: Has knowledge regarding to quality of supply in the electricity market;											x	0.41667

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	LEARNING OUTCOMES/COMPETENCES	LEARNING ACTIVITIES for "Power Quality"										ELEVET-ECVET Credit Points	
	(125 min, expert level) LO3: Has knowledge regarding to demand-side management;											x	0.41667
	(125 min, expert level) LO4: Has knowledge regarding to contracts for electricity supply, tariffs and power quality;											x	0.41667
	(125 min, expert level) LO5: Has knowledge regarding to rational use of energy (RUE).											x	0.41667
ELEVET-ECTS credit points		2.05	1.90	1.73	1.95	1.85	1.73	1.85	1.85	1.75	2.10	M_{Unit No.57} = 18.76/18.76	

The algorithm used inside of the above table:

In terms of ELEVET - ECVET credit points are allocated based on the scope and duration of the learning activity.

Each of the learning activities (see the above table head) has duration of "n_i" minutes (study load), for i = 1 to N (N is number of learning activities/Sub-units/Modules that constitutes the Unit/Course under discussion; in the above example N=10 learning activities/Sub-units/Modules) and has allocated:

$$"n_i" \text{ minutes} \times 2 \text{ credits}/(10 \text{ hours} \times 60 \text{ minutes}) = "m_i" \text{ ELEVET - ECVET credit points.}$$

When allocating ELEVET - ECVET credit points, the starting point is, that the amounts of ELEVET - ECTS and ELEVET - ECVET in total are the same i.e. m_i.

The total number of credit points for the Unit/Course under discussion is M as is calculate as follows:

$$M_{\text{Unit No.}...} = m_1 + m_2 \dots m_N.$$

When allocating ELEVET - ECVET credit points, the relative importance for the labour market for progression to other qualifications levels has to be taken into consideration together with the complexity level, scope and volume of the learning outcome and the learner's workload.

There are four complexity levels for each learning outcome/competence: *beginner*, *routine*, *advanced* and *experts* with the respective weights of 1, 2, 3 and 4.



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When allocating ELEVET - ECVET credit points between the learning outcomes/competences pertaining to a Sub-Unit/Module ($LO_{m_i}(x)$), it will be used the following formula:

$$LO_{m_i}(x) = \frac{\text{level of } LO_{m_i}(x) \bullet \text{time of } LO_{m_i}(x) \bullet m_i}{\text{level of } LO_{m_i}(1) \bullet \text{time of } LO_{m_i}(1) + \text{level of } LO_{m_i}(2) \bullet \text{time of } LO_{m_i}(2) + \dots + \text{level of } LO_{m_i}(q) \bullet \text{time of } LO_{m_i}(q)}$$

$x=1$ up to q , where q is the number of learning outcomes/competences pertaining to Sub-Unit/Module LO_{m_i} ($q=6$ for Sub-Unit/Module 1, and $q=1$ for Sub-Unit/Module 5).



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4 - TESTING AND PILOTING

There were done during WP 5 - Operational Testing, in Poland, Italy and Romania.

5 - EVALUATION

It was done during WP 5 - Operational Testing, based on the feedback from the students, lecturer/teachers and partner countries.

6 - REFERENCES

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ANNEXES

- Annex 1 - List of ELEVET units for vocational education and training of electrical engineers (29 pages)**
- Annex 2 - Questionnaire no. 1 for the ELEVET target groups, to be completed before the training course (2 pages)**
- Annex 3 - User Satisfaction Questionnaire (3 pages)**
- Annex 4 - Questionnaire no. 3 for the ELEVET target groups, to be completed after the training course (3 pages)**

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- 2) Sharing knowledge and experience,
- 3) Building relationship with other people,
- 4) Communicativeness,
- 5) Customer –oriented approach – professional service of internal and external customer.

2.3. Personal soft skills (Table 10):

- 1) Conscientiousness,
- 2) Aiming of results,
- 3) Readiness to learn,
- 4) Solving problems,
- 5) Creativity and assertiveness.

Table 1 concludes the List of ELEVET units for vocational education and training of electrical engineer.

Table 1-List of ELEVET units for vocational education and training of electrical engineer

Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
1.	Assigning tasks (managerial - soft skill)	Table 8/item 3	Assigning tasks (CECE)	1 <u>Section 1.</u> Management basis <u>Section 2.</u> Available resources <u>Section 3.</u> Assigning tasks (1 day: 9 hours)	Yes (Graduation Session)	- Learners - Employers - Managers - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
2.	Strategic thinking (managerial - soft skill)	Table 8/item 7	Strategic thinking (CECE)	3 <u>M1.</u> Theory of strategic thinking <u>M2.</u> Available resources <u>M3.</u> Strategic Thinking (3 days: 24 hours)	Yes (Graduation Session)	- Learners - Professionals /managers (junior and senior) - Business staff - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
3.	Planning (managerial - soft skill)	Table 8/item 9	Planning (CECE)	1 <u>Section 1.</u> Management basis <u>Section 2.</u> Available resources <u>Section 3.</u> Planning (1 day: 8 hours)	Yes (Graduation Session)	- Middle and line managers and professionals responsible for setting and achieving business goals. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or	

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
21.	Ability to negotiate and make decisions (business skill)	Table 4/item 4	Techniques of Negotiation and Communication in Business (SIER)	1 (2 days: 11 hours)	Yes (Graduation Session)	- Heads of business units, management team, heads of departments, persons involved in the negotiations, the staff of the commercial departments, union leaders, staff from the departments of human resources, engineers, economists. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	- The text is a little bit different from the original version ("Ability to negotiate and make decisions") from ELEVET-Questionnaire (WP3), but in this form is more concretely and it is a course already performed in Romania, by VET "Perfect Service"
22.	Ability to negotiate and make decisions (business skill)	Table 4/item 4	Techniques and Strategies of Negotiation (SIER)	2 <u>M1.</u> Techniques and Strategies of Negotiation – Part I <u>M2.</u> Techniques and Strategies of Negotiation – Part II (2 days: 16 hours)	Yes (Graduation Session)	- Business people - Managers - Staff with attributions in commercial field - Staff responsible for managing of human resources - Representatives of trade unions or employers - Politicians - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	- The text is a little bit different from the original version ("Ability to negotiate and make decisions") from ELEVET-Questionnaire (WP3), but in this form is more concretely and it is a course already performed in Romania, by VET "Perfect Service"
23.	Ability to independently plan and self-education process to inspire and organize the learning process of others (business skill)	Table 4/item 5	Independently plan and self-education process to inspire and organize the learning process of others		Yes (Graduation Session)	- Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
24.	Ability to develop and implement the panel's work schedule, subject to certain priorities (business skill)	Table 4/item 6	Ability to develop and implement the panel's work schedule, subject to certain priorities (CECE)	1 <u>Section 1.</u> How to implement the panel's work <u>Section 2.</u> Available resources <u>Section 3.</u> Implement the panel's work	Yes (Graduation Session)	- All the staff involved in the business, learners and managers. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
	management team (business skill)		team			that have the knowledge necessary to take part in this course, employed or unemployed	
30.	The effectiveness of the management team (business skill)	Table 7/item 3	Performance Management (SIER)	1 (2 days: 12 hours)	Yes (Graduation Session)	- Heads of business units, management team, heads of departments, specialists in human resources - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	- The text is a little bit different from the original version ("The effectiveness of the management team ") from ELEVET- Questionnaire (WP3), but in this form is more concretely and it is a course already performed in Romania, by VET "Perfect Service"
31.	Creativity and innovation in business (business skill)	Table 7/item 4	Creativity and innovation (CONSEL)	3 <u>M1.</u> Creativity <u>M2.</u> The development of innovation in business <u>M3.</u> Management models to ensure innovation in the enterprise (3 days: 24 hours)	Yes (Graduation Session)	- All company employees as individuals who share the same working environment and therefore interested to consolidate or develop their skills with a view to organizational growth and professional. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
32.	Management of the project (business skill)	Table 7/item 6	Project / Program Manager (SIER)	4 <u>M1.</u> Strategies, objectives and tactics for project management <u>M2.</u> Develop the project activities to use efficient all the resources (human, financial, material, information). <u>M3.</u> Team structure of project: manage and motivate team <u>M4.</u> Project quality and risk management (8 days: 32 hours)	Yes (Graduation Session)	specialists with technical / economic / legal higher education, executives, project team members, managers / heads of departments involved in development of projects (including projects with European funding), interested in project management and certification as Project/Program Manager - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	- The text is a little bit different from the original version ("Management of the project") from ELEVET- Questionnaire (WP3), but in this form is more concretely and it is a course already performed in Romania, by VET "Formenerg"
33.	Management of	Table 7/item 6	Investments Management	4 M1.	Yes (Graduation Session)	- Engineers, lawyers, economists, people	- The text is a little bit different from the

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
	the project (business skill)		(SIER)	Investment process <u>M2.</u> Efficiency of investments. <u>M3.</u> Investments financial decisions <u>M4.</u> Cost benefit analysis of investment projects (8 days: 32 hours)	Session)	responsible with investment activities and operational monitoring of fixed assets and building yard engineers/ inspectors. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	original version ("Management of the project") from ELEVET-Questionnaire (WP3), but in this form is more concretely and it is a course already performed in Romania, by VET "Formenerg"
34.	Management of the project (business skill)	Table 7/item 6	Economic concepts/basis for engineers (SIER)	4 <u>M1.</u> Introduction. Financial statement <u>M2.</u> Financial ratios. Economic-financial diagnosis. <u>M3.</u> Profitability and risk analysis <u>M4.</u> Markets and the behavior of the firm (8 days: 32 hours)	Yes (Graduation Session)	- Investors, consultants, designers, electrical and non-electrical installations building up or installation work contractor, managers and specialist engineers, responsible with the initiation, financing, designing, implementation/ performing, operating and maintenance of installations, as well, who intend to increase their knowledge in this field. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	- The text is a little bit different from the original version ("Management of the project") from ELEVET-Questionnaire (WP3), but in this form is more concretely and it is a course already performed in Romania, by VET "Formenerg"
35.	Managing and motivating the team (business skill)	Table 7/item 7	Managing and motivating the team (CONSEL)	2 <u>M1.</u> Team management <u>M2.</u> Team motivation and development (2 days: 16 hours)	Yes (Graduation Session)	- Manager, persons who manage others employees - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
36.	Safe operation of electrical equipment and installations (technical competence)	Table 5/item 9	Safe operation of electrical equipment and installations		Yes (Graduation Session)	- Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
37.	Safe operation of electrical equipment and	Table 5/item 9	Assembly and functions of road lighting (SEP)	3 <u>M1.</u> Assembly and functions of road	Yes (Graduation Session)	- Contractors of road lighting electrical installations, - Maintenance staff and	

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
	installations (technical competence)			lighting <u>M2</u> Safety rules of works carried out at electrical equipment and systems <u>M3</u> Carrying out maintenance – related works by the road lighting (7 days: 40 hours, include 4 hours of "Soft skills")		electricians handling (operating) electrical systems and fire protection equipment operated at less than 1 kV, - Designers of road lighting electrical installations, - Suppliers of lighting equipment. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
38.	Safe operation of electrical equipment and installations (technical competence)	Table 5/item 9	Basic work safety principles during maintenance and operation of electrical equipment and systems (SEP)	3 <u>M1.</u> Assembling of electrical equipment and systems <u>M2</u> Legal safety regulations relating to works at electrical equipment and systems <u>M3</u> Carrying out maintenance – related works by the electrical equipment and systems (7 days: 40 hours, include 4 hours of "Soft skills")	Yes (Graduation Session)	- Contractors of electrical systems in buildings, irrespective of the operating voltage, - Maintenance staff and electricians handling (operating) electrical systems and fire protection equipment, - Designers of electrical systems in buildings, irrespective of the operating voltage, - Contractors, designers, maintenance staff, and electricians operating fire protection systems, - Contractors, designers, maintenance staff, and electricians operating lightning protection systems. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
39.	Protection against the electrical power lines and electrical substations with a voltage above 1 kV (technical competence)	Table 5/item 2	Protection against the electrical power lines and electrical substations with a voltage above 1 kV		Yes (Graduation Session)	- Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	The text was completed - in the same sense - to be more accurate.

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
40.	Execution of works under voltage in electrical installations above 1 kV (technical competence)	Table 5/item 8	Live working methods in electrical installations above 1 kV (PIGE)	3 <u>M1.</u> Fundamentals and updated knowledge about the structure and operation of the electrical installation above 1 kV. <u>M2.</u> The legal basis of the rules and organization of work in the operation and maintenance of equipment and electrical installations above 1 kV <u>M3.</u> Principles of construction and operation: networks, devices and installations with voltages above 1 kV. (7 days: 40 hours, include 4 hours of "Soft skills")	Yes (Graduation Session)	- Contractors of electrical installations above 1 kV - People operating and maintaining electrical installations and equipment above 1 kV - Conservators and electricians maintaining electrical installations and equipment against electric shock above 1 kV. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	The text was completed - in the same sense - to be more accurate. The original text was: "The works under voltage above 1 kV"
41.	Execution of works under voltage in electrical installations above 1 kV (technical competence)	Table 5/item 8	Implementation and maintenance of electrical under no voltage limits (SEP)	3 <u>M1</u> Fundamentals of the design of electrical systems at over 1 kV <u>M2</u> Legal safety regulations relating to works at electrical equipment and systems <u>M3</u> Carrying out maintenance – related works by the electrical equipment and installations above 1 kV (7 days: 40 hours, include 4 hours of "Soft	Yes (Graduation Session)	- Contractors of electrical systems operated at over 1 kV, - Maintenance staff and electricians handling (operating) electrical systems and fire protection equipment operated at over 1 kV, - Designers of electrical systems operated at over 1 kV, - Contractors, designers, maintenance staff, and electricians operating lightning protection systems at electric power stations. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or	

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
51.	Optimization of energy consumption in areas of priority for the company (technical competence)	Table 6/item 2	Optimization of energy consumption in areas of priority for the company (SEP)	3 (equivalent of 4 modules) <u>M1.</u> Types of equipment and construction elements as a priority in industrial company regarding to energy saving <u>M2.</u> Possible methods of energy saving for some equipment and industrial buildings <u>M3.</u> Carrying out maintenance – related works by the electrical equipment and systems (7 days: 40 hours include 4 hours of "Soft skills")	Yes (Graduation Session)	- Contractors of electrical equipment and systems in industrial companies, - Maintenance staff and electricians handling (operating) electrical systems and fire protection equipment, - Designers of electrical equipment and systems in industrial companies, - Contractors, designers, maintenance staff, and electricians operating different electrical equipment and systems. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
52.	Energy efficiency of electrical installations in buildings (technical competence)	Table 6/item 7	Energy efficiency of electrical installations in buildings (CONSEL)	6 <u>M1.</u> Building Envelope <u>M2.</u> Heating System <u>M3.</u> The ventilation <u>M4.</u> Conditioning in Summer <u>M5.</u> The use of renewable sources <u>M6.</u> Energy certification of buildings (6 days: 48 hours)	Yes (Graduation Session: 1 day)	- Engineers, technicians - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
53.	Automation of the medium and high voltage grid (technical competence)	Table 6/item 9	Grid automation (SIER)	4 <u>M1.</u> Developing and implementing innovative concepts for the monitoring, control and protection of	Yes (Graduation Session: 2 days, 10 hours) <u>1st day:</u> Final recapitulation	- Electric power engineers responsible with grid automation design or operating, planning studies. - Managers and consulting engineers responsible for the operation and	It is also specified, as "Grid automation", with rank 2-3 into chapter 3.a "Report of survey from international companies" (ELEVET-WP3)

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
				Power Quality. Energy Storage Systems. <u>M10.</u> Utility Package (Aspects of power quality relating to the consumers. Frequency and Voltage Variations and Control. Quality of Supply in the Electricity Market. DSM. Contracts, tariffs and power quality. Rational use of energy). (20 days: 100 hours)			
58.	Earthing systems/ installations (design, construction, operation) (technical competence)	Related to Table 5 - Safety of people and equipment	Earthing systems/ installations (SIER)	3 <u>M1.</u> Earthing (functions, components, electrical parameters, construction types, sizing, materials, limits allowed, soil resistivity, measurement methods, etc.) <u>M2.</u> Means and automatic and selective protection devices in electrical power networks to avoid the damages and the accidents by electric shock/ electrocution <u>M3.</u> Practical activities (case studies) of dimensioning / designing of earthing systems. Practical activities of on-site measurements of the ground resistivity and	Yes (Graduation Session: 2 days, 10 hours) <u>1st day:</u> Final recapitulation and Clarifications/ Q&A Meeting <u>2nd day:</u> Graduation Exam and Correction/Evaluation by lecturers of the Graduation Exam Tests, in presence of all participants	- Designers, installers or contractor of installations, consultants, managers and specialist' engineers responsible for the operation and maintenance of equipment and facilities of consumers and power/electricity companies who wish to improve their knowledge in this field. - Manufacturers, equipment sellers and services providers in the electricity sector - End-users of equipment. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	SIER proposal, as major background for personnel safety and for preventing the damages and accidents by electric shock/ electrocution.

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
				works at high and medium voltage lines and stations <u>M4</u> Power system operation in the high voltage transmission system <u>M5</u> Power system operation in the distribution system (7 days: 40 hours include 4 hours of "Soft skills")		- Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
62.	The electricity networks of high and medium voltage - construction, maintenance and operation (technical skills)	Chapter 3a. Over the next few years, the company provides for the employment of workers specializing in: - item 1	Maintenance and operation of power transmission and distribution systems (SEP)	5 <u>M1</u> Design of high voltage electrical lines and stations (mainly in transmission systems) <u>M2</u> Design of medium voltage electrical lines and stations (in distribution systems) <u>M3</u> Legal regulations of maintenance and operation works at high and medium voltage lines and stations <u>M4</u> Power system operation in the high voltage transmission system <u>M5</u> Power system operation in the distribution system (7 days: 40 hours, include 4 hours of "Soft skills")	Yes (Graduation Session)	- Electrical engineers supervising maintenance and operation works of equipment in transmission and distribution networks, - Power operators in operator centres of the transmission system, - Operators in operator centres of the distribution network, - Electrical and power engineers in the centres for maintenance and operation of transmission and distribution networks. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
63.	The electricity networks of high and medium voltage - construction, maintenance and operation (technical skills)	Chapter 3a. Over the next few years, the company provides for the employment of workers specializing in: - item 1	Maintenance and operation of electrical machines, equipment and systems (SEP)	3 <u>M1</u> Design fundamentals of electrical machines, equipment, and systems operated at various voltages <u>M2</u> Carrying out maintenance – related works by electrical machines, equipment, and systems operated at various voltages <u>M3</u> Maintenance and operation - related works by machines, equipment, and systems (7 days: 40 hours, include 4 hours of "Soft skills")	Yes (Graduation Session)	- Maintenance staff and electricians operating electrical equipment in production plants and at electric power stations, - Designers of electrical equipment, - Suppliers of electrical equipment. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
64.	The electricity equipment and installations - construction, maintenance and operation (technical skills)	Tables 1 – 3, 5 – 6, 8 -10	Power Energy Engineering (SEP)	5 <u>M1</u> Legal basis of electrical profession <u>M2</u> Electrical system protection <u>M3</u> Safe operation of electrical equipment and systems <u>M4</u> Occupational safety during works by measuring equipment and systems <u>M5</u> Soft skills for electricians (7 days: 40 hours)	Yes (Graduation Session)	- Contractors of electrical systems operated at up to 1 kV, - Maintenance staff and electricians handling (operating) electrical systems and fire protection equipment operated at less than 1 kV, - Designers of electrical systems operated at up to 1 kV, - Contractors, designers, maintenance staff, and electricians operating fire protection, lightning protection, and RES (renewable sources of energy) systems. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in	

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
67.	Energy management systems	Chapter 3a. Over the next few years, the company provides for the employment of workers specializing in: - item 12	Modern Energy Management Systems (SIER)	4 <u>M1.</u> International Standards on Energy Management Systems: ISO 50001, ISO 50004 and EN 16001 <u>M2.</u> Home Energy Management Systems (HEMS), Building Energy Management Systems (BEMS) and Community/City Energy Management Systems (CEMS). Smart Metering Systems <u>M3.</u> Energy Management Systems for industrial companies / processes, retail and commercial companies, organizations and public services. Metering systems and Smart metering systems for companies, organizations and public services. <u>M4.</u> Energy Management Systems for Generation and Transmission and Distributions Networks. Metering systems for electricity markets participants. (8 days: 40-48 hours)	Yes (Graduation Session: 2 days, 10 hours) 1 st day: Final recapitulation and Clarifications/ Q&A Meeting 2 nd day: Graduation Exam and Correction/Evaluation by lecturers of the Graduation Exam Tests, in presence of all participants	- Electric power engineers responsible with energy management systems design or operating, planning studies. - Managers and consulting engineers responsible for the operation and maintenance of equipment and facilities of consumers and power/electricity companies who wish to improve their knowledge in this field. - Engineers responsible with equipment supply (hardware/software components) for energy management systems. - Engineers involved in utility company activities. - University teachers for IT&C and power engineers and graduate students. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	It is with rank 4-6 into "Report of survey from international companies" (ELEVET-WP3)
68.	Building energy audits and energy efficiency	Chapter 3a. Over the next few years, the company provides for the employment of workers specializing in:	Building energy audits and energy efficiency audits for industry	4 <u>M1.</u> Types of buildings and aims of	Yes (Graduation Session)	- Contractors and designers of thermomodernization of	It is with rank 4-6 into "Report of survey from international

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
	audits for industry	- item 13	(SEP)	energy audits for buildings <u>M2.</u> Aims of energy efficiency audits for industrial companies <u>M3.</u> Methodology of energy audits of buildings realization <u>M4.</u> Methodology of energy efficiency audits realization (7 days: 40 hours include 4 hours of "Soft skills")		different types of buildings, - Maintenance staff and electricians handling (operating) electrical systems in the industrial companies and in different types of buildings, - Energy auditors of buildings, - Energy efficiency auditors in industrial companies - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	companies" (ELEVET-WP3)
69.	Renewable energy sources	Chapter 3a. Over the next few years, the company provides for the employment of workers specializing in: - item 9	Alternative sources of energy buildings (PIGE)	3 <u>M1</u> The importance of RES in the energy balance of the country. <u>M2</u> The development of energy from renewable sources and the conditions of the country. <u>M3</u> Possibilities of the use of alternative renewable energy Sources. (6 days: 35 hours, include 5 hours of "Soft skills")	Yes (Graduation Session)	- Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	-It is with rank 1 into "Report of survey from international companies" (ELEVET-WP3) -See also Units no. 50, 60 and 70
70.	Renewable energy sources	Chapter 3a. Over the next few years, the company provides for the employment of workers specializing in: - item 9	Photovoltaics (PIGE)	3 <u>M1</u> Photovoltaics from the point of view of the RES Act Basics of PV systems. <u>M2</u> Photovoltaic modules. Inverters for photovoltaics.	Yes (Graduation Session)	- Professionals from the field of Renewable Energy Sources, - Designers, - Installers, - Representatives of local governments, - Students and managers of energy networks, - People, who treat	-It is with rank 1 into "Report of survey from international companies" (ELEVET-WP3) -See also Units no. 50, 60 and 69

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Unit no.	Competence/ skills category	Reference from "Reference from the report on consultation" (ELEVET-WP3)	Unit/Course name (Responsible Partner)	No. of sub-units/modules	Exam for Unit/Course Graduation	Target group	Remarks
				M3 Designing and practical aspects of photovoltaic systems. (6 days: 35 hours, include 5 hours of "Soft skills")		photovoltaics as a hobby, - Teachers of subjects related to equipment and renewable energy systems. - Electrical engineers - but that is not constitute a mandatory requirement - that have the knowledge necessary to take part in this course, employed or unemployed	
71.	Professional engineering - engineer level*)	Chapter 3c. The expectations for the competence of employees associated with business activity. Table 3 - item 6	-		Steps in obtaining a Professional engineering: - Pass the „Fundamentals of Engineering“ Unit Exam. - Gain four years of engineering experience „on-job“ under the supervision of an professional engineer in engineering. - Pass the „Principles and Practice of Engineering“ Unit Exam.	- Electrical engineers that are interesting in engineering field that have the knowledge necessary to take part in this course, employed or unemployed	Resulted from the „WP4 -Polish National Feedback to the last (12th) version of the Framework“.
72.	Fundamentals of Engineering for electrical engineers	Chapter 3c. The expectations for the competence of employees associated with business activity. Table 3 - item 6	Fundamentals of Engineering for electrical engineers		Yes (Graduation Session)	- Electrical engineers that are interesting in engineering field that have the knowledge necessary to take part in this course, employed or unemployed	Resulted from the „WP4 -Polish National Feedback to the last (12th) version of the Framework“.
73.	Principles and Practice of Engineering for electrical technicians	Chapter 3c. The expectations for the competence of employees associated with business activity. Table 3 - item 6	Principles and Practice of Engineering for electrical engineers		Yes (Graduation Session)	- Electrical engineers that are interesting in engineering field that have the knowledge necessary to take part in this course, employed or unemployed	Resulted from the „WP4 -Polish National Feedback to the last (12th) version of the Framework“.
74.	Professional engineering - technicians level**)	Chapter 3c. The expectations for the competence of employees associated with business activity. Table 3 - item 6	-		Steps in obtaining a Professional engineering: - Electrical technicians that are interesting in engineering field that have the knowledge necessary to take part in this course,		Resulted from the „WP4 -Polish National Feedback to the last (12th) version of the Framework“.



ANNEX 2

**Questionnaire no. 1 for the ELEVET target groups
(to be completed before the training course)**

NOTE:

Information to be provided in this survey will be used as guidelines on improving the level of the training course in which you are about to participate, as well as efficiency and attractiveness of further training courses. Please, complete all fields and write down all remarks that could improve the level of training quality in which you are about to participate.

Information on the person completing the questionnaire:

Gender F (female)
 M (male)

Age: under 20
 20 – 25
 25 – 30
 over 30

Education:
 completed secondary school
 graduated from a university
 bachelor degree

1. Participation in the training course has been initiated by:

- a) the employer
- b) the participant

1.1 Your aim at taking part in the training course is:

- a) to acquire specialist professional qualifications.....Yes.....No
- b) to take further training with regard to the already acquired professional qualifications
.....Yes..... No
- c) to take further training to apply for an EuroEngineer certificate
.....Yes..... No

2. Should the so-called “soft skills” be implemented in further training courses for professional qualifications, besides the profession-oriented subjects?

- a) business skillsYes..... No
- b) skills
 - managerial..... Yes..... No
 - social.....Yes..... No
 - personal.....Yes..... No



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3. What is the optimum number of hours in a training course for electrical professional qualifications (in terms of the course programme)?

- a) theoretical classes
- b) practical classes
- c) laboratory classes

4. In your opinion, the participation in the planned training course will:

- a) improve the quality of your professional job Yes.....No
- b) not have any significant impact on improvement of the quality of my professional job or getting promoted..... Yes..... No
- c) other elements (which ones)..... Yes..... No
.....
.....
- d) other envisaged effects of attending the course
.....
.....
.....

Thank you for completing the survey!

ANNEX 3

USER SATISFACTION QUESTIONNAIRE

Module: _____ **Lecturers:** _____ **Date:** _____

Remarks: *Please assign marks for quality between 1 and 6 (1: worst mark; 6: best).
 Tick for each question the box which you think fits best according to your evaluation.*

What do you think about the organisation of our Training Module?						
	does not apply			applies exactly		
	1	2	3	4	5	6
The subject was very important	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The subject was very interesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The lecture was well structured	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The handout was very good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The presented slides were very good	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The exercises were good to establish understanding of the subject	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The subject was		too easy <input type="checkbox"/>		well <input type="checkbox"/>		too difficult <input type="checkbox"/>
The complexity of the subject was		too small <input type="checkbox"/>		well <input type="checkbox"/>		too large <input type="checkbox"/>
<u>Do you have any further remarks?</u>						

What do you think about the lecturer ?						
	does not apply			applies exactly		
	1	2	3	4	5	6
The lecturer						
... has a pedagogic talent	<input type="checkbox"/>					
... motivates me	<input type="checkbox"/>					
... acts motivated	<input type="checkbox"/>					
... has a very good technical knowledge	<input type="checkbox"/>					
... has a very good style of giving a lecture	<input type="checkbox"/>					
... has a very comfortable speed in lecturing	<input type="checkbox"/>					
... is concerned about the success of his students	<input type="checkbox"/>					



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Do you have any further remarks ?

By which adjectives would you characterise the lecturer?

	applies exactly		applies exactly
The lecturer...			
... is humanly	<input type="checkbox"/>	... is chaotic	<input type="checkbox"/>
... is simpatico	<input type="checkbox"/>	... is disinterested	<input type="checkbox"/>
... is commanding respect	<input type="checkbox"/>	... is displeasing	<input type="checkbox"/>

Do you have any further comment?

How did you discover the existence of this course?

ELEVET web-site	<input type="checkbox"/>
Other web-sites (specify _____)	<input type="checkbox"/>
Magazine (specify _____)	<input type="checkbox"/>
E-mail	<input type="checkbox"/>
Fairs, conferences....	<input type="checkbox"/>
Other (specify _____)	<input type="checkbox"/>

Do you have any further comment?

Which improvements would you recommend?

... and what should absolutely stay as it is now?

Which related topics would you like to deepen in forthcoming courses?

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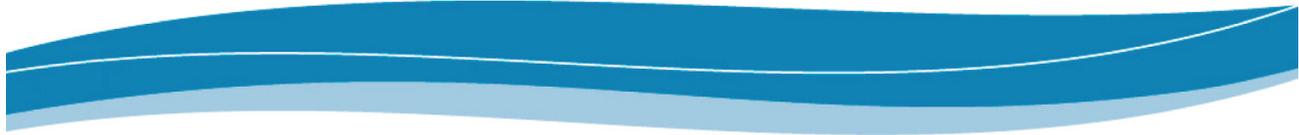
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Comments

Thank you very much for your cooperation!

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ANNEX 4

Questionnaire no. 3 for the ELEVET target groups
(to be completed after the training course)

NOTE:

Information to be provided in this survey will be used as guidelines on improving the level of the training course in which you are about to participate, as well as efficiency and attractiveness of further training courses. Please, complete all fields and write down all remarks that could improve the level of training quality in which you are about to participate.

Information on the person completing the questionnaire:

Gender F (female)
 M (male)

Age: under 20
 20 – 25
 25 – 30
 over 30

Education:
 completed secondary school
 graduated from a university
 bachelor degree

5. Have you attended the training course in order to:

- a) acquire specialist professional qualifications?
.....Yes.....No
- b) take further training with regard to the already acquired professional qualifications?
.....Yes.....No
- c) take further training to apply for a EuroEngineer certificate?
.....Yes.....No

6. Has the training course programme presented new, or additional, technical topics with regard to the expected specialist knowledge?

Scale: from 1 for “strongly disagree” to 6 for “strongly agree”.

If not, why:

.....
.....
.....



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7. Has the training course programme included the following aspects?

- a) business skills..... Yes..... No
- b) soft skills:
 - managerial..... Yes..... No
 - social..... Yes..... No
 - personal..... Yes..... No

Which of the topics have corresponded best to your expectations and are the most useful ones?

.....
.....

8. Have you gained sufficient knowledge of the “soft” skills during the training course with regard to:

- a) required business skills?..... Yes..... No
- b) required soft skills?
 - managerial..... Yes..... No
 - social..... Yes..... No
 - personal..... Yes..... No

9. In your opinion, duration of the course has been:

- a) As should be..... Yes..... No
- b) if not, it has been
 - too short?..... Yes..... No
 - too long?..... Yes..... No

Please, justify:

.....

10. In your opinion, equipment in the training room has been:

- a) As should be..... Yes..... No
- b) if not, what was wrong?

.....

11. Has your previous knowledge (school, other lectures) provided you with fundamentals to participate in the training course?

..... Yes..... No

If not, please, justify:

.....

.....

12. In your opinion, the participation in the planned training course will:

- a) improve the quality of your professional job Yes..... No
- b) not have any significant impact on improvement of the quality of my professional job



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or getting promoted..... Yes..... No

13. Lecturer evaluation:

- Have the lectures been interesting?..... Yes..... No
Have the lectures been understandable and adequately paced?..... Yes..... No
Have the lectures started on time and regularly?..... Yes..... No
Has the applied teaching methods helped with understanding the content?..... Yes....No
Has the lecturer encouraged asking question and raising problems?... Yes..... No
Has the lecturer offered consultation willingly?..... Yes..... No
Has the lecturer always checked the homework?..... Yes.....No

14. How do you assess usefulness of the provided knowledge? (Scale: from 1 for "low" to 5 for "very high")

15. How do you assess your new skills? (Scale: from 1 for "low" to 5 for "very high")

16. The range of training course topics with regard to your needs was: (from 1 for "small" to 5 for "met my expectations")

17. Scope of the course content (please, mark your answer):
not much contentproper contenttoo much content

18. How do you assess the materials distributed during the training course? (from 1 for "hard to say" to 5 for "very good")

19. What is your content-related assessment of the training course (from 1 for "hard to say" to 5 "definitively good")

20. What is your general evaluation of the training course (from 1 for "hard to say" to 5 "definitively good")

21. How would you assess yourself in the course?

Thank you for completing the survey!

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