



Establishing future-oriented training and qualification quality standards for fostering a broad uptake of sustainable energy skills in the European construction sector

D2.2 Competence quality standard for a common understanding of sustainable energy skills



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## **Executive summary**

This document describes the methodology of the TRAIN4SUSTAIN Competence Quality Standard (CQS). The CQS allows the evaluation, scoring and reporting the level of competence of professionals, workers with regards to specific Areas of Expertise related to sustainability at building and urban scale.

On the base of Learning Outcomes acquired through the completion of learning processes, a professional receives the TRAIN4SUSTAIN Skill Passport, a transnational document reporting the level of competence in relation to the thematic fields and areas of expertise of the Competence Quality Standard.

The main reference for the methodology development has been the European Qualification Scheme developed by the H2020 Prof/Trac project and it is being expanded in TRAIN4SUSTAIN project to include new topics and new professions.

The TRAIN4SUSTAIN CQS has been structured in modules and hierarchic levels, reflecting the structure of the most relevant sustainability certification systems at building and urban scale and in relation to the recent Level(s) framework of core sustainability indicators issued by European Commission in October 2020. An additional source of information for the definition of topics to include in the TRAIN4SUSTAIN Competence Quality Standard has been the Deliverable T2.1 "Baseline of national qualification schemes and recognition policies" where several national and international qualification schemes have been analysed. More than 120 Areas of Expertise have been defined in the CQS as result of the analysis of relevant transnational and national qualification schemes.

The TRAIN4SUSTAIN CQS allows to map existing qualifications and trainings in relation to building constructions, building energy efficiency and sustainability at national and transnational level and to integrate them in the system through the identification of the Learning Outcomes provided. The TRAIN4SUSTAIN CQS is a living and extendible system that can evolve over time as it is able to receive new inputs for instance, new (area) expertise considering technological and methodological development, also fulfilling its "future-looking" mission.

The structure of the TRAIN4SUSTAIN Competence Quality Standard has been already successfully tested. The Learning Outcomes of 16 relevant national and transnational qualification schemes has been mapped and integrated in the system.



# Abbrevations and Key words

Blu-collar worker	A person who performs manual labour, needing strength or physical skills.
Competence	Proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development
Competence Quality Standard (CQS)	Standard to identify and describe competencies and their level with a common procedure.
European Qualification Framework (EQF)	Common European reference framework whose purpose is to make qualifications more readable and understandable across different countries and systems COUNCIL RECOMMENDATION of 22 May 2017 (2017/C 189/03)
Knowledge	Outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories, and practices that is related to a field of work or study. In the context of the EQF, knowledge is described as theoretical and/or factual;
Learning Outcome (LO)	Statements regarding what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of knowledge, skills and responsibility and autonomy
Level(s)	Common European Framework of Sustainability Indicators for Residential and Office Buildings (https://ec.europa.eu/environment/topics/circular- economy/levels_en)
Prof-Trac	"Open Training and Qualification Platform n NZEB construction and renovation", H2020 project.
Qualification	Formal outcome of an assessment and validation process which is obtained when a competent authority determines that an individual has achieved learning outcomes to given standards;
Skill	Ability to apply knowledge and use know-how to complete tasks and solve problems. In the context of the EQF, skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments);
Skill Passport	Tool to compare competences in sustainable building on a transnational level.
White-collar worker	A person who works in office, doing work that needs mental effort.



## 1 Introduction to the TRAIN4SUSTAIN Competence Quality Standard

The TRAIN4SUSTAIN Competence Quality Standard (CQS) allows to evaluate, score and report the **Level of Competence** of professionals and workers with regards to specific **Areas of Expertise** related to sustainability at building and urban scale.

On the base of Learning Outcomes acquired through the completion of learning processes, a building professional receives the **TRAIN4SUSTAIN Skill Passport**, a transnational document that can be successfully used to report the level of competence in relation to the thematic fields and areas of expertise of the Competence Quality Standard.

The TRAIN4SUSTAIN Skill Passport makes possible to compare the level of competencies of building professionals and workers in Europe, establishing a common reference methodology for their evaluation and reporting.

The main users of the TRAIN4SUSTAIN CQS are:

- Professionals/experts (white collars and blue collars)
- Private and public clients (demand side)
- Scheme operators and trainers.

The following figure shows the mutual benefits in the use of the CQS and Passport.



Figure of the project "impacts" on stakeholders



The TRAIN4SUSTAIN CQS is an open and living system that will progress over time on the base of the evolution of professional qualification schemes. It is possible to integrate in the CQS any existing and future qualification scheme for professionals and blue collars.

The TRAIN4SUSTAIN CQS intends to be a tool to facilitate the request of qualified professionals and blue collars by public administrations and private clients and to valorise with a transparent common "reporting" system the competences acquired through training courses and experience on field.

In the following chapters, extensive descriptions will be given on:

- the development process of the CQS
- the structure of the CQS
- how it is possible to evaluate the level of competences through the CQS
- the topics and areas of expertise included in the CQS
- what professions can access the CQS
- the relation between CQS and project's stages
- the relation between CQS and spatial scales
- how to integrate a qualification scheme in the CQS
- the TRAIN4SUSTAIN Skill Passport based on the CQS



## 2 <u>Development Process of the TRAIN4SUSTAIN</u> <u>Competence Quality Standard</u>

The TRAIN4SUSTAIN Competence Quality Standard (CQS) has been developed by the combined use and understanding of existing qualification schemes, initiatives, and standards in the field of sustainable building in Europe.

From the methodological point of view, the main reference in the definition of the CQS has been the Prof/TracEuropean Qualification Scheme (Deliverable 3.2) of the Prof/Trac project. On a basis of a detailed analysis, TRAIN4SUSTAIN CQS is an evolution of the Prof/Trac European Qualification Scheme.

The main changes with regards to Prof/Trac European Qualification Scheme are:

- Inclusion of additional topics and areas of expertise. The Prof/Trac European Qualification Scheme was focused only on nZEB. The TRAIN4SUSTAINg CQS has a broader scope and includes all the relevant topics and areas of expertise concerning sustainable building. The structure of the Prof/Trac European Qualification Scheme has then been revised and expanded. The Prof/Trac Qualification Scheme is now a sub-set of areas of expertise included in the TRAIN4SUSTAIN CQS.

- Inclusion of blue collars in the qualification scheme. The Prof/Trac European Qualification Scheme was targeted to white collars only (architects, engineers, etc.). The TRAIN4SUSTAIN CQS addresses a larger number of professions.

- Combination of task-based competences and technology competences. The Prof/Trac European Qualification Scheme is based on competences related to technologies. The TRAIN4SUSTAIN CQS integrates in the qualification schemes competencies tasks based, in relation to the reference work fields.

- Concerning the description of "Learning Outcomes" (elementary unit of the CQS), more strict alignment with the European Qualifications Framework (Council Recommendation 2017/C 189/03). In Prof/Trac the Learning Outcomes are described combining "skills" and "knowledge" in a unique text. In the TRAIN4SUSTAIN CQS, Learning Outcomes are described keeping skills and knowledge separated to improve the evaluation process of the competences acquired by professionals.

- Alignment with Level(s), the EU framework of sustainability core indicators for buildings. On October 2020, the EC issued the final version of Level(s), a framework of sustainability indicators that aims to harmonise the sustainability assessment systems in Europe and to raise the impact of policies and programs issued in this field. The macro-areas and topics addressed by Level(s) have been integrated in the TRAIN4SUSTAIN CQS. This makes possible to evaluate the level of competence of professionals concerning the use of Level(s) and to understand how much a



qualification scheme (e.g. DGNB Consultant, LEED AP, BREEAM Assessor, etc.) provides the necessary Learning Outcome for carrying out an evaluation using Level(s).

- Direct connection with qualification schemes and standard. The TRAIN4SUSTAIN CQS can be used to map existing qualification schemes and to verify the area of expertise and Learning Outcomes provided by each of them. This function is useful to guide professionals in the selection of the most appropriate qualification schemes on the base of their needs and to support scheme owners in the identification of gaps and overlaps among learning processes.

The main steps in the development of the TRAIN4SUSTAIN CQS have been:

- Analysis of the Prof/Trac European Qualification Scheme to identify the necessary changes in relation to the TRAIN4SUSTAIN approach and objectives.

- Development of the TRAIN4SUSTAIN CQF structure. To identify the additional sustainability topics and areas of expertise to be included in the CQS, the structure and topics addressed by Level(s) and the most relevant sustainability assessment systems (DGNB, LEED, BREEAM, Protocollo ITACA, Passivhaus, Klimahaus, etc.) have been deeply analysed. SDGs and targets of the Agenda 2030 have also been considered to define the sustainability dimensions of the CQF. An additional source of information to identify the topics to include in the TRAIN4SUSTAIN Competence Quality Standard is the Deliverable T2.1 "Baseline of national qualification schemes and recognition policies" where several national qualification schemes have been analysed.

- Discussion of the TRAIN4SUSTAIN CQF methodological approach with target groups (scheme operators, public administrations, chambers of architects and engineers, craftsmen associations, construction companies, etc.) through the organisation of Local Projects Committee (WP5, Task 5.1) and B2B meetings (WP5, Task 5.2) in the participating countries. This co-creative approach allowed to validate the TRAIN4SUSTAIN methodological approach.

- Test of the TRAIN4SUSTAIN CQF. The CQF has been used to map in each country relevant qualification schemes for professionals and workers. This activity allowed to verify the completeness of the CQS structure in relation to the considered sustainability topics.

- Integration of 16 qualification schemes (see point above) in the CQS. The Learning Outcomes belonging of each qualification scheme have been inserted in the CQS and associated to Areas of Expertise. The Learning Outcomes and the association with the Areas of Expertise is illustrated in the Annex.



## 3 <u>Structure of the TRAIN4SUSTAIN Competence</u> <u>Quality Standard</u>

The TRAIN4SUSTAIN CQS is a framework of "Areas of Expertise" organised in a hierarchic and modular structure that includes all the relevant topics in sustainable building. The hierarchic levels of CQS are:

- Level 1 Dimensions
- Level 2 Thematic Fields
- Level 3 Macro Areas of Expertise
- Level 4 Areas of Expertise
- Level 5 Learning Outcomes

The following figure illustrates the CQS hierarchic structure:





#### Level 1: Dimensions

The higher level of the framework is constituted by 4 "Dimensions", representing 3 dimensions of sustainable development (Agenda 2030 - Environment, Society, Economy) plus one additional, "Process". This one, deals with all the competences not connected to a specific sustainable development dimension but instead with areas of expertise concerning the design, construction and maintenance processes of buildings and small urban areas. The 4 Dimensions of the TRAIN4SUSTAIN CQS are:

Environment	Planet: protection of the planet from degradation, including through sustainable consumption and production, sustainable managing its natural resources and taking urgent action on climate change, so that it can support the needs of the present and future generations.		
Society	People: all human beings can fulfil their potential in a healthy environment		
Economy	Prosperity: to ensure that all human beings can enjoy prosperous and fulfilling lives and that economic, social, and technological progress occurs in harmony with nature.		
Process	Capacity to act: deployment and management of effective processes during the design, construction and operation of buildings targeted to maximise the performance of buildings and urban areas towards the 3 sustainable development dimensions. Interdisciplinary skills are included in this dimension.		

#### Level 2 – Thematic Fields

The second hierarchic level of the TRAIN4SUSTAIN CQS are the **Thematic Fields**. They represent the key topics in relation to the 4 Dimensions of the framework. To facilitate their identification, Thematic Fields have been coded with a single letter. The Thematic Fields in the TRAIN4SUSTAIN CQS are:

Environment	Society	Economy	Process
E – Energy	C – Comfort and well	Q – Economical	D - Building Design
	being	Quality	
W – Water	S – Safety		Z - Urban Design
M – Materials	A – Accessibility		I – Innovative digital
			solutions
H - Habitat	0 – Mobility		T – Sustainable
			construction
	F – Services		U – Maintenance
			and operating
	R – Adaptation to		N - Commissioning
	climate chance		_
		-	P – Sustainability
			Certification Systems
			K – Interdisciplinary
			Skills



#### Level 3 – Macro Areas of Expertise

The third hierarchic level are the **Macro-Areas of Expertise** that represent a particular aspect pertaining to the Thematic Fields. To facilitate their identification, Macro Area of Expertise coded with 2 letters in relation to the Thematic Fields.

Example of Macro Areas of Expertise in the Energy Thematic Field:

Dimension	Environment
Thematic Filed	E - Energy
Macro-Area of Expertise	EM – Energy Management
	EP - Energy Production
	ER – Energy Reduction
Thematic Field	W - Water
Macro-Area of Expertise	WE - Water Efficiency
	WM - Effluents Management
	WS - Sustainable Drainage
Thematic Field	M - Materials
Macro-Area of Expertise	MD - Design for Deconstruction, reuse and recycling
	MS – Sustainable Materials
	MW - Construction Waste
Thematic Field	H - Habitat
Macro-Area of Expertise	HL - Land Use
	HB - Biodiversity

#### Level 4 – Areas of Expertise

The fourth hierarchic level of the framework are the **Areas of Expertise** that represents the specific topics contained in each Macro Area of Expertise. To facilitate their identification, Macro Area of Expertise coded with 2 letters and a progressive number in relation to the Macro Areas of Expertise.

Example of Areas of Expertise in the Macro Area "Quality of Air":

Dimension	Society
Thematic Field	C - Comfort
Macro Area of Expertise	CQ - Quality of Air
Area of Expertise	CQ1 - Low Emitting Materials
	CQ2 - Natural Ventilation
	CQ3 - Mechanical Ventilation
	CQ4 - Radon



#### Level 5 – Learning Outcomes

The fifth and lower hierarchic level of the CQS are the **Learning Outcomes (LO)**. Each Area of Expertise is described in terms of Learning Outcomes. They are the elementary unit of the framework. The definition of Learning Outcomes is: "statements regarding what a learner knows, understands and is able to do on completion of a learning process" (EQF – Council Recommendation - 2017/C 189/03). Learning outcomes can be acquired outside the formal learning context through work experience, voluntary work, independent study, provided that these learning outcomes satisfy the requirements of their qualifications or components.

Example of Learning Outcomes in the Area of Expertise "CQ3 - Mechanical Ventilation":

Dimension	Society	
Thematic Field	C - Comfort	
Macro Area of Expertise	CQ - Quality of Air	
Area of Expertise	CQ3 - Mechanical Ventilation	
Learning Outcome	CQ3.1 - Understand ventilation systems in relation to energy	
	performance	
	CQ 3.2 - Understand basic design principles of ventilation	
	and IAQ systems.	
	CQ 3.3 - Advise on required IAQ	
	CQ 3.4 - Investigate and select fitted ventilation systems	
	CQ 3.5 - Perform energy calculation of ventilation systems	
	CQ 3.6 - Advise on natural ventilation for (summer) night	
	cooling	
	CQ 3.7 - Engineer a ventilation system	
	CQ 3.8 - Specify a ventilation system in tender contracts	
	CQ 3.9 - Quality assurance of a ventilation system according	
	to tender contract	

In TRAIN4SUSTAIN Competence Quality Standard, Learning Outcomes are described in terms of **knowledge** and **skills**. The definition of knowledge is: "the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study" (EQF – Council Recommendation - 2017/C 189/03). The definition of skills is: "the ability to apply knowledge and use know-how to complete tasks and solve problems. Skills are described as cognitive (involving the use of logical, intuitive and creative thinking) or practical (involving manual dexterity and the use of methods, materials, tools and instruments)" (EQF – Council Recommendation - 2017/C 189/03).



Example of "Knowledge and "Skill" describing the Learning Outcomes of the Area of Expertise "ER1 - Insulation":

Dimension	Environment		
Thematic Field	Energy		
Macro area of Expertise	ER - Energy Reduction		
Area of Expertise	ER1 - In	sulation	
Learning Outcome	Knowledge	Skill	
Understand the importance of thermal insulation.	Has general knowledge on thermal insulation. Understands the basic concept of energy conservation.	Is able to take part in discussions within a project team. Is able to keep in consideration constraints and boundary conditions related to thermal insulation.	
Understand the importance of health and safety issues regarding the installation of thermal insulation	Has knowledge on concepts of health and safety issues regarding the installation of thermal insulation.	Is able to keep in consideration health and safety issues regarding the installation of thermal insulation.	
Select the suitable material for thermal insulation	Has knowledge on the insulating materials and their properties. Has general overview of insulation products available on the market, their requirements and possibilities, including advantages and disadvantages.	Is able to select the most suitable material for thermal insulation in relation to constraints and boundary conditions (regulations, type of building, type of insulation technique, etc.)	
Perform the installation of thermal insulation on different types of building elements, using different types of techniques and different materials available on the market	Has knowledge on different techniques/ systems for correct installation of insulation materials.	Is able to select the most suitable system/technique for thermal insulation in relation to constraints and boundary conditions (regulations, type of building elements, etc.). Is able to install thermal insulation material using different types of systems/techniques and material available on the market.	

In the TRAIN4SUSTAIN CQS, the Learning outcomes are described:

- in concrete terms, they illustrate what the learner knows and what is able to do

- from the perspective of the learner, not from the perspective of the trainer.

Learning outcomes do not describe the learning path, but the results achieved at the completion of a learning process.



Generic descriptions in terms of training curricula/programme aren't allowed, as for instance:

- Materials for thermals insulation
- Techniques for thermal insulation

It is allowed the use of verbs in passive form as:

- Insulation material properties were properly identified and brought into relationship with building features

- Practical exercises were carried out on the use of insulation material



## 4 **Evaluation of competences**

The TRAIN4SUSTAIN CQS allows to evaluate, score, and report the level of competence of professionals. The evaluation is done at Areas of Expertise level.

The definition of **competence** is: "proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development" (EQF – Council Recommendation - 2017/C 189/03).

The **level of competence** is expressed through a scale ranging from 1 to 5, where 5 is the highest degree. TRAIN4SUSTAIN CQS uses the performance scale developed in the Prof/Trac project with some adaptations. The Prof/Trac scoring scale was developed to measure the skill level specifically in the nZEB field. In the case of TRAIN4SUSTAIN, the performance scale has been made more generic to be applicable for all the topics included in the framework and to all professions, not just to white collars.

Level 1 of the CQS requires learning outcomes similar to EQF 4, level 2 and 3 correspond to learning outcomes of EQF 5 or 6, level 4 calls for learning outcomes comparable to EQF 6 or 7 and level 5 corresponds to EQF 7 or 8.

The TRAIN4SUSTAIN competence levels are not related to the EHEA (European Higher Education Area) qualification or to vocational training qualification, meaning that each building professional having an official EQF level from 5 to 8 (i.e., the EQF range of white collars in terms of education) can add to his/her EQF a TRAIN4SUSTAIN CQS level ranging from 1-5. For instance, a professional with EQF level 7 on architecture without competences on renewable energy systems could achieve through a training course a Train4Sustan CQS level 2 which is additional to the already present competence in architecture.

Similarly, a blue-collar worker having a generic vocational qualification diploma (EQF level 3 or 4), can reach a TRAIN4SUSTAIN CQS level 5 on a specific area of expertise (i.e. installation of insulation components) through the participation in specific skills upgrading training courses or through work experiences.



The following table describes the levels of competence used in the TRAIN4SUSTAIN CQS:

1	Has little knowledge and skills with respect to the thematic area. Understands basic principles and is able to take part in project team discussions
2	Understands basic knowledge and has practical skills within the thematic area, is able to solve simple problems by selecting and applying basic methods, tools, materials and information.
3	Has comprehensive, factual and theoretical knowledge and skills within the the the the the the the the the standard problems within the field
4	Has advanced knowledge involving a critical understanding of theories and principles and skills, required to solve complex and unpredictable problems in the field and is aware of the boundaries
5	Has specialized knowledge and problem-solving skills, partly at the forefront of knowledge in the field, in order to develop new knowledge and procedures and to integrate knowledge from different fields

In the TRAIN4SUSTAIN CQS, each Learning Outcome in the Areas of Expertise is associated to a competence level. This information specifies for which levels of competence each Learning Outcome is needed. The value associated to each Learning Outcome will depend on its degree of specialisation. For instance:

Dimension		Environment	
Thematic Field		Energy	
Macro area of		ER - Energy Reduction	
Expertise			
Area of		Insulation	
Expertise			
Learning	Knowledge	Skill	Level of
Outcome			competence
Understand the importance of thermal insulation.	Has general knowledge on thermal insulation. Understands the basic concept of energy conservation.	Is able to take part in discussions within a project team. Is able to keep in consideration constraints and boundary conditions related to thermal insulation.	1
Understand the importance of health and safety issues regarding the installation of thermal insulation	Has knowledge on concepts of health and safety issues regarding the installation of thermal insulation.	Is able to keep in consideration health and safety issues regarding the installation of thermal insulation.	2



Select the suitable material for thermal insulation	Has knowledge on the insulating materials and their properties. Has general overview of insulation products available on the market, their requirements and possibilities, including advantages and disadvantages.	Is able to select the most suitable material for thermal insulation in relation to constraints and boundary conditions (regulations, type of building, type of insulation technique, etc.)	3
Perform the installation of thermal insulation on different types of building elements, using different types of techniques and different materials available on the market	Has knowledge on different techniques/ systems for correct installation of insulation materials.	Is able to select the most suitable system/technique for thermal insulation in relation to constraints and boundary conditions (regulations, type of building elements, etc.). Is able to install thermal insulation material using different types of systems/techniques and material available on the market.	4

To reach a certain level of competence in an Area of Expertise, a professional has to acquire through training courses all the requested Learning Outcomes. For instance, if an architect wants to reach the competence level 4 in "ER1 Insulation", he has to acquire all the Learning Outcomes associated to level 4 and lower (1-2-3).

This scoring system is useful to inform professionals about what are the competences provided by a qualification scheme and at which level.



## 5 **Topics and Areas of Expertise**

Sustainable Building (and Neighbourhoods) is a field requesting multi-disciplinary competences because addressing different and complementary dimensions (environment, society, economy). Professionals need to own a minimum of competence in most sustainability topics to be able to take part in integrated design or planning processes. For instance, an architect shall have a minimum of competence in renewable energy to be able to interact with the engineer that is designing the technical installation. This interaction would allow to find the better synergy with other design strategies and solutions. For this reason, the TRAIN4SUSTAIN CQS includes all the relevant topics for sustainable building, identified and selected through the analysis of the most important sustainability assessment systems and Level(s).

All sustainability and energy certification systems organise assessment criteria and indicators in hierarchic and modular structures. In each system, the assessment criteria are organised in relation to topics, macro areas and categories. To define the structure of the TRAIN4SUSTAIN CQS, the structure of the following assessment systems has been studied:

- LEED (International version)
- HQE (France)
- BREEAM (International version)
- DGNB (Germany)
- Protocollo ITACA (Italy)
- Casaclima (Italy)
- GBC (Italy)
- WELL (International version)
- Passivhaus (Germany)

In addition, the macro themes that constitutes the final version of Level(s), issued in October 2020, have been analysed. Level(s) is a common frameworks of sustainability indicators elaborated and issued by the European Commission, For the harmonisation of building sustainability certification systems in Europe.

The structures of the analysed assessment systems have been compared and combined to originate the TRAIN4SUSTAIN CQS structure.

An overview of the CQS structure is illustrated in the following tables. Annex 1 contains the detailed description.



#### Overview of TRAIN4SUSTAIN CQS structure:

Envi	ronment		Soc	iety		Econ	omy		Proc	ess		
E	Energy		С	Comfort and well being		Q	Economical quality		D	Building Design		
EM	Energy Management		CQ	Quality of air		QC	Cost planning and management		DI	Integrative design		
EM1	Smart grid systems	N	CQ1	Low Emitting materials	В	QC1	Construction cost planning	B/N	DI1	Integrated Design Process		В
EM2	Domotic systems (homes)	В	CQ2	Natural ventilation	В	QC2	Life cycle cost assessment	B/N	DI2	Use of assessment tools in IDP		В
EM3	Building management systems BMS	B	CQ3	Mechanical ventilation	В	QV	Green value		DI3	Quality of site assessment		в
EP	Energy Production		CQ4	Radon management	В	QV1	Value creation and risk exposure	B/N	Z	Urban Design	_	
EPU ED1	Conthermal energy systems	в	CT1	Thermal Comfort Indeer		QV2	Communication of green building value	B/N	20	Integrated urban planning		
EP1 EP2	Biomass energy production	в	CT1	Ambient thermal comfort conditions	B	051	Financing schemes for sustainable building	R/N	201	Integrated Planning Process		N
ED2	Biogas energy production		CV	Visual comfort	14	052	Rusiness models preparation	D/N	702	Built urban systems		
EP4	District heating and cooling	N	CV1	Davlighting	в	00	Operative costs	0/14	ZM1	Urban mornhology and energy		N
EP5	Planning and design of heat nump installations	В	CV2	Interior lighting	в	001	Operating and maintenance cost management	B/N	7M2	Urban morphology and mobility		N
EP6	Solar power systems for electricity generation	B/N	CV3	Illumination of outdoor spaces	N	002	Use stage energy cost management	B/N	ZM3	Urban structure and form optimization		N
EP7	Solar absorption cooling	в	CV4	Circadian lighting design	в	003	Use stage water cost management	B/N	ZM4	Integration with the context	E	/N
EP8	Solar thermal energy systems for heating gen.	B/N	CA	Acoustic comfort				,	1	Innovative Digital Solutions		
EP9	Mini wind power generation	В	CA1	Passive building acoustic requirements	в				IB	Building Information Modelling		
EP10	Combined Heat and Power (CHP) generation	В	CA2	Management of ambient noise conditions	N				IB1	Operation of BIM systems		в
ER	Energy Reduction		CE	Electromagnetic pollution					ID	District Information Modelling		
ER1	Insulation	В	CE1	Management of indoor exposure to ELF magnetic fields	в				ID1	Operation of DIM systems		N
ER2	Air tightness building	В	CE2	Management of indoor exposure to RF/MW EMF	в				IG	GIS Systems		
ER3	Micro climates	В	CR	Ergonomics					IG1	GIS Systems for design and planning	В	/N
ER4	Envelope systems	В	CR1	Cognitive and emotional health	в				IL	Lean Management		
ER5	Hot water systems	В	S	Safety					IL1	Lean Management solutions		в
ER6	Window and/or glazing systems	В	SP	Fire protection					IM	Measuring		
ER7	Heating and cooling emission systems	в	SP1	Risk to occupants and facilities from fire	В				IM1	Smart meters		В
ER8	Electric heating systems	В	SF	Flood					IM2	Sensors		В
ER9	Artificial lighting systems	В	SF1	Risk to occupants and facilities from flooding	В				T	Sustainable construction		
ER10	Ventilation systems	В	SE	Eartnquake					TS	Sustainable construction management		
w	Water		SE1	Risk to occupants and facilities from earthquake	В				TS1	Construction Activity Pollution Management	В	/N
WE	water efficiency	0.444	A	Accessibility	A				TS2	C&D waste management	В	/N
WE1	Outdoor water use management	B/N	AB	barrier ifee accessibility					0	maintenance and operating		
WE2	Indoor water use management	B	AB1	Accessibility of public spaces	0				UI	Maintenance		
VVE3	Fillionte management	в	AB2	Design for All	D/U				011	wantenance and management plans		8
WIVI	Enruents management	P	ABS	Mobility	6/U				012	building maintenance		8
VVIV11	Crownater collection and reuse systems	B	0	Alternative mobility					013	building inaintenance		8
W/C	Sustainable Dreinage (N)	в	041	Transportation infrastructure	N				110	Ontimization of performance		5
WV 3	Sustainable drainage (N)	NI	OAL	Urban marabalani far mahilitu	N				1101	Duilding anomy management		
W 51	Materiale	IN	UAZ	Soprices	IN				1001	Building water management		D
MD	Design for Deconstruction, rouse and reguling		FC	Communication					1102	Duilding Water management		
NID	Design for Deconstruction, reuse and recycling		FC	Communication	0 /01				003	Building IEQ management		в
NDI	materials and components for ease of disassembly	в	FUI	communication services	B/IN				N	Commissioning	-	
MS	Sustainable materials		FS	Services for inhabitants					NP	Commissioning process		
MS1	Environmental impact of construction materials (LCA)	В	FS1	Optimization of public and private facilities and service:	N				NP1	Management of a Commissioning Process		в
MS2	Environmental labels for construction materials	В	FS2	Functional mix	N				P	Sustainability certification systems	_	
MS3	Recycled material	в	F53	Intrastructure	N				PE	EPC		
MS4	Renewable materials	в	FS4	Bicycle parking	B/N				PE1	Assessment methodology		в
IVIS5	Certified materials	в	RD	Adaptation and resilience to climate change					PEZ	Certification process		в
IVIS0	Constrauction waste	в	RD1	Design strategies	D				25	581001		
N410/1	Construction waste	R/N	PD	Planning strategies	ь				PS1 PS2	Assessment methodology		В
101001	Habitat	D/IN	DD1	Design strategies for resilient neighbourboods	N				P 52	SNTool		•
н	land lise (N)		INF 1	Design strategies for resilient heighbourhoods	14				PN1	Assessment methodology		N
HI1	Site preservation, regeneration and development	B/N							PP			
HL2	Efficient use of land	N							PP1	Assessment methodology		в
HL3	Environmental impacts management	N							PP2	Certification process		в
HL4	Permeability	N							PL	LEED		
НВ	Biodiversity (N)								PL1	Assessment methodology		в
HB1	Management of biodiversity on the site	B/N							PL2	Certification process		в
									PB	BREEAM		
									PB1	Assessment methodology		В
									PB2	Certification process		В
									PH	HQE		
									PH1	Assessment methodology		В
									PH2	Certification process		В
									PC	CasaClima		
									PC1	Assessment methodology		8
									PC2	Certification process		8
									PG1	Assessment methodology		B
									PG1	Certification process		B
									PW	WELL		Ĩ
									PW1	Assessment methodology		в
									PW2	Certification process		в
									PD	DGNB		
									PD1	Assessment methodology	B	/N
									PD2	Certification process	B	/N
									К	Interdisciplinary Skills		
									KP	Procurement		
									KP1	GPP Requirements		В
									KP2	Tenders preparation and management		В
									KQ	Quality assurance		
									KQ1	Quality assurance planning and management		В
									KC	Collaboration and Communication		
									KC1	Motivation and communication - Design Team		В
									KI	Information management		
									KI1	Management of information in a design process		в
									KM	ivianagement and community involvement		
									KM1	Participatory Guarantee Systems		N
									KIVI2	Safety Assurance		IN
									KC1	Risk prevention safety and health of workers		B
									1.31	and presention, solery and realth of workers		-



#### Environment Energy **Energy Management** EM EM1 Smart grid systems Ν EM2 Domotic systems (homes) B EM3 Building management systems BMS R EP **Energy Production** EPO Heating and Cooling GENERAL B EP1 Geothermal energy systems В EP2 Biomass energy production В EP3 Biogas energy production В EP4 District heating and cooling Ν EP5 Planning and design of heat pump installations В EP6 Solar power systems for electricity generation B/N EP7 Solar absorption cooling В EP8 Solar thermal energy systems for heating gen. B/N EP9 Mini wind power generation В EP10 Combined Heat and Power (CHP) generation В ER Energy Reduction **ER1** Insulation В ER2 Air tightness building В ER3 Micro climates В ER4 Envelope systems В ER5 Hot water systems В ER6 Window and/or glazing systems B ER7 Heating and cooling emission systems B ER8 Electric heating systems В ER9 Artificial lighting systems B ER10 Ventilation systems B W Water WE Water efficiency B/N WE1 Outdoor water use management WE2 Indoor water use management В WE3 Process water В WM Effluents management WM1 Rainwater collection and reuse systems В WM2 Greywater collection and reuse systems В WS Sustainable Dreinage (N) WS1 Sustainable drainage systems Ν Materials м MD Design for Deconstruction, reuse and recycling MD1 Materials and components for ease of disassembly В MS Sustainable materials MS1 Environmental impact of construction materials (LCA) В MS2 Environmental labels for construction materials В MS3 Recycled material В MS4 Renewable materials В MS5 Certified materials В MS6 Design for adaptability and renovation В **MW** Constrauction waste MW1 Construction waste management B/N H Habitat HL Land Use (N) HL1 Site preservation, regeneration and development B/N HL2 Efficient use of land N HL3 Environmental impacts management N HL4 Permeability Ν **Biodiversity (N)** HB B/N HB1 Management of biodiversity on the site

#### Society C Comfort and well being CQ Quality of air CQ1 Low Emitting materials B CQ2 Natural ventilation B CQ3 Mechanical ventilation B CQ4 Radon management В **CT** Thermal comfort CT1 Thermal Comfort Indoor В CT2 Ambient thermal comfort conditions N **CV** Visual comfort CV1 Daylighting В CV2 Interior lighting B CV3 Illumination of outdoor spaces N CV4 Circadian lighting design B CA Acoustic comfort CA1 Passive building acoustic requirements В CA2 Management of ambient noise conditions N **CE** Electromagnetic pollution CE1 Management of indoor exposure to ELF magnetic fields В CE2 Management of indoor exposure to RF/MW EMF В **CR** Ergonomics CR1 Cognitive and emotional health В S Safety SP Fire protection SP1 Risk to occupants and facilities from fire В SF Flood SF1 Risk to occupants and facilities from flooding В SE Earthquake SE1 Risk to occupants and facilities from earthquake B A Accessibility Α AB Barrier free accessibility AB1 Accessibility of public spaces U AB2 Design for All B/U AB3 Public Transport B/U O Mobility **OA** Alternative mobility OA1 Transportation infrastructure N OA2 Urban morphology for mobility Ν F Services FC Communication B/N FC1 Communication services FS Services for inhabitants FS1 Optimization of public and private facilities and service N FS2 Functional mix N FS3 Infrastructure N FS4 Bicycle parking B/N Adaptation and resilience to climate change R **RD** Design strategies RD1 Design strategies for resilient buildings В **RP** Planning strategies Ν RP1 Design strategies for resilient neighbourhoods



Economy					
Q	Economical quality				
QC	Cost planning and management				
QC1	Construction cost planning	B/N			
QC2	Life cycle cost assessment	B/N			
QV	Green value				
QV1	Value creation and risk exposure	B/N			
QV2	Communication of green building value	B/N			
QF	Financing schemes and business models				
QF1	Financing schemes for sustainable building	B/N			
QF2	Business models preparation	B/N			
QO	Operative costs				
Q01	Operating and maintenance cost management	B/N			
Q02	Use stage energy cost management	B/N			
Q03	Use stage water cost management	B/N			

Proc	Process					
D	Building Design					
DI	Integrative design					
DI1	Integrated Design Process	В				
DI2	Use of assessment tools in IDP	В				
DI3	Quality of site assessment	В				
z	Urban Design					
ZU	Integrated urban planning					
ZU1	Integrated Planning Process	N				
ZU2	Use of assessment tools in IUP	N				
ZM	Built urban systems					
ZM1	Urban morphology and energy	Ν				
ZM2	Urban morphology and mobility	Ν				
ZM3	Urban structure and form optimization	Ν				
ZM4	Integration with the context	B/N				
1	Innovative Digital Solutions					
IB	Building Information Modelling					
IB1	Operation of BIM systems	В				
ID	District Information Modelling					
ID1	Operation of DIM systems	N				
IG	GIS Systems					
IG1	GIS Systems for design and planning	B/N				
IL	Lean Management					
IL1	Lean Management solutions	В				
IM	Measuring					
IM1	Smart meters	В				
IM2	Sensors	В				
T	Sustainable construction					
TS	Sustainable construction management	- 6-				
TS1	Construction Activity Pollution Management	B/N				
TS2	C&D waste management	B/N				
U	Maintenance and operating					
UI	Maintenance					
011	Maintenance and management plans	в				
012	Building diseases diagnosis	В				
013	Building maintenance	В				
014	Estimation of materials' service life	В				
00		D				
1001	Building water management	В				
002		в				
UO3	Building IEQ management	В				

Ν	Commissioning	
NP	Commissioning process	
NP1	Management of a Commissioning Process	В
Ρ	Sustainability certification systems	
PE	EPC	
PE1	Assessment methodology	В
PE2	Certification process	В
PS	SBTool	
PS1	Assessment methodology	В
PS2	Certification process	В
PN	SNTool	
PN1	Assessment methodology	Ν
PP	Protocollo ITACA	
PP1	Assessment methodology	В
PP2	Certification process	В
PL	LEED	
PL1	Assessment methodology	В
PL2	Certification process	В
PB	BREEAM	
PB1	Assessment methodology	В
PB2	Certification process	В
PH	HQE	
PH1	Assessment methodology	В
PH2	Certification process	В
РС	CasaClima	
PC1	Assessment methodology	В
PC2	Certification process	В
PG	GBC	
PG1	Assessment methodology	В
PG2	Certification process	В
PW	WELL	
PW1	Assessment methodology	В
PW2	Certification process	В
PD	DGNB	
PD1	Assessment methodology	B/N
PD2	Certification process	B/N
K	Interdisciplinary Skills	
KP	Procurement	
KP1	GPP Requirements	В
KP2	lenders preparation and management	В
KQ	Quality assurance	
KQ1	Quality assurance planning and management	В
KC	Collaboration and Communication	
KC1	Motivation and communication - Design Team	В
KI	Information management	-
KI1	ivianagement of information in a design process	В
KIVI	ivianagement and community involvement	
KM1	Participatory Guarantee Systems	N
KM2	Community involvement in urban planning activities	N
KS	Sarety Assurance	
KS1	KISK prevention, safety and health of workers	В

Overview of the CQS Structure Economy and Process dimensions



## 6 <u>Reference Professions</u>

The TRAIN4SUSTAIN CQS addresses different professions, both white collars (e.g. architects, engineers) and blue collars (e.g. workers, installers). Professional titles can be different among countries. To overcome this issue in the CQS, professionals have been organised in reference professions that are described with a task base approach. In this way, users overcome the differences in professional titles and will focus on the competencies. The table below summarizes the reference work fields, the corresponding professions and the general description. This table updates the professions identified in the Prof/Trac project, expanding them to include the blue collars.

#	Work field	Reference profession(s) within the work field	Definition of the profession
1	Architecture	<b>AR:</b> Architect	Architects investigate, design and oversee the implementation of buildings taking into account functional, architectural, aesthetic, structural, technical, regulatory, cost and contextual requirements with due regard to public health and safety.
2	Urban Planning	<b>UP:</b> Urban Planner	Urban planners develop comprehensive plans and designs for the use of space within cities and towns.
3	Mechanical engineering	<b>ME</b> : Mechanical Engineer, Energy Engineer	Designer of materials and systems for HVAC and sanitary equipment, considering the limitations imposed by practicality, regulation, safety, and cost.
4	Civil engineering	<b>CE:</b> Structural engineer, Civil Engineer, Construction Engineer	Designer of materials and structures, considering the limitations imposed by practicality, regulation, safety, and cost. Specialization is possible on topics like construction safety, thermal performance, acoustics, building physics.
5	Electrical engineering	EL: Electrical Engineer / ICT Engineer/ Building Automation Engineer	Designer of power, lighting, data and or communication installations, considering the limitations imposed by practicality, regulation, safety, and cost. Designer of building automation systems, system engineer / system integrator, considering the limitations imposed by practicality, regulation, safety, and cost.



6	Environmental engineering	<b>EE</b> : Environmental engineer	Designer of solutions to protect human health, nature's beneficial ecosystems, and to improve environmental-related enhancement of the quality of human life
7	Energy efficiency	<b>BEC:</b> Building Energy Consultants, Assessors	The person responsible for the optimization of energy usage, as well as the sources from which the energy is derived. Responsible for the EPC draft.
8	Sustainable Building	<b>SC:</b> Sustainability Consultants, Assessors	The person responsible for the optimization of building's sustainability performance. Expert in sustainability certification processes.
9	Construction management	<b>C</b> : Manager of building process, Constructors	The person responsible for quality assurance during on-site construction works in the realization of sustainable buildings
		<b>Br:</b> Bricklayers	The person dealing with the construction of the building envelop
		FM: Carpenters	The person dealing with wood construction
10	Construction works - Building	<b>FW</b> : Façade Workers, Plasterer	The person dealing with the façade construction and its finishing
10		II: Insulation installers	The person dealing with the installation of thermal insulation
		<b>R</b> : Roofers	The person dealing with the construction of the building's roof
		<b>WI:</b> Window Installers	The person dealing with the installation of windows or other transparent components of the building envelope
		EI: Electrical installers	The person dealing with the installation of electrical equipment
	Construction	<b>P</b> : Plumber	The person dealing with the installation of water pipes and devices
11	Construction works – Technical installations	<b>RESI:</b> Renewable Energy Systems Installers (Electric)	The person dealing with the installation of renewable energy systems for producing electricity (e.g. Photovoltaic Panels)
		<b>RWT:</b> Renewable Energy Systems	The person dealing with the installation of renewable energy systems for producing heat (e.g. Solar thermal panels)



		Installers (Thermal)	
		VI: Ventilation and Air Conditioning Installers	The person dealing with the installation of ventilation and air conditioning systems
10	Building	<b>FaM:</b> Facility Manager	The person responsible to maintain the real estate as it was realized at the end of the building process.
IZ	management	<b>BO</b> : Building Operator	The person responsible for management, monitoring and improvement of operation of facilities.

In the TRAIN4SUSTAIN CQS, each Learning Outcome is associated to one or more professions. For instance:

Dimension	Environment		
Thematic Field	Energy		
Macro area of		ER - Energy Reduction	
Expertise			
Area of Expertise		Insulation	
Learning	Profession		
Outcome			
Understand the impo	ortance of		
thermal insulation.			
Understand the impo	ortance of	AR – Architect	
health and safety issu	les	ME - Mechanical Engineer, Energy Engineer	
regarding the installa	ation of	EN - Building Energy Consultant	
thermal insulation		SB - Sustainability Consultant	
		C - Manager of building process	
		II - Insulation Installer	
Is able to install a the according to best pra	ermal coat actice	II - Insulation Installer	



# 7 Project stages

Each Learning Outcome (LO) is linked to one or more project's stages. This information indicates in which stage of a project the competence is applicable. A competence can be useful in more than one project's stage. Following the Level(s) description approach, the reference stages are:

- Conceptual design
- Detailed design
- Construction
- As built
- In use

**Conceptual design** is an early phase of the design process, in which the broad outlines of function and form of the building are articulated.

**Detailed design** is the phase where all design information required to manufacture and construct the project are completed.

**Construction** is the phase where the construction of the building takes place.

As built is the phase where the building has been completed but it still not operative. In this phase it is undertaken a review of the project performance, defects are rectified, commissioning is completed.

In use is the phase where the building is used, operated and maintained.

This is an example:

Dimension	Environment
Thematic Field	Energy
Macro area of Expertise	ER - Energy Reduction
Area of Expertise	Insulation
Learning Outcome	Project Stage
Understand the importance of thermal insulation.	All
Select the suitable material for thermal insulation.	Design
Understand the importance of health and safety issues regarding the installation of thermal insulation.	Construction
Is able to install a thermal coat according to best practice.	Construction



## 8 Spatial Scales

In the Areas of Expertise of the TRAIN4SUSTAIN CQS, each Learning Outcome (LO) is linked to one or more spatial scale.

The spatial scales addressed by the TRAIN4SUSTAIN CQS are:

- building (single construction)
- urban/cluster (group of buildings / block)
- urban/neighbourhood (group of clusters)

The following definition is adopted to define clusters and neighbourhoods. It has been established by the 7<sup>th</sup> Framework Programme project FASUDIR (Friendly and Affordable Sustainable Urban Districts Retrofit)

#### Block/Cluster

Defined by street intersections.

Traditional composition: few buildings (adjacent or separated), internal courtyard.

#### <u>Neighbourhood</u>

Traditional scale culturally recognized. City inhabitants recognize its defining traits (social, cultural, architectural).

Reference size values:

- Square with a 200-400 m size
- Area that can be crossed in 10-15 min walk
- 200-1500 inhabitants

This association allows to visualise in the TRAIN4SUSTAIN CQS the Areas of Expertise and relative Learning Outcomes that are relevant for each specific spatial scale.



## 9 Integration of Qualification Schemes

Any existing professional qualification standard can be integrated in the TRAIN4SUSTAIN CQS and can contribute to its evolution. The TRAIN4SUSTAIN CQS is an open and living system, that will evolve over time following the changes in professional qualifications.



Integration of existing qualification schemes in TRAIN4SUSTAIN CQS

The process to include existing qualification schemes in the TRAIN4SUSTAIN CQS takes place in steps:

- 1. The Learning Outcomes provided by the qualification scheme are identified and described in terms of knowledge and skills, following the EQF approach. To reach this result, the training material and process is analysed in detail.
- 2. Each identified Learning Outcome is associated to:
  - a. A project stage
  - b. One or more professions
  - c. A spatial scale
- 3. Each Learning Outcome is then integrated in the most appropriate Area of Expertise.
- 4. Finally, a competence level (from 1 to 5) is associated to the Learning Outcome on the base of its degree of specialization.



For instance, this is a group of Learning Outcomes coming from the analysis of the "Esperto Protocollo ITACA" professional qualification:

#### Learning Outcome (LO)

Understand the importance of limiting soil consumption

Evaluate the reduction of land use encouraging the re-use of the soil already compromised

Understand the importance of the accessibility to the public transport

Determine the accessibility to the public transport

Each Learning Outcome is described in terms of Knowledge and Skill:

Learning Outcome	Knowledge	Skill
Understand the importance of limiting soil consumption	Has general knowledge related to the land consumption aspects	Is able to take part in discussion within the project concerning land consumption
Evaluate the reduction of land use encouraging the re- use of the soil already compromised	Knows the calculation method of the indicator related to land consumption	Is able to apply the assessment method for the characterisation of the indicator related to land consumption
Understand the importance of the accessibility to the public transport	Has general knowledge related to the importance to reduce the use of private vehicles	Is able to take part in discussion within the project concerning the accessibility to the public transport
Determine the accessibility to the public transport	Knows the calculation method of the indicator related to the accessibility to the public transport	Is able to apply the assessment method for the characterisation of the indicator related to the accessibility to the public transport

Each Learning Outcome is then associated to one or more project's stages, spatial scale and professions:



Learning outcome (LO)	Stage of the project	Scale	Professions
	Conceptual design		UP
Understand the importance of limiting soil	Detailed design	B/N	AR
consumption			EE SC
	In Use		
			UP
Evaluate the reduction of land use	Detailed design		AR
encouraging the re-use of the soil already		B/N	EE
	In Use		SC
	Conceptual design		AR
Understand the importance of the	Detailed design	B/N	UP
accessibility to the public transport			SC
	In Use		
			UP
Determine the accessibility to the public	Detailed design		AR
transport	¥	B/N	SC
	In Use		



For each Learning Outcome, the most appropriate Area of Expertise is then identified:

Area of Expertise	Learning outcome (LO)				
HL1 - Site preservation, regeneration and development	Understand the importance of limiting soil consumption				
PP1 - Assessment Methodology Protocollo ITACA	Evaluate the reduction of land use encouraging the re- use of the soil already compromised				
AB3 - Public Transport	Understand the importance of the accessibility to the public transport				
PP1 - Assessment Methodology Protocollo ITACA	Determine the accessibility to the public transport				

The association of a Learning Outcome to an Area of Expertise allows to integrate it in the CQS:



Finally, each Learning Outcome is associated to a level of competence. The level of competence is referred to the Area of Expertise to which the LO is associated. If, for example, a LO is required for level 3, it will also be required for higher levels of competence (i.e. 4 and 5).



Example of association between Learning Outcomes and Level of Competence:

Learning outcome (LO)	Requested for the levels of competence						
	1	2	3	4	5		
Understand the importance of limiting soil consumption.	1	2	3	4	5		
Evaluate the reduction of land use encouraging the re-use of the soil already compromised.	-	-	3	4	5		
Understand the importance of the accessibility to the public transport.	1	2	3	4	5		
Determine the accessibility to the public transport.	-	-	3	4	5		

This is an overview about the full characterisation of Learning Outcomes on the base of the TRAIN4SUSTAIN methodology.

Area of Expertis	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Re	questeo co	d for th mpeter	e level Ice	s of	Scale 🖕	Professions
					1	2	3	4	5		
		Conceptual design									UP
	Understand the importance	Detailed design	Has general knowledge related	Is able to take part in discussion within the project concerning land consumption	1	2	3	4	5	B/N	AR
HL1	of limiting soil consumption		to the land consumption aspects								EE
											SC
		In Use									
	Evaluate the reduction of			is able to apply the assessment							UP
	land use encouraging the re-	Detailed design	Knows the calculation method of the indicator related to land	method for the characterisation of the indicator related to land	-	-	3	4	5	В	AR
PP1 use of the soil already	use of the soil already										EE
	compromised		consumption	consumption							SC
		In Use									
	Understand the importance	Conceptual design	-	Is able to take part in discussion							AR
		Detailed design	Has general knowledge related to the importance to reduce the use of private vehicles	within the project concerning the accessibility to the public transport	1	2	3	4	5	B/N	UP
AB3 of the accessibility to the	of the accessibility to the										SC
	public transport										
		In Use									
PP1	Determine the accessibility to the public transport	D	Knows the calculation method of the indicator related to the accessibility to the public transport	is able to apply the assessment							UP
		Detailed design		of the indicator related to the	-	-	3		5	В	AR
								4			SC
		In Lico		accessibility to the public							
		in Ose		u ansport							

Through this process each Learning Outcome belonging to a qualification scheme is associated to one Area of Expertise in the CQS. This will allow to users to understand what competencies and at which level a specific qualification scheme can provide.



# 10 TRAIN4SUSTAIN Skill Passport

The TRAIN4SUSTAIN Skill Passport (T4S Passport) is a tool for facilitating transnational recognition of learning outcomes and skill levels of existing qualifications and vocational trainings.

It is a reporting document that shows the competences, and their respective levels, acquired by a professional and their level. National qualification schemes can be compared with schemes from other countries and transnationally, and thus gaps and shortcomings can be identified. Scheme operators and employers will be able to easier recognize the skill level of qualified experts.



The T4S Skill Passport allows to compare the competencies and their level acquired through different qualification schemes.

The Passport is configured as a reporting card, listing the Areas of Competence acquired by the professional and the level of competence achieved:

Mr	Profession: AR - Architect
Thematic Field	C - Comfort and Well Being
Macro area of expertise	CQ - Quality of air
Area of Expertise	Level of competence
CQ1 Low emitting materials	5
CQ2 Natural Ventilation	2
CQ3 Mechanical ventilation	2
CQ4 Radon management	1



The scoring card above shows that the architect is very expert in low emitting construction materials, has a generic knowledge about natural and mechanical ventilation and a basic knowledge concerning radon management.

Professional can benchmark their competences and get the T4S European Passport accessing the CQS and indicating the professional qualification owned.



Train4Sustain Competence Qualification Standard

T4S European Passport

To reach this result, the most relevant national and transnational qualification schemes will be mapped in the task 4.3 of the TRAIN4SUSTAIN project. The CQS will be a living and evolving system that will include over time the European qualification schemes.

Through the Local Projects Committees and the B2B meetings (WP5), schemes operators and trainers will be engaged, and qualification schemes will feed and expand the TRAIN4SUSTAIN CQS.





## 11 Test of the CQS structure

The structure of the TRAIN4SUSTAIN Competence Quality Standard has been tested mapping 16 relevant qualification schemes at national and transnational level for professionals and workers.

The training material and the training process of each qualification scheme has been evaluated and studied in detail. All Learning Outcomes provided by the qualification schemes have been identified and described.

Each Learning Outcome has been then associated to an Area of Expertise of the CQS. This activity has been useful to validate the structure of the CQS and the Areas of Expertise included in terms of completeness and exhaustiveness.

Because the CQS is a framework of Areas of Expertise related to sustainability, PPs analysed a group of qualification schemes belonging to the most relevant building sustainability certification systems at transnational and national level used in Europe. In particular:

- Esperto Protocollo ITACA
- Casaclima Junior Expert
- Casaclima Energy Consultant
- Casaclima Sustainability Consultant
- ComuneClima Consultant
- Craftman CasaClima Expert
- LEED Green Associate
- LEED Approved Professional (BD+C)
- LEED Approved Professional (ID+C)
- GBC Home Approved Professional
- GBC Historical Building AP
- Well Approved Professional
- DGNB Registered Professional
- DGNB Consultant

Because most of the qualification schemes belonging to sustainability certification systems are focused on professionals (architects, engineers), 2 additional qualifications schemes for workers have been included in the analysis:

- Photovoltaic Installer (ENA263\_3)
- Window manufacturer expert (IT20)



## 12 Next steps

The structure of the TRAIN4SUSTAIN quality competence standard has been developed and tested on a first group of 16 qualification schemes identified in task 2.1 survey.

This first group of qualification schemes have been integrated, analysing in detail their Learning Outcomes and associating them to the CQS Areas of Expertise.

Through the organisation of the first Local Project Committee (T5.1), the methodological approach of CQS has been discussed with the target groups. B2B meetings took place to get the validation of the qualification schemes owners in the CQS development and test (DGNB Academy, GBC Italia, ITACA, Passivhaus Institute, CasaClima Agency).

A meeting has been also organised with the coordinator of the Level(s) process from DG Environment (Josefina Lindblom).

Task 2.3 will allow to complete the description of the Areas of Expertise. At the moment of the preparation of this document, PPs have already identified and analysed a further set of relevant qualification schemes. They will be included in the CQS after validation by the scheme owners.

- Referent HQE
- Specialized Master<sup>®</sup> Green Buildings-Green buildings (GBBV)
- Audit Reno
- Photovoltaic generator connected to the competence network Integration in the building.
- Refrigeration, air conditioning and heat pump equipment installer
- FACILITY ENERGY ENGINEER
- Energy auditor
- Building energy assessor
- Wooden Carpenter expert
- ENA358\_3 Energy efficiency of Buildings

During T2,3 additional qualification schemes will be analysed and integrated in the CQS, to ensure the most complete coverage of the CQS Areas of Expertise.

Finally, the CQS and the European Skill Passport will be implemented in an IT platform in WP3 "Development of the European skill bank and knowledge scheme centre for sustainable building professionals and implementation of a European Skills Registry (ESR)".

The TRAIN4SUSTAIN CQS methodological approach has been conceived to make the platform a living tool that will evolve over time, following the evolution of qualification schemes and the new knowledge in the field of sustainable competence for professionals and workers.


# Annex 1: Structure of the CQS

This annex contains the detailed description of the CQS structure.

#### Environment

Thematic	Ma	cro area of	Description	Are	eas of Expertise
Field	e	xpertise			
E Energy	EM	Energy Management	Strategies, solutions, technologies for the	EM1	Smart grid systems
			efficient management of energy	EM2	Domotic systems
				EM3	Building management systems
	EP	Energy Production	Strategies, solutions, technologies for the	EPO	Heating and Cooling GENERAL
			efficient production and delivering of thermal and	EP1	Geothermal energy systems
			electric energy.	EP2	Biomass energy production
				EP3	Biogas energy production
				EP4	District heating and cooling
				EP5	Planning and design of heat pump installations
				EP6	Solar power systems for electricity
				EP7	Solar absorption cooling
				EP8	Solar thermal energy systems for heating gen.
				EP9	Mini wind power generation
				EP10	Combined Heat and Power (CHP) generation
	ER	Energy	Strategies, solutions,	ER1	Insulation
		Reduction	technologies for the reduction of the energy	ER2	Air tightness building
			needs and consumptions	ER3	Microclimates
			of buildings.	ER4	Envelope systems
				ER5	Hot water systems
				ER6	Window and/or
					glazing systems
				ER7	Heating and
					systems



				ER8	Electric heating
				ER9	Artificial lighting systems
				ER10	Ventilation systems
W Water	WE	Water efficiency	Strategies, solutions, technologies for the	WE1	Outdoor water use management
			reduction of the water needs and consumption	WE2	Indoor water use management
			of buildings.	WE3	Process water
	WM	Effluents	Strategies, solutions,	WM1	Rainwater
		management	technologies for the reuse of effluents		collection and reuse systems
			reducing the consumption of fresh	WM2	Greywater collection and
			water.		reuse systems
	WS	Sustainable Drainage	technologies to manage	W21	Sustainable drainage systems
M Materials	MD	Design for	Design strategies to	MD1	Materials and
		Deconstruction,	facilitate the		components for
		reuse and	deconstruction of		ease of disassembly
		recycling	buildings and the		
			recycling/reuse of demolition waste.		
	MS	Sustainable	Strategies, solutions,	MS1	Environmental
		materials	technologies to minimise		impact of
			the environmental		construction
			impact of construction		materials (LCA)
			materials, according to	MS2	Environmental
			the circular economy		labels for
			principles.		construction
				1.100	materials
				MS3	Recycled material
				M54	Renewable
				NASE	Materials Cartifical materials
				10122	Certified materials
				10130	adaptability and renovation
	MW	Construction	Strategies and solutions	MW1	Construction waste
		waste	to manage construction		management
			waste and facilitate its		
			reuse / recycling.		
H Habitat	HL	Land Use	Strategies and solutions	HL1	Site preservation,
			to reduce the land		regeneration and
			consumption through		development
			urban regeneration and	HL2	Efficient use of land
			to manage the	HL3	Environmental
			environmental impact of		impacts
			bullaings on land.		management
				HL4	Permeability
	НВ	BIOGIVERSITY	strategies and solutions	нві	Management of
			on the sites		bibalversity on the
			on the sites.		SILE



### Society

Thematic	Ma	cro area of	Description	Ar	eas of Expertise				
Field	e	expertise							
C Comfort and well	CQ	Quality of air	Strategies, solutions, technologies to manage	CQ1	Low Emitting materials				
being			the quality of air in buildings and fulfil the	CQ2	Natural ventilation				
			Technical standards.	CQ3	Mechanical ventilation				
				CQ4	Radon management				
	CT	Thermal comfort	Strategies, solutions, technologies to manage	CT1	Thermal Comfort Indoor				
			the indoor thermal comfort in buildings and fulfil the technical standards.	CT2	Ambient thermal comfort conditions				
	CV	Visual comfort	Strategies, solutions,	CV1	Daylighting				
			technologies to manage	CV2	Interior lighting				
			the indoor visual comfort	CV3	Illumination of				
			in buildings and fulfil the		outdoor spaces				
			fechnical standards.	CV4	Circadian lighting design				
	CA	Acoustic comfort	Strategies, solutions, technologies to manage the indoor acoustic	CA1	Passive building acoustic requirements				
			comfort in buildings and fulfil the technical standards.	CA2	Management of ambient noise conditions				
	CE	Electromagnetic pollution	Strategies, solutions, technologies to minimise the exposition of	CE1	Management of indoor exposure to ELF magnetic fields				
			occupants to electric, magnetic and electromagnetic fields.	CE2	Management of indoor exposure to RF/MW EMF				
	CR	Ergonomics	Strategies, solutions, technologies to guarantee a good cognitive and emotional health.	CR1	Cognitive and emotional health				
S Safety	SP	Fire protection	Strategies, solutions, technologies to guarantee the safety of occupants in case of fire.	SP1	Risk to occupants and facilities from fire				
	SF	Flood	Strategies, solutions, technologies to guarantee the safety of occupants in case of flood.	SF1	Risk to occupants and facilities from flooding				
	SE	Earthquake	Strategies, solutions, technologies to guarantee the safety of occupants in case of earthquake.	SE1	Risk to occupants and facilities from earthquake				



A Accessibility	AB	Barrier free accessibility	Strategies, solutions, technologies to guarantee the access to buildings and public	AB1 AB2 AB3	Accessibility of public spaces Design for All Public Transport
			transports to all.		
O Mobility	OA	Alternative mobility	Strategies, solutions, technologies to maximise	OA1	Transportation infrastructure
			the access and use of alternative mobility.	OA2	Urban morphology for mobility
F Services	FC	Communication	Strategies, solutions, technologies to maximise	FC1	Communication services
			the access to communication services		
	FS	Services for inhabitants	Strategies, solutions, technologies to maximise the access to services.	FS1	Optimization of public and private facilities and services
				FS2	Functional mix
				FS3	Infrastructure
				FS4	Bicycle parking
R Adaptation and resilience to climate change	RD	Design strategies	Strategies, solutions, technologies for the adaptation of buildings to climate change.	RD1	Design strategies for resilient buildings
	RP	Planning strategies	Strategies, solutions, technologies for the adaptation of urban areas to climate change.	RP1	Design strategies for resilient neighbourhoods

#### Economy

Thematic	Ma	cro area of	Description	Areas of Expertise				
Field	е	xpertise						
Q Economical quality	QC	Cost planning and	Methodologies and standards to manage	QC1	Construction cost planning			
		management	the costs of a building in the life cycle.	QC2	Life cycle cost assessment			
	QV QF QO	Green value	Methodologies and process to maximise the	QV1	Value creation and risk exposure			
			green value of buildings.	QV2	Communication of green building value			
		Financing schemes and business models	Capacity to develop business models and to manage financing	QF1	Financing schemes for sustainable building			
			schemes for susfainable building.	QF2	Business models preparation			
		Operative costs	Strategies, solutions, technologies, methodologies to	QO1	Operating and maintenance cost management			
			manage the operative costs during operation.	QO2	Use stage energy cost management			
				QO3	Use stage water cost management			



#### Process

Thematic	Ma	cro area of	Description	Ar	eas of Expertise
Field	e	expertise			
D Building Design	DI	Integrative design	Methodologies and standards to implement	DI1	Integrated Design Process
			and manage an integrative design	DI2	Use of assessment tools in IDP
			buildings.	DI3	Quality of site assessment
Z Urban Design	ZU	Integrated urban planning	Methodologies and standards to implement	ZU1	Integrated Planning Process
			and manage an integrative integrated urban planning process for sustainable urban areas.	ZU2	Use of assessment tools in IUP
	ZM	Built urban systems	Strategies and methodologies to	ZM1	Urban morphology and energy
			manage the morphology of urban	ZM2	Urban morphology and mobility
			areas.	ZM3	Urban structure and form optimization
				ZM4	Integration with the context
I Innovative Digital Solutions	IB	Building Information Modelling	Standards, solutions, IT tools for Building Information Modelling	IB1	Operation of BIM systems
	ID	District Information Modelling	Standards, solutions, IT tools for District Information Modelling	ID1	Operation of DIM systems
	IG	GIS Systems	Technologies, solutions, IT tool for the use of GIS in building design and urban planning.	IG1	GIS Systems for design and planning
	IL	Lean Management	Methodologies and standards for lean management of buildings.	IL1	Lean Management solutions
	IM	Measuring	Technologies, solutions,	IM1	Smart meters
			IT tool for measuring and monitoring the performance of buildings and urban areas.	IM2	Sensors
T Sustainable construction	TS	Sustainable construction	Methodologies, standards, processes for	TS 1	Construction Activity Pollution
		management	the sustainable management of construction sites	TS2	Management C&D waste
	UI	Maintenance	Methodologies, processes, tools for the	UI1	Maintenance and management plans



U Maintenance			efficient management of buildings.	UI2	Building diseases diagnosis
and operating				UI3	Building maintenance
				UI4	Estimation of materials' service life
	UO	Optimization of performance	Methodologies and tools for the continuous	UO1	Building energy management
			verification and optimization of buildings'	UO2	Building water management
			performances.	UO3	Building IEQ management
N Commissioning	NP	Commissioning process	Commissioning processes and documents management	NP1	Management of a Commissioning Process
P Sustainability certification	PE	EPC	EPC process and drafting of certification	PE1	Assessment methodology
systems			documents	PE2	Certification process
	PS	SBTool	Assessment methodology,	P\$1	Assessment methodology
			calculation method of indicators, drafting of certification documentation	PS2	Certification process
	PN S	SNTool	Assessment methodology,	PN1	Assessment methodology
			calculation method of indicators, drafting of certification documentation	PN2	Certification process
	PP	Protocollo ITACA	Assessment methodology,	PP1	Assessment methodology
			calculation method of indicators, drafting of certification documentation	PP2	Certification process
	PL	LEED	Assessment methodology,	PL1	Assessment methodology
			calculation method of indicators, drafting of certification documentation	PL2	Certification process
	PB	BREEAM	Assessment methodology,	PB1	Assessment methodology
			calculation method of indicators, drafting of certification documentation	PB2	Certification process
	PH	HQE	Assessment methodology,	PH1	Assessment methodology
			calculation method of indicators, drafting of certification documentation	PH2	Certification process



	PC	CasaClima	Assessment	PC1	Assessment
			alculation mothod of	DC0	Cartification
			indicator drafting of	FCZ	
			a artification		process
			documentation		
	PG	GBC	Assessment	PG1	Assessment
			methodology,		methodology
			calculation method of	PG2	Certification
			indicators, drafting of		process
			certification		
			documentation		
	PW	WELL	Assessment	PW1	Assessment
			methodology,		methodology
			calculation method of	PW2	Certification
			indicators, drafting of		process
			certification		
			documentation		
К	KP	Procurement	Green Public	KP1	GPP Requirements
Interdisciplinary			Procurement processes	KP2	Tenders
Skills			and sustainability		preparation and
			requirements, tenders		management
			preparation and		
			implementation		
	KQ	Quality	Drafting and	KQ1	Quality assurance
		assurance	management of quality		planning and
			assurance plans .		management
	KC	Collaboration	Competences in	KC1	Motivation and
		and	communication and		communication -
		Communication	motivation of design		Design Team
			teams.		
	KI	Information	Methodologies,	KI1	Management of
		management	solutions, to manage the		information in a
			information in design		design process
			processes.	141.4.7	
	KM	Management	Methodologies for the	KMI	Participatory
		and community	implementation and	10.10	Guarantee Systems
		involvement	management of	KM2	Community
			participatory processes		
			in design and planning.		urban pianning
	KC	Calfath A second			
	К2	satety Assurance	Methodologies,	K21	KISK prevention,
			for rick provention		Sulery und health of
			nor risk prevention in		workers
1			CONSTRUCTION SITES.	1	1



# **Annex 2: Analysis of Qualification Schemes**

This annex contains the description of the Learning Outcomes (see Chapter 9) belonging to the 16 qualification schemes analysed to test the CQS structure (see Chapter 10).

The analysed qualification schemes are:

- Esperto Protocollo ITACA
- Casaclima Junior Expert
- Casaclima Energy Consultant
- Casaclima Sustainability Consultant
- ComuneClima Consultant
- Craftman CasaClima Expert
- LEED Green Associate
- LEED Approved Professional (BD+C)
- LEED Approved Professional (ID+C)
- GBC Home Approved Professional
- GBC Historical Building AP
- Well Approved Professional
- DGNB Registered Professional
- DGNB Consultant
- Photovoltaic Installer
- Window manufacturer expert



### 12.1ESPERTO PROTOCOLLO ITACA

Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels of competence			s of	Scale 🖕	Professions 🖕	
Expertis	(10)	project			1	2	3	4	5		
HL1	Understand the importance of limiting soil consumption	Conceptual design Detailed design In Use	Has general knowledge related to the land consumption aspects	Is able to take part in discussion within the project concerning land consumption	1	2	3	4	5	B/N	UP AR EE SC
PP1	Evaluate the reduction of land use encouraging the re- use of the soil already compromised	Detailed design	Knows the calculation method of the indicator related to land consumption	Is able to apply the assessment method for the characterisation of the indicator related to land consumption	-	-	3	4	5	В	UP AR EE SC
AB3	Understand the importance of the accessibility to the public transport	Conceptual design Detailed design In Use	Has general knowledge related to the importance to reduce the use of private vehicles	Is able to take part in discussion within the project concerning the accessibility to the public transport	1	2	3	4	5	B/N	AR UP SC
PP1	Determine the accessibility to the public transport	Detailed design	Knows the calculation method of the indicator related to the accessibility to the public transport	Is able to apply the assessment method for the characterisation of the indicator related to the accessibility to the public transport	-	-	3	4	5	В	UP AR SC
FS2	Understand the importance of the functional mix of services in the area	Conceptual design Detailed design In Use	Has general knowledge related to the benefits generated by a high functional mix	Is able to take part in discussion within the project concerning functional mix	1	2	3	4	5	Ν	AR UP SC
PP1	Determine the functional mix (commercial, culture, services, sports, etc.) in the area analysed	Detailed design	Knows the calculation method of the indicator related to the functional mix in the area	Is able to apply the assessment method for the characterisation of the indicator related to the functional mix	-	-	3	4	5	В	SC UP AR
FS3	Understand the importance of the proximity of buildings to the existing infrastructure networks	Conceptual design Detailed design In Use	Has general knowledge related to the analysis of the technical map showing the distribution of the infrastructure networks	Is able to take part in discussion within the project concerning infrastructure networks distribution	1	2	3	4	5	Ν	CE AR SC EE
PP1	Verify the proximity of buildings to the existing infrastructure networks	Detailed design Construction	Knows the calculation method of the indicator related to the proximity of buildings to the existing infrastructure networks	Is able to apply the assessment method for the characterisation of the indicator related to the proximity of buildings to the existing infrastructure networks	-	-	3	4	5	В	CE CE AR EE
FS4	Understand the importance of the installation of parking spaces for bicycles	Conceptual design Detailed design In Use	Has general knowledge related to green mobility	Is able to take part in discussion within the project concerning parking spaces for bicycles	1	2	3	4	5	B/N	SC AR
PP1	Verify the installation of parking spaces for bicycles	Detailed design	Knows the calculation method of the indicator related to the proximity of buildings to the installation of parking spaces for bicycles	Is able to apply the assessment method for the characterisation of the indicator related to the installation of parking spaces for bicycles	-	2	3	4	5	В	SC AR
WE1	Understand the importance of potable water reduction for irrigation	Conceptual design Detailed design In Use	Has general knowledge related to water requirement in buildings and water-saving systems for irrigation	Is able to take part in discussion within the project concerning water-saving systems for irrigation	1	2	3	4	5	В	SC AR EE CE
PP1	Evaluate the performance of the building with regard to the potable water reduction for irrigation	Detailed design	Knows the calculation method of the indicator related to the performance of the building with regard to the potable water reduction for irrigation	Is able to apply the assessment method for the characterisation of the indicator related to the performance of the building with regard to the potable water reduction for irrigation	-	-	3	4	5	В	AR EE CE
WE2	Understand the importance of potable water reduction for indoor uses	Conceptual design Detailed design In Use	Has general knowledge related to the water requirement in buildings for the main domestic activities and water-saving systems for indoor uses	Is able to take part in discussion within the project concerning water-saving systems for indoor uses and per capita water consumption for the main domestic activities	1	2	3	4	5	В	CE AR SC
PP1	Evaluate the performance of the building with regard to the potable water reduction for indoor uses	Detailed design	Knows the calculation method of the indicator related to the performance of the building with regard to the potable water reduction for indoor uses	Is able to apply the assessment method for the characterisation of the indicator related to the performance of the building with regard to the potable water reduction for indoor uses	-	-	3	4	5	В	CE AR SC



Area of	Learning outcome	Stage of the	Knowledge	Skill	Rec	questeo co	d for th mpeter	ie level nce	s of	Scale 🖕	Professions 🗸
LAPCICIO	(-0)	project	-	-	1	2	3	4	5		
MS3	Understand the importance of using recycled and recovered materials in a building construction	Conceptual design Detailed design In Use	Has general knowledge related to recycled and recovered materials for buildings construction	Is able to take part in discussion within the project concerning recycled and recovered materials for buildings construction	1	2	3	4	5	В	CE AR BEC SC
PP1	Evaluate the use of recycled and recovered materials in a building construction	Detailed design	Knows the calculation method of the indicator related to the performance of the building with regard to the use of recycled and recovered materials in a building construction	Is able to apply the assessment method for the characterisation of the indicator related to the performance of the building with regard to the use of recycled and recovered materials in a building construction	-	-	3	4	5	В	CE AR BEC SC
MS4	Understand the importance of using materials from renewable sources in a building construction	Conceptual design Detailed design In Use	Has general knowledge related to the definition of renewable sources and about materials for buildings construction resulting from renewable sources	Is able to take part in discussion within the project concerning materials from renewable sources	1	2	3	4	5	В	CE AR BEC SC
PP1	Evaluate the use of materials from renewable sources in a building construction	Detailed design	Knows the calculation method of the indicator related to the performance of the building with regard to the use of materials from renewable sources in a building construction	Is able to apply the assessment method for the characterisation of the indicator related to the performance of the building with regard to the use of materials from renewable sources in a building construction	-	-	3	4	5	В	CE AR BEC SC
MS5	Understand the importance of using materials from renewable sources in a building construction	Conceptual design Detailed design In Use	Has general knowledge related to the environmental labels and declarations for materials in a building construction	Is able to take part in discussion within the project concerning environmental labels and declarations for materials	1	2	3	4	5	В	CE AR BEC SC
PP1	Determine the presence of certified materials in the building and their use	Detailed design	Knows the calculation method of the indicator related to the presence of certified materials in the building and their use	Is able to apply the assessment method for the characterisation of the indicator related to the presence of certified materials in the building and their use	-	-	3	4	5	В	CE AR BEC SC
EPO	Understand the importance of energy performance of the building during the operational phase	Conceptual design Detailed design In Use	Has general knowledge related to the total energy performance and the primary energy demand of the building	Is able to take part in discussion within the project concerning energy performance of the building during the operational phase	1	2	3	4	5	В	CE AR BEC SC
PP1	Evaluate the energy performance of the building during the operational phase	Detailed design	Knows the calculation method of the indicator related to the energy performance of the building during the operational phase	Is able to apply the assessment method for the characterisation of the indicator related to the energy performance of the building during the operational phase	-	-	3	4	5	В	CE AR BEC SC
EPO	Understand the importance of using renewable energy for thermal uses	Conceptual design Detailed design In Use	Has general knowledg related to the thermal energy performance of the building and about energy from renewable sources	Is able to take part in discussion within the project concerning renewable energy for thermal uses	1	2	3	4	5	В	CE AR BEC SC RESI
PP1	Determine the share of renewable energy for thermal uses	Detailed design	Knows the calculation method of the indicator related to the share of renewable energy for thermal uses	Is able to apply the assessment method for the characterisation of the indicator related to the share of renewable energy for thermal uses	-	-	3	4	5	В	CE AR BEC SC
EPO	Understand the importance of using renewable energy for electrical uses	Conceptual design Detailed design In Use	Has general knowledge related to the electrical energy performance of the building and about energy from renewable sources	Is able to take part in discussion within the project concerning renewable energy for electrical uses	1	2	3	4	5	В	CE AR BEC SC RESI
PP1	Determine the share of renewable energy for electrical uses	Detailed design	Knows the calculation method of the indicator related to the share of renewable energy for electrical uses	Is able to apply the assessment method for the characterisation of the indicator related to the share of renewable energy for electrical uses	-	-	3	4	5	В	CE AR BEC SC
EPO	Understand the importance of the evaluation of thermal energy demand for heating and cooling	Conceptual design Detailed design In Use	Has general knowledge related to the thermal energy performance and the primary energy demand of the building	Is able to take part in discussion within the project concerning thermal energy demand for heating and cooling	1	2	3	4	5	В	CE AR BEC SC
PP1	Evaluate the thermal energy demand for heating and cooling	Detailed design	Knows the calculation method of the indicator related to the thermal energy demand for heating and cooling	Is able to apply the assessment method for the characterisation of the indicator related to the thermal energy demand for heating and cooling	-	-	3	4	5	В	CE AR BEC SC



Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels of competence		s of	Scale	Professions		
Expertis	(LO)	project			1	2	3	4	5	_	
	Understand the importance	Conceptual design	Has general knowledge related	Is able to take part in discussion							CE
EP7	of evaluating energy	Detailed design	to the CO2 emissions produced	within the project concerning	1	2	2	4	c	P	AR
ER/	during the operational		about the CO2 emission factors	energy emissions of the building	T	2	2	4	5	Б	SC
	phase	In Use	of the main energy carriers	during the operational phase							
	Evaluate the energy	Detaile d de sien	Knows the calculation method of	Is able to apply the assessment							CE
PP1	emissions of the building	Detailed design	the indicator related to the	of the indicator related to the	-	-	3	4	5	В	BEC
	during the operational		energy emissions of the building	energy emissions of the building			_			-	SC
	pliase	In Use	during the operational phase	during the operational phase							
		Conceptual design	Has general knowledge related	Is able to take part in discussion							CE
	Understand the importance	Detailed design	to the reducing of soil sealing	within the project concerning soil							AR
HL4	improving the permeability	Construction	water through the soil and about	It is able to applicate permeability	1	2	3	4	5	Ν	UP
	of water through the soil	As Built	permeability coefficients related	coefficients related to the							EE
		In Use	to the typologies of surface	typologies of surface							
		Dotailed design	Knows the calculation method of	Is able to apply the assessment							CE
PP1	P1 Determine soil permeability	Construction	the indicator related to the soil	method for the characterisation	-	-	3	4	5	В	UP
	· · · · · · · · · · · · · · · · · · ·	As Built	permeability	of the indicator related to the soil							EE
		In Use									CF
		Conceptual design		Is able to take part in discussion							LE
	Understand the importance	Detailed design		heat island effect and to perform							AR
СТ2	cT2 of evaluating the causes		Has general knowledge related	shading analysis in an urban area.	1	2	3	4	5	N	UP
0.2	that generate the heat island effect	As Built	heat island effect	Is able to identify the solar	-	-	5		Ű		FF
			-	materials useful for calculating							
		In Use		the heat effect island							SC
				Is able to apply the assessment							CE
DD1	Evaluate the heat island	Detailed design	Knows the calculation method of	method for the characterisation	_	_	3	1	5	в	AR
effect	As Built	island effect	of the indicator related to the	-	-	5		5	D	EE	
		In Use		neat Island effect							SC
	Understand the importance	Conceptual design	Has general knowledge	Is able to take part in discussion							CE
соз	indoor evaluating the	Detailed design	concerning aspects related to	within the project concerning	1	2	3	4	5	В	BEC
	aspects related to the	As Built	the natural and mechanical	ventilation and indoor air quality							VI
	mechanical ventilation in	In Use	ventration in buildings								
		Detailed design	Knows the calculation method of	method for the characterisation							AR
PP1	Evaluate the ventilation and		the indicator related to the	of the indicator related to the	-	-	3	4	5	В	BEC
		As Built	quality	ventilation and the indoor air							
		In Use Conceptual design		quality							CE
	Understand the importance	Detailed design	Has general knowledge	Is able to take part in discussion							AR
CT1	temperature during		the natural and mechanical	operating temperature during	1	2	3	4	5	В	BEC
	summertime	As Built	ventilation in buildings	summertime							
			Knows the colouistics with 1.5	Is able to apply the assessment							CE
	Evaluate the operating	Detailed design	the indicator related to the	method for the characterisation							AR
PP1	temperature during	Ac Puilt	operating temperature during	of the indicator related to the	-	-	3	4	5	В	BEC
		In Use	summertime	summertime							
	Understand the importance	Conceptual design		Is able to take part in discussion							CE
CT4	of evaluating the	Detailed design	Has general knowledge	within the project concerning the	1	2	2	4	_	D	AR
	summertime indoor thermal	As Built	concerning indoor thermal	summertime indoor thermal	1	2	3	4	5	В	BEC
	comfort	In Use		comtort							
		Datailed	Knows the calculation method of	Is able to apply the assessment							CE
PP1	Evaluate the summertime	Detailed design	the indicator related to the	of the indicator related to the	-	-	3	4	5	В	AK BEC
	indoor thermal comfort	As Built	summertime indoor thermal	summertime indoor thermal						-	
		In Use		comfort							05
	Understand the importance	Conceptual design	Has general knowledge	Is able to take part in discussion							CE AR
CV1	Understand the importance CV1 of evaluating the level of		concerning values of mean	within the project concerning the	1	2	3	4	5	В	BEC
	CV1 of evaluating the level of	As Built	daylight factor	level of natural lighting in buildings							
		In Use		Is able to apply the accossment							CE
	Evoluoto the level of network	Detailed design	Knows the calculation method of	method for the characterisation							AR
PP1 Evaluation	lighting in buildings		the indicator related to the level	vel of the indicator related to the	-	-	3	4	5	В	BEC
		As Built	of natural lighting in buildings	level of natural lighting in							
		in Use		punumgs							



Area of	Learning outcome	Stage of the	Knowledge	Skill	Rec	questeo co	d for th mpeter	ne level nce	s of	Scale 🖕	Professions 🖕
Expertis	(10)	project	_		1	2	3	4	5		
CA1	Understand the importance of evaluating the global acoustics class of the building	Conceptual design Detailed design As Built In Use	Has general knowledge concerning acoustic class of the building	Is able to take part in discussion within the project concerning the global acoustics class of the building	1	2	3	4	5	В	CE AR BEC
PP1	Evaluate the global acoustics class of the building	Detailed design As Built In Use	Knows the calculation method of the indicator related to the global acoustics class of the building	Is able to apply the assessment method for the characterisation of the indicator related to the global acoustics class of the building	-	1	3	4	5	В	CE AR BEC
CE1	Understand the importance of evaluating the indoor exposure to ELF magnetic fields	Conceptual design Detailed design As Built In Use	Has general knowledge concerning magnetic and electric field sources in the building	Is able to take part in discussion within the project concerning magnetic and electric field sources in the building	1	2	3	4	5	В	CE AR SC
PP1	Evaluate magnetic and electric field in the building	Detailed design As Built	Knows the calculation method of the indicator related to the magnetic and electric field in the building	Is able to apply the assessment method for the characterisation of the indicator related to the magnetic and electric field in the building	-	-	3	4	5	В	CE AR SC
EM3	Understand the importance to determine the BACS (Building & Automation Control System) efficiency class	Conceptual design Detailed design	Has general knowledge concerning magnetic and electric field sources in the building	Is able to take part in discussion within the project concerning BACS (Building & Automation Control System) efficiency class	1	2	3	4	5	В	CE AR SC
PP1	Determine the BACS (Building & Automation Control System) efficiency class	Detailed design	Knows the calculation method of the indicator related to the BACS (Building & Automation Control System) efficiency class	Is able to apply the assessment method for the characterisation of the indicator related to the BACS (Building & Automation Control System) efficiency class	-	-	3	4	5	В	CE AR SC
EM2	Understand the importance to determine the number of domotic functions existing in buildings	Conceptual design Detailed design	Has general knowledge concerning domotic function	Is able to take part in discussion within the project concerning domotic functions existing in buildings	1	2	3	4	5	В	CE AR SC
PP1	Determine the number of domotic functions existing in buildings	Detailed design	Knows the calculation method of the indicator related to the number of domotic functions existing in buildings	Is able to apply the assessment method for the characterisation of the indicator related to the number of domotic functions existing in buildings	-	-	3	4	5	В	CE AR SC
DI1	Application of the integrated design approach	Conceptual design Detailed design Construction As Built In Use	Has general knowledge of the integrated design methodology	Is able to take part in discussion within the project concerning the integrated design approach	1	2	3	4	5	В	CE AR SC EE BEC
PP1	Application of the integrated design approach	Conceptual design Detailed design Construction As Built In Use	Knows the integrated design methodology	Is able to interact with area experts to collect the data for the calculation of ITACA indicators	-	-	3	4	5	В	CE AR SC EE BEC
PP1	Understanding and application of the SBTool methodology	Conceptual design Detailed design As Built In Use	Has knowledge about the SBTool methodology and understands the methodology awarding of the final score through three main steps: characterization, normalization and aggregation	Is able to apply the SBTool methodology	-	-	3	4	5	В	CE AR SC BEC
PP1	Understanding of the Protocollo ITACA approach	Conceptual design Detailed design As Built In Use	Understands the contexts and applicability specifications of the Protocollo ITACA. Understands modular and hierarchical system organized in assessment areas, categories and criteria. Understands the multicriteria analysis system	Is able to perform the calculation of the performance score through the SBMethod	-	-	3	4	5	В	CE AR SC BEC
PP2	Facilitate and support project teams to achieve the target Protocollo ITACA rating	Conceptual design Detailed design As Built	Has knowledge about the process of Protocollo ITACA certification	Can identify and prepare the correct type of evidence required to enable the Protocollo ITACA assessors to carry out their assessment. Is able to facilitate the project team's efforts by providing key input throughout the whole process in order to achieve the target rating	-	-	3	4	5	В	CE AR SC BEC



## 12.2CasaClima Junior Expert

Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels competence				s of	Scale	Professions
Expertis	. (10)	project		_	1	2	3	4	5		
EPO	Understand the importance of energy performance of the building during the operational phase	Conceptual design Detailed design In Use	Has general knowledge of the total energy performance and primary energy requirements of the building based on the legislation in force.	Is able to take part in the discussion within the project regarding the energy performance of the building during the operational phase according to the current standard.	-	2	3	4	5	В	AR CE EE BEC
PC1	Evaluate the energy performance of the building during the operational phase	Detailed design	Has knowledge on the method of calculating the indicator relating to the energy performance of the building during the operational phase, through the CasaClima Calculation Tool. Has basic rudiments regarding national legislation and complies with the specific CasaClima Directive.	Is able to summarily apply the evaluation method for the characterization of the indicator relating to the energy performance of the building during the operational phase	-	2	3	4	5	В	AR EE BEC CE
EPO	Understand the importance of using renewable energy for thermal uses	Conceptual design Detailed design In Use	Has basic knowledge about the standard relating to the thermal energy performance of the building. Has a general knowledge of energy from	Is able to take part in the discussion within the project regarding renewable energy for thermal use.	-	2	3	4	5	В	AR EE CE BEC
PC1	Determine the share of renewable energy for thermal uses	Detailed design	Has the knowledge of the thermal energy performance of the building by generically determining the share of renewable energy.	Is able to apply the evaluation method for the characterization of the indicator relating to the share of renewable energy for thermal uses	-	-	3	4	5	В	AR EE BEC CE
EPO	Understand the importance of using renewable energy for electrical uses	Conceptual design Detailed design In Use	Has general knowledge of the use of renewable energy for electrical purposes in the energy performance of the building.	Is able to take part in the discussion within the project concerning renewable energy for electrical use in compliance with current regulations.	-	2	3	4	5	В	AR EE CE BEC RESI
PC1	Determine the share of renewable energy for electrical uses	Detailed design	Has the knowledge on the method of calculating the indicator relating to the share of renewable energy for electrical uses through the CasaClima Calculation Tool	Is able to apply the evaluation method for the characterization of the indicator relating to the share of renewable energy for electrical uses	-	-	3	4	5	В	AR EE CE BEC
EPO	Understand the importance of the evaluation of thermal energy demand for heating and cooling	Conceptual design Detailed design	Has general knowledge of the thermal energy performance and the energy needs of the building according to the mandatory standards.	Is able to participate in the discussion within the project regarding the thermal energy requirements for heating and cooling according to current legislation.	-	2	3	4	5	В	CE AR EE BEC
PC1	Evaluate the thermal energy demand for heating and cooling	Detailed design In Use	Has the knowledge on the method of calculating the indicator relating to the heat energy demand for heating and cooling through the CasaClima Calculation Tool.	Is able to apply the evaluation method for the characterization of the indicator relating to the thermal energy demand for heating and cooling	-	-	3	4	5	В	CE AR EE BEC
ER7	Understand the importance of evaluating energy emissions of the building during the operational phase	Conceptual design Detailed design In Use	Has general knowledge of the CO2 emissions produced for the operation of the building and knows the CO2 emission factors of the main energy carriers.	Is able to take part in the discussion within the project regarding the energy emissions of the building during the operational phase in relation to current regulations.	1	2	3	4	5	В	CE AR EE BEC
PC1	Evaluate the energy emissions of the building during the operational phase	Detailed design	Has general knowledge about the method of calculating the indicator relating to the energy emissions of the building during the operational phase through	Is able to apply the assessment method for the characterisation of the indicator related to the energy emissions of the building during the operational phase	-	2	3	4	5	В	CE AR EE BEC
СQ3	Understand the importance of preserving the comfort indoor evaluating the aspects related to the mechanical ventilation in	Conceptual design Detailed design In Use	Has general knowledge of the aspects related to the natural and mechanical ventilation of buildings and related legislation.	Is able to participate in the discussion within the project regarding ventilation and indoor air quality in compliance with current legislation.	-	2	3	4	5	В	VI CE AR EE BEC
PC1	Evaluate the ventilation and the indoor air quality	Detailed design As Built In Use	Has knowledge of the method of calculating the indicator relating to ventilation and indoor air quality through the CasaClima Calculation Tool. He also knows the tools for measuring air tightness (BDT).	Is able to apply the assessment method for the characterisation of the indicator related to the ventilation and the indoor air quality	-	-	3	4	5	В	CE AR EE BEC



Determ         (D)         (D)         (D)         (D)         (D)         (D)         (D)         (D)         (D)           Intermed to import an operation of the o	Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels of competence			s of	Scale	Professions	
C1       in general strend per inport       Address and strend	Expertis	(LO)	project 🗾			1	2	3	4	5		
C1 <ul> <li></li></ul>			Conceptual design	Has general knowledge of the	Is able to take part in the							
(1)         (1		Understand the importance	Deteiled desire	aspects related to the natural	discussion within the project							65
CL1       weight starting daring starting daring dari	674	of evaluating the operating	Detailed design	buildings.	regarding the operating		2	2		_		CE
membra         matrix         matrix<	011	temperature during		He has a general knowledge of	period in implementation of	-	2	3	4	5	В	AR
Image: market is a second se		summertime		the criteria for the design of interior environments and of all	current legislation.							EE
FCI       Evaluate the operating the endance of the induced operation or angle to the endance of the induced operation or angle to the endance operation of the endance operance operance operation of the endance operation of the			In Use	the relevant legislation.								BEC
Problem         Detailed age         Explanate the operating any problem in the data seturing in the data in the data seturing in the data in the data seture problem. The data seture problem in the data seture problem in the data seture problem. The data seture problem is the data seture problem in the data seture problem. The data seture problem is the data seture problem. The data seture problem is the data seture problem. The data seture problem is the data seture problem. The data seture problem is the data seture problem. The data seture problem is the data seture problem. The data seture problem is the data seture problem. The data seture problem is the data seture problem. The data seture problem is the data seture problem is the data seture problem. The data seture problem is the data seture problem is the data seture problem is the data seture problem. The data seture problem is the data seture problem				Has knowledge of the method of	Is able to apply the evaluation							
L.       Subprint a function       In the control of subprint and the subprint of subprint and the subprint of subprint		Evaluate the operating	Detailed design	calculating the indicator relating	method for the characterization			2		_		CE
Interaction	PC1	temperature during		to the operating temperature during the summer period	of the indicator relating to the operating temperature in the	-	-	3	4	5	В	AR FF
moderation the invested moments in the invested			In Use	through the CasaClima	summer period							BEC
CT1         security is a submit and is a proving the marked with the enject is and a part to max and all is a special to max and all is a specint to max and all is a special to max and all is a		Understand the importance	Conceptual design	Has general knowledge of the	Is able to participate in the							CE
constrained into the main parameters and all the use of the matrix of the parameters and all the use of the matrix of the parameters and all the user displation       into the discrete di	CT1	of evaluating the	Detailed design	internal thermal comfort	discussion within the project	_	2	3	Λ	5	в	AR
entropy       initial entropy       definition of the entropy       constrained entropy		summertime indoor thermal		parameters and of all the	comfort in compliance with	-	2	5	4	5	в	EE
Parameter         Fealures         index in the instantial with the registree in service of the instantial information informatinformation informatinfo		comfort	In Use	reference energy regulations.	current legislation							BEC
PC1       Prolute the summerine model of calcular general isotehic particular summeriants in the data argument is the summeriant model thread isotehic particular summeriants in the summeriant model isotehic particular summeriants in the summeriant method isotehic particular summeriant model isotehicon the summeriant method i				He is familiar with the method								
Fordulate the summarities       immain and partial is first and impact to the start of the drare treated of the induces start in the solution of the induces start in the induces start in the solution of the induces start in			Datailad dasign	of calculating the indicator	is able to apply the assessment							CF.
PC1       index the an information of the index of the i		Evaluate the summertime	Detalled design	thermal comfort. He has a	method for the characterisation							
$ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$	PC1	indoor thermal comfort		general knowledge of national	of the indicator related to the	-	-	3	4	5	В	AK
Image: consistent of the index of the i			As Built	CasaClima Directive in	comfort							EE
CA     Conceptial feed or enclusing in pointing enclusing in pointing in the integrated design approach probability of the integrated design in the integrated design approach integrated design approach intecont design integrated design approach integrated design ap			In Use	compliance with the legislative								BEC
CV1       indextrade the importance brained stars in the importance stars at lighting in buildings       indextrade the impor			Concentual design	dictates in force.	la abla ta participata in tha							
CV1       of evaluating the level of startal lighting in building       in use induced in the week of startal lighting in building.       in use induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in induced in the evel of startal lighting in induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in evel of startal lighting in induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in evel of startal lighting in building.       in use induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in evel of startal lighting in evel of startal lighting in building.       in use induced in the evel of startal lighting in building.       in use induced in the evel of startal lighting in evel of startal lighting in building.       in use induced in the evel of startal lighting in evel		Understand the importance	Detailed design	Has general knowledge of the	discussion within the project on							CE
natural lighting in buildings:	CV1	of evaluating the level of		factor and of the reference	the level of natural lighting in	1	2	3	4	5	В	AR
PC1       Evaluate the level of natural probability is a general knowledge related to factural lighting in building.       -       2       3       4       5       B       AB         C2       a bit to the program of the integrated design physics       -       2       3       4       5       B       AB         C42       or evaluating the global acoustic class of the building       -       2       3       4       5       B       AB         PC1       Understand the importance for the dialage in the discosion within the project acoustic class of the building of the reference legislation.       -       2       3       4       5       B       AB         PC1       Evaluate the global acoustic class of the building of the reference legislation.       -       -       -       3       4       5       B       AB         PC1       Application of the integrated design approach       -       2       3       4       5       B       AB         PC1       Application of the integrated design approach       -       2       3       4       5       B       AB         PC1       Application of the integrated design approach       -       2       3       4       5       B       AB         PC1       Application of the in		natural lighting in buildings	In Use	standard.	buildings in compliance with							EE
PC1       Evaluate the level of natural lighting in building:       For a general knowledge related method to price the indicar related method to price the indic			in ose		Is able to recognize an evaluation							520
PC1       lighting in buildings       As Built in Like       Conceptual design in Like <thconceptual design<br="">in Like       C</thconceptual>	504	Evaluate the level of natural	Detailed design	Has a general knowledge related	method for the characterization		2	2		_		CE
Image:	PCI	lighting in buildings	As Built	to some nints of building technical physics	of the indicator relating to the level of natural lighting in	-	2	3	4	5	В	EE
CA2       understand the importance of evaluating the global counsis class of the building with explanation of the building			In Use		buildings				-			BEC
CA2       assume of evaluating of evaluating of the global societic class of the building of the reference legislation.       -       2       3       4       5       8       6       6         PC1       Evaluate the global acoustics class of the building with reference legislation.       in Use       1       1       8       6       8       6       8       6       8       6       8       6       8       6       8       6       8 <td< th=""><td></td><td rowspan="3">Understand the importance of evaluating the global acoustics class of the building</td><td>Conceptual design</td><td>Has general knowledge of the</td><td>Is able to take part in the</td><td></td><td></td><td></td><td></td><td></td><td></td><td>CE</td></td<>		Understand the importance of evaluating the global acoustics class of the building	Conceptual design	Has general knowledge of the	Is able to take part in the							CE
bitting       of the reference legislation.       class of the building.       of the reference legislation.       class of the building.       of the reference legislation.       effective corrent regulations.       effective corerent regulations. </th <td>CA2</td> <td>Detailed design</td> <td>acoustic class of the building and</td> <td>regarding the overall acoustic</td> <td>-</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>В</td> <td>AR</td>	CA2		Detailed design	acoustic class of the building and	regarding the overall acoustic	-	2	3	4	5	В	AR
PC1       Product the global accountise class of the building       Detailed design the number of physics with reference to some hints of building       Has a general knowledge effect in use       Has a general knowledge of the insteared design approach       -				of the reference legislation.	class of the building with							EE
PC1       Evaluate the global acoustics class of the building       Has a general knowledge related in Use       is able to recentize an evaluation of the indicator relating to the noise level of buildings       - <td< th=""><td></td><th>-</th><td>In Use</td><td></td><td>reference to current regulations.</td><td></td><td></td><td></td><td></td><td></td><td></td><td>BEC</td></td<>		-	In Use		reference to current regulations.							BEC
PC1       acoustics class of the building       As Built in Use       central physics with reference to current legislation.       or current legislation.       or the indicator relating to the nose level of buildings       - </th <td></td> <th>Evaluate the global</th> <td>Detailed design</td> <td>Has a general knowledge related</td> <td>Is able to recognize an evaluation method for the characterization</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>CE</td>		Evaluate the global	Detailed design	Has a general knowledge related	Is able to recognize an evaluation method for the characterization							CE
Jointhing         A Sumplement         Courrent legislation.         noise level of buildings         Course         Sale to take part in discussion within the project concerning the integrated design methodology.         Sale to take part in discussion within the project concerning the integrated design methodology from an design methodology from an design methodology from an design methodology.         Sale to interact with area separts to collect data for the calculation of the CASACLIMA indicator         Course         <	PC1	acoustics class of the	Ac Puilt	technical physics with reference	of the indicator relating to the	-	-	3	4	5	В	AR
D11       Application of the integrated design approach       Construction integrated design methodology integrated design approach       is able to take part in discussion integrated design approach       -       2       3       4       5       B       CE         PC1       Application of the integrated design approach       Conceptual design       -       2       3       4       5       B       CE         PC1       Application of the integrated design approach       Conceptual design       Has knowledge of the integrated design methodology if on an energetic point of view       -       2       3       4       5       B       CE         PC1       Application of the CasaClima methodology       As Built       -       2       3       4       5       B       CE         PC1       Indeerstanding and methodology       Conceptual design       Has knowledge of the casaClima methodology of the results of the calculation of the CasaClima methodology. As Built       -       2       3       4       5       B       CE         PC1       Indeerstanding of the integrated design       Detailed design       Has knowledge of the creasClima methodology. If the consequent dases.       -       2       3       4       5       B       CE         PC1       Indeerstanding of the Protecollo CASACLIMA acluation system teas.		bunding	In Use	to current legislation.	noise level of buildings							BEC
Dia       Application of the integrated design approach in user       Defaulted design the price of the integrated design approach in user       as general knowledge of the integrated design approach in user       as able to interact with area experts to collect data for the calculation of the CASACUMA in user       2       3       4       5       8       AR in the integrated design integrated design approach in user         PC1       Application of the integrated design approach in user       Concentruit in user       As nowledge of the integrated esign methodology from an energetic point of view       is able to interact with area experts to collect data for the calculation of the CASACUMA in user       -       2       3       4       5       8       AR integrated in user         PC1       Understanding and application of the CasaClima methodology       Detailed design in user       Has knowledge of the calculation in the acalculation erfering to in user       is able to apply the CasaClima methodology, of the contexts and the applicability selectification. At knowledge of the calculation system, the analysis of the dispersing surfaces, the stratigraphy of the bilding components.       is able to perform the calculation of the performance score through the casaClima spreadsheet       2       3       4       5       B       AR         PC1       Understanding of the Protocollo CASACLIMA approach       Detailed design components.       East required to allow CasaClima methodology of the bilding components.       East required to allow CasaClima methodology fore the oldicase form is in us			Conceptual design									SC
PC1       As Built in Use       integrated design approach in Use       integrated design approach integrated design approach       integrated design	DI1	Application of the	Detailed design	Has general knowledge of the	Is able to take part in discussion	-	2	з	4	5	в	CE
Image       Image <th< th=""><td>011</td><th>integrated design approach</th><td>As Built</td><td>integrated design methodology</td><td>integrated design approach</td><td></td><td>-</td><td>5</td><td></td><td></td><td>5</td><td>EE</td></th<>	011	integrated design approach	As Built	integrated design methodology	integrated design approach		-	5			5	EE
PC1       Application of the integrated design approad       Lonceptual design methodology from a design methodology from an induce of the calculation of the CASACIIMA indicator       is able to interact with area design methodology from an induce of the CASACIIMA indicator       is able to interact with area design methodology from an induce of the CASACIIMA indicator       is able to interact with area design methodology from an induce of the CASACIIMA indicator       is able to interact with area design methodology from an indicator       is able to interact with area design the calculation of the CASACIIMA indicator       is able to interact with area design the calculation of the CASACIIMA indicator       is able to interact with area design the calculation of the CASACIIMA indicator       is able to interact with area design the calculation of the CASACIIMA indicator       is able to interact with area design the calculation of the CASACIIMA indicator       is able to interact with area design the calculation of the CASACIIMA indicator       is able to interact with area design the calculation of the CASACIIMA indicator       is able to apply the CasaCIIMA indicator       is able to perform the calculation of the CASACIIMA indicator       is able to perform the calculation of the performance score through the casaCIIMA is and wheread the applicability is able to accilitate and support the integrate ASACIIIMA accinculation in the casaciIIMA is and wheread the			In Use			-						BEC
PC1       Application of the integrated design approach       Construction of skip methodology from a negretic point of view energetic point of view energetic point of view energetic point of view indicator       collect data for the calculation of the CASACLIMA indicator       -       2       3       4       5       B       AR         PC1       Understanding and application of the CasaClima methodology. Has knowledge of the casaClima of the calculations of the results of the energy requirement and the info use       Sc       Sc       Sc       Sc         PC1       Understanding of the Protocollo CASACLIMA approach       Conceptual design       Has knowledge of the casaClima of the casaClima of the energy requirement and the calculation       Is able to apply the CasaClima methodology.       -       2       3       4       5       B       AR         PC1       Understanding of the Protocollo CASACLIMA approach       In Use       Conceptual design       Has knowledge of the casaClima approach       Is able to perform the calculation of the casaClima approach       -       2       3       4       5       B       AR         PC1       Understanding of the Protocollo CASACLIMA approach       In Use       Conceptual design       Has knowledge of the casaClima approach       -       2       3       4       5       B       AR         EE       Detailed design       Detailed design       Est required to al			Detailed design	Has knowledge of the integrated	Is able to interact with area							CE
Magenetic basis       As Built in Use       energetic point of view       indicator       Image of the classes       Image of the clas	PC1	Application of the	Construction	design methodology from an	experts to collect data for the calculation of the CASACLIMA	-	2	3	4	5	В	AR
PC1       Understanding and application of the CasaClima methodology. Has knowledge of the calculations referring to in Use       has knowledge of the casaClima methodology. Has knowledge the methodology of the results of the calculations referring to in Use       is able to apply the CasaClima methodology       -       2       3       4       5       BE       CCE         PC1       Understanding of the framework of the casaClima methodology       -       2       3       4       5       BE       CE       CE         PC1       Understanding of the Protocollo CASACLIMA approach       -       Conceptual design       -       2       3       4       5       BE       CE         PC1       Understanding of the Protocollo CASACLIMA approach       -       Conceptual design       -       -       2       3       4       5       BE       CE         PC1       Understanding of the Protocollo CASACLIMA approach       -       -       2       3       4       5       B       AR         BEC       -       -       -       2       3       4       5       BE       CE         Bec       -       -       2       3       4       5       B       AR         Bec       -       -       2       3       4		-0 and	As Built	energetic point of view	indicator							EE
PC1       Understanding and application of the CasaClima methodology       Detailed design       methodology of the casaLimation of the casaClima of the calculations referring to the energy requirement and the in Use       is able to apply the CasaClima methodology       -       2       3       4       5       Be       AR         PC1       As Built       Onceptual design       Has knowledge of the CASACLIMA calculation methodology, of the consequent classes.       Is able to apply the CasaClima methodology       -       2       3       4       5       Be       AR         PC1       Understanding of the Protocollo CASACLIMA approach       Has knowledge of the CASACLIMA calculation methodology, of the contexts and the applicability specifications of the CasaClima calculation system, the analysis of the dispersing surfaces, the stratigraphy of the building components.       -       2       3       4       5       Be       AR         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Conceptual design       Lest sequired to allow CasaClima auditors to carry out their control. Is able to facilitate the efforts of the project teams to achieve the target CASACLIMA Protocollo rating       A       5       Be       AR         EE       BEC       BEC       BEC       BEC       BEC       BEC         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Co			Concentual design	Has knowledge of the Corrol'								SC
PC1       application of the CasaClima methodology       the methodology of the results of the calculations referring to the energy requirement and the to energy requirement and the in Use       is able to apply the CasaClima methodology       -       2       3       4       5       B       AR         PC1       As Built       in Use       Conceptual design       Has knowledge of the CASACLIMA calculation       is able to apply the CasaClima methodology       -       2       3       4       5       B       AR         PC1       Understanding of the Protocollo CASACLIMA approach       In Use       Conceptual design       Methodology, of the contexts and the application of the CasaClima specifications of the CasaClima specifications of the CasaClima specifications of the casaClima specifications of the dispersing surfaces, the stratigraphy of the building components.       is able to perform the calculation is addition of the casaClima suffaces, the stratigraphy of the building components.       -       2       3       4       5       B       AR         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Conceptual design       Ests required to allow CasaClima spreadsheet       -       2       3       4       5       B       AR         EE       BEC       BEC       EE       BEC       BEC       BEC       BEC         PC2       Facilitate and suppo		Understandter	Detailed design	methodology. Has knowledge								CF
methodology       As Built       of the calculations referring to the energy requirement and the consequent classes.       methodology       a       a       a       a         PC1       Mass Built       In Use       Conceptual design       Has knowledge of the CASACLIMA calculation specifications of the applicability specifications of the applicability specifications of the dispersing surfaces, the stratigraphy of the building components.       a bele to perform the calculation of the performance score through the CasaClima spreadsheet       -       2       3       4       5       B       AR         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Conceptual design       Has knowledge of the CasaClima certification process from its inception to the delivery of the energy label       tests required to allow CasaClima auditors to carry out their control. Is able to facilitate the efforts of the project teams to achieve the target CASACLIMA Protocollo rating       A       5       B       AR         EE       In Use       As Built       Has knowledge of the CasaClima certification process from its inception to the delivery of the energy label       tests required to allow CasaClima auditors to carry out their control. Is able to facilitate the efforts of the project team by providing the whole process in order to reach the target evaluation       -       2       3       4       5       B       AR         EE       BEC       BEC       BEC       BEC	PC1	application of the CasaClima	Secured design	the methodology of the results	Is able to apply the CasaClima	-	2	3	4	5	В	ΔR
As Built       Descript requirementation       Consequent classes.       EE       BEC         In Use       In Use       Conceptual design       Has knowledge of the CASACLIMA calculation methodology, of the contexts and the applicability specifications of the casaClima approach       Is able to perform the calculation of the performance score through the CasaClima spreadsheet       Is able to perform the calculation of the performance score through the CasaClima spreadsheet       Image: Conceptual design applicability       Image: CasaClima spreadsheet		methodology	A- Duilt	of the calculations referring to the energy requirement and the	methodology						-	An CC
PC1       Has knowledge of the Conceptual design       Has knowledge of the CASACLIMA calculation methodology, of the contexts and the applicability specifications of the CasaClima Certification. Has knowledge the is able to perform the calculation of the performance score through the CasaClima spreadsheet       -       2       3       4       5       B       AR         PC1       Detailed design approach       Detailed design       Certification. Has knowledge the calculation system, the analysis of the dispersing surfaces, the stratigraphy of the building components.       is able to perform the calculation of the performance score through the CasaClima spreadsheet       -       2       3       4       5       B       AR         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Detailed design       Has knowledge of the CasaClima certification process from its inception to the delivery of the energy label       tests required to allow CasaClima auditors to carry out their control. Is able to facilitate the efforts of in order to reach the target evaluation       -       2       3       4       5       B       AR         EE       BAR       EE       BEC       BEC       BEC       BEC       BEC			In Lise	consequent classes.								RFC
PC1       Understanding of the Protocolio CASACLIMA approach       Detailed design       CASACLIMA calculation methodology, of the contexts and the applicability specifications of the CasaClima Certification. Has knowledge the calculation system, the analysis of the dispersing surfaces, the stratigraphy of the building components.       is able to perform the calculation of the performance score through the CasaClima spreadsheet       -       2       3       4       5       B       AR         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocolio rating       Conceptual design       Has knowledge of the CasaClima certification process from its inception to the delivery of the energy label       tests required to allow CasaClima auditors to carry out their control. Is able to facilitate the efforts of the project team by providing key inputs during the whole process in order to reach the target evaluation       -       2       3       4       5       B       AR         EE       BEC       BEC       BEC       BEC       BEC       BEC			Concentual deside	Has knowledge of the								DEC
PC1       Detailed design       metnocology, of the contexts and the applicability specifications of the casaClima derification. Has knowledge th calculation system, the analysis of the dispersing surfaces, the stratigraphy of the building components.       is able to perform the calculation of the performance score through the CasaClima spreadsheet       -       2       3       4       5       B       AR         PC1       As Built       Caculation system, the analysis of the dispersing surfaces, the stratigraphy of the building components.       -       2       3       4       5       B       AR         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Conceptual design       Has knowledge of the CasaClima certification process from its inception to the delivery of the energy label       tests required to allow CasaClima auditors to carry out their control. Is able to facilitate the efforts of the project team by providing key inputs during the whole process in order to reach the target evaluation       -       2       3       4       5       B       AR         EE       As Built       In Use       Has knowledge of the CasaClima auditors to carry out their control. Is able to facilitate the efforts of the project team by providing key inputs during the whole process in order to reach the target evaluation       -       2       3       4       5       B       AR         EE       BEC       BEC       BEC       BEC       BEC			Conceptual design	CASACLIMA calculation								
PC1       Understanding of the Protocollo CASACLIMA approach       Image: Conceptual design       Specifications of the CasaClima Certification. Has knowledge the calculation system, the analysis of the dispersing surfaces, the stratigraphy of the building components.       Is able to perform the calculation of the performance score through the CasaClima spreadsheet       -       2       3       4       5       B       AR         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Detailed design       Has knowledge of the CasaClima certification process from its inception to the delivery of the energy label       tests required to allow CasaClima auditors to carry out their control. Is able to facilitate the efforts of the project teams to achieve in order to reach the target evaluation       -       2       3       4       5       B       AR         EE       BEC       BEC       BEC       BEC       BEC       BEC			Detailed design	methodology, of the contexts and the applicability								CE
As Built       Certification. Has knowledge the calculation system, the analysis of the dispersing surfaces, the stratigraphy of the building components.       In Use       Certification. Has knowledge the dispersing surfaces, the stratigraphy of the building components.       In Use       East argament of the dispersing surfaces, the stratigraphy of the building components.       In Use       East argament of the dispersing surfaces, the stratigraphy of the building components.       In Use       Conceptual design       Has knowledge of the CasaClima address from its inception to the delivery of the building components.       Test arget CASACLIMA Protocollo rating       Detailed design       Has knowledge of the CasaClima additors to carry out their control. Is able to facilitate the efforts of the project teams by providing key in order to reach the target evaluation       2       3       4       5       B       AR         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Detailed design       Has knowledge of the casaClima additors to carry out their control. Is able to facilitate the efforts of the project team by providing key in order to reach the target evaluation       -       2       3       4       5       B       AR         In Use       In Use       In Use       In Use       EE       BEC       BEC       BEC	PC1	Understanding of the		specifications of the CasaClima	Is able to perform the calculation	-	2	з	4	5	R	AD
As Built       Calculation systems       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Conceptual design       Has knowledge of the casaClima additors for the dilvery of the building components.       Ests required to allow CasaClima additors to carry out their control. Is able to facilitate the efforts of the project teams to achieve the target CASACLIMA Protocollo rating       Detailed design       Has knowledge of the dilvery of the under the energy label       tests required to allow CasaClima additors to carry out their control. Is able to facilitate the efforts of the project team by providing key in order to reach the target evaluation       A       B       AR         In Use       In Use       In Use       BEC       BEC	PC1	approach		Certification. Has knowledge the	the CasaClima spreadsheet		2	5			5	АК
In Use       stratigraphy of the building components.       stratigraphy of the building components.       Im Use       stratigraphy of the building components.       Im Use       Im Use       BEC         PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Detailed design       Has knowledge of the CasaClim certification process from its inception to the delivery of the energy label       tests required to allow CasaClima auditors to carry out their control. Is able to facilitate the efforts of the project team by providing key in order to reach the target evaluation       -       2       3       4       5       B       AR         BEC       In Use       In Use       Im Use <th></th> <td>As Built</td> <td>of the dispersing surfaces, the</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>EE</td>			As Built	of the dispersing surfaces, the								EE
PC2       Conceptual design project teams to achieve the target CASACLIMA Protocollo rating       Conceptual design design       Has knowledge of the casaClima inception to the delivery of the energy label       tests required to allow CasaClima auditors to carry out their control. Is able to facilitate the efforts of the project team by providing key inception to the delivery of the anget CASACLIMA Protocollo rating       As Built       Has knowledge of the casaClima auditors to carry out their control. Is able to facilitate the efforts of the project team by providing key inception to the delivery of the anget evaluation       A       B       AR         In Use			In Use	stratigraphy of the building								BEC
PC2       Facilitate and support the project teams to achieve the target CASACLIMA Protocollo rating       Detailed design       Has knowledge of the CasaClima auditors to carry out their control. Is able to facilitate the efforts of inception to the delivery of the inception to the delivery of the energy label       Has knowledge of the CasaClima auditors to carry out their control. Is able to facilitate the efforts of inception to the delivery of the inputs during the whole process in order to reach the target evaluation       -       2       3       4       5       B       AR         In Use       In Use       In Use       BEC       BEC				components.	tests required to allow CaseCline							
PC2       Detailed and support the project teams to achieve the target CASACLIMA Protocollo rating       Detailed design       Has knowledge of the CasaClima certification process from its inception to the delivery of the inception to the delivery of the energy label       Is able to facilitate the efforts of the project team by providing key inputs during the whole process in order to reach the target       -       2       3       4       5       B       CE         B       As Built       energy label       in Use       In Use       energy label       energy label       BEC		Facilitada en decomo en d	Conceptual design	Han han suite that the set	auditors to carry out their control.							
PC2       the target CASACLIMA Protocollo rating       inception to the delivery of the energy label       the project team by providing key inputs during the whole process in order to reach the target evaluation       2       3       4       5       B       AR         B       As Built       energy label       energy label       in order to reach the target evaluation       -       2       3       4       5       B       EE		project teams to achieve	Detailed design	Has knowledge of the CasaClima certification process from its	Is able to facilitate the efforts of							CE
Protocollo rating         As Built         energy label         in order to reach the target evaluation         protocollo rating         EE           In Use         EE         BEC         BEC         BEC         BEC	PC2 project teams the target CA Protocollo rat	the target CASACLIMA		inception to the delivery of the	the project team by providing key	-	2	3	4	5	В	AR
In Use evaluation BEC		Protocollo rating	As Built	energy label	in order to reach the target	255			EE			
			In Use		evaluation							BEC



## 12.3CasaClima Energy Consultant

Area of	Learning outcome	Stage of the project-	Knowledge	CL:II	Requested for the levels of competence			ls of	Scala	Professions	
Expertis	. (LO) 🚬				1	2	3	4	- 5	Julie	
MS3	Understand the importance of using recycled and recovered materials in a building construction	Conceptual design Detailed design In Use	Has very general knowledge of recycled and recovered materials for building construction.	Is able to participate in the discussion within the project regarding recycled and recovered materials for the construction of buildings.	1	2	3	4	5	В	AR CE EE BEC
PC1	Evaluate the use of recycled and recovered materials in a building construction	Detailed design	Has general knowledge on the methodology for calculating the indicator relating to the performance of the building with regard to the use of recycled and recovered materials.	Is able to apply the evaluation method for the characterization of the indicator relating to the performance of the building as regards the use of recycled and salvaged materials in a building construction	-	2	3	4	5	В	AR CE EE BEC
MS4	Understand the importance of using materials from renewable sources in a building construction	Conceptual design Detailed design In Use	Has general knowledge of the definition of renewable sources and materials for the construction of buildings deriving from renewable sources.	Is able to participate in the discussion within the project on materials of renewable origin.	1	2	3	4	5	В	AR CE EE BEC
PC1	Evaluate the use of materials from renewable sources in a building construction	Detailed design	Has general knowledge of the methodology for calculating the indicator relating to the performance of the building as regards the use of materials from renewable sources because it is included in the CasaClima calculation tool even if it may not be considered.	Is able to apply the evaluation methodology for the characterization of the indicator relating to the performance of the building with regard to the use of materials from renewable sources	-	2	3	4	5	В	AR CE EE BEC
MS5	Understand the importance of using certified materials in the construction of a building	Conceptual design Detailed design In Use	Has a general understanding of environmental labels and declarations for materials in a building construction.	Is able to participate in the discussion within the project regarding environmental labels and declarations for materials.	1	2	3	4	5	В	AR CE EE BEC
PC1	Determine the presence of certified materials in the building and their use	Detailed design	Has general knowledge of the method of calculating the indicator relating to the presence of certified materials in the building and their use because it is present in the CasaClima Tool even if not mandatory	Is able to apply the evaluation method for the characterization of the indicator relating to the presence of certified materials in the building and their use	-	2	3	4	5	В	AR CE EE BEC
EPO	Understand the importance of energy performance of the building during the operational phase	Conceptual design Detailed design In Use	Has a good knowledge of the total energy performance and primary energy needs of the building and is up to date on energy regulations.	Is able to take part in the discussion within the project regarding the energy performance of the building during the operational phase in accordance with current legislation.	-	-	3	4	5	В	AR CE EE BEC
PC1	Evaluate the energy performance of the building during the operational phase	Detailed design As Built In Use	Knows the CasaClima calculation method of the indicator relating to the energy performance of the building during the operational phase.	Is able to apply the assessment method for the characterisation of the indicator related to the energy performance of the building during the operational phase	-	-	-	4	5	В	AR EE BEC CE
EPO	Understand the importance of using renewable energy for thermal uses	Conceptual design Detailed design As Built In Use	Has in-depth knowledge of the thermal energy performance of the building using energy from renewable sources in harmony with current regulations.	Is able to face the discussion within the project concerning renewable energy for thermal use and to be proactive.	-	-	3	4	5	В	AR EE CE BEC
PC1	Determine the share of renewable energy for thermal uses	Detailed design	Has knowledge of the method for calculating the indicator relating to the share of renewable energy for thermal uses	Is able to calculate and apply the evaluation method for the characterization of the indicator relating to the share of renewable energy for thermal uses	-	-	-	4	5	В	AR EE BEC CE
EPO	Understand the importance of using renewable energy for electrical uses	Conceptual design Detailed design	Has knowledge of the calculation of the energy performance of buildings referred to electrical uses, in accordance with current legislation	Is able to deal with the discussion within the project regarding renewable energy for electrical use and to be proactive, in harmony with current legislation	-	2	3	4	5	В	AR EE CE BEC



		Stage of the			Rec	wester	d for th	ne leve	ls of		
Area of	Learning outcome	project-	Knowledge	Skill	nee	co	mpeter	nce	.5 01 	Scale	Professions _
expertis	(10)				1	2	3	4	5		
			Has a good knowledge of the	Is able to apply your well the							
	Determine the share of	Detailed design	method of calculating the	evaluation method for the							AR
PC1	renewable energy for		Indicator relating to the share of	characterization of the indicator	-	-	3	4	5	В	FF
	electrical uses		use through the CasaClima	relating to the share of renewable							CE
		In Use	Calculation Tool	energy for electrical uses							BEC
		Conceptual design	Use in death locaidedee of	Is able to participate in the							CE
	Understand the importance	Detailed design	thermal energy performance	discussion and be proactive							AR
EPO	of the evaluation of thermal	Detailed design	and the primary energy needs of	within the project concerning the	-	-	3	4	5	В	
	and cooling		the building in accordance with	and cooling in compliance with							BEC
		In Use	current legislation.	current legislation.							BEC
			Has in-depth knowledge on the								
	Evaluate the thermal energy		method of calculating the	is perfectly capable of applying the evaluation method for the							65
PC1	demand for heating and	Detailed design	indicator relating to the thermal	characterization of the indicator	-	-	-	4	5	В	CE
	cooling		cooling through the CasaClima	relating to the thermal energy							AR
		In Use	Calculation Tool.	demand for heating and cooling.							BEC
		Conceptual design	Has in-depth knowledge of the	It able to take part in the							
	Understand the importance	Detailed docign	CO2 emissions produced for the	discussion within the project							CE
	of evaluating energy	Detailed design	operation of the building and the	regarding the energy emissions of		-				5	
ER7	emissions of the building		LU2 emission factors of the	operational phase to be proactive	-	2	3	4	5	В	AR
	phase		He has knowledge of energy	about it in compliance with							EE
		In Use	legislation	current legislation.							BEC
			Has a good knowledge of the	Is able, through the CasaClima							
	Evaluate the energy	Detailed design	method of calculating the	Tool, to apply the evaluation							CE
PC1	emissions of the building	_	indicator relating to the energy	method for the characterization	-	-	3	4	5	В	AD
	during the operational		emissions of the building during	of the indicator relating to the							An
	phase	As Built	the CasaClima Calculation Tool.	during the operational phase.							EE
	Understand the importance	In Use Concentual design	Has a good knowledge of the	Is able to apply and participate in							BEC
	of preserving the comfort	Detailed design	aspects related to natural and	the discussion within the project							CE
CQ3 indoor aspect mecha	indoor evaluating the aspects related to the		mechanical ventilation of	regarding ventilation and indoor	-	-	3	4	5	В	AR
	aspects related to the		buildings and related	air quality in application of							EE
	mechanical ventilation in	in Use	regulations.	current legislation.							BEC
		Detailed design in the calculating the lis able to apply the evaluation									
		Detailed design	method of calculating the indicator relating to ventilation         Is ab method           and indoor air quality through the CasaClima Calculation Tool.         of th vent           uilt         He also has knowledge of air tightness measurement tools         Tool.	method for the characterization							CE
PC1	Evaluate the ventilation and			of the indicator relating to	-	-	-	4	5	В	AR
	the indoor air quality			ventilation and indoor air quality through the CasaClima Calculation							
		As Built		Tool.							EE
		In Use	(BDT).								BEC
		Conceptual design	Has knowledge of the aspects	Is able to apply and take part in							
	Understand the importance	Detailed design	related to the natural and	the discussion within the project							CE
CT1	of evaluating the operating	0	mechanical ventilation of	temperature during the summer	-	2	3	4	5	В	٨R
	temperature during		buildings in compliance with the	period, implementing the project							
	Summer unlie		force and referred to the VMC.	in accordance with current							EE
		In Use		legislation.							BEC
			Has a good knowledge of the	is able to apply inrough the CasaClima Calculation Tool, the							
	Evaluate the operating	Detailed design	calculation method concerning	evaluation method for the							CE
PC1	temperature during		indicator during the summer	characterization of the indicator	-	-	3	4	5	В	AR
	summertime	Δs Ruilt	period through the CasaClima	relating to the operating							FF
		In Use	Calculation Tool.	period.							BEC.
		Conceptual design		Is able to apply and participate in							
	Understand the importance	Detailed design	Has knowledge of internal	the discussion within the project							CF
CT1	of evaluating the	Detailed design	thermal comfort parameters in	regarding indoor summer thermal	-	2	3	4	5	В	40
	summertime indoor thermal		compliance with current	comfort and to implement the building project in compliance							AR
		In Use	Reported on energy matters.	with current regulations.							EE BEC
			Has a good knowledge of the	-							DEC
			method of calculating the								
		Detailed design	indicator relating to internal	Is able to apply the evaluation							CE
PC1	Evaluate the summertime		has in-depth knowledge of	of the indicator relating to indoor	-	-	3	4	5	В	AR
PC1	Indoor thermal comfort	∆c Ruil+	national legislation and applies	summer thermal comfort through						-	FF
		A3 Duilt	the CasaClima Directive in	the CasaClima Tool.							LL
		In Use	compliance with the legislative								BEC
L	1		anciates in force.	l		I				l	



		Stage of the			Rec	ueste	d for th	e level	sof		
Area of	Learning outcome	project-	Knowledge	Skill		со	mpeter	nce	 	Scale	Professions
Expertis	(10)		-		1	2	3	4	5		
		Conceptual design	Has general knowledge of the	Is able to participate in the							
		Detailed design	values of the average factor of davlight of the transmission of	discussion within the project on the level of natural lighting in							CE
CV/1	Understand the importance		light, of the reflection factors, of	buildings and to implement the		2	2	4	c	P	AR
CVI	natural lighting in buildings		the energy performance of	building project in accordance	-	2	5	4	5	D	55
			buildings - energy requirements	with the current legislation.							EE
		In Use	relevant legislation.								BEC
			Has knowledge of the method of	Is able to apply the assessment							
0.01	Evaluate the level of natural	Detailed design	calculating the indicator relating	method for the characterisation			2		-		CE
PCI	lighting in buildings	As Built	to the level of natural lighting in	of the indicator related to the level of natural lighting in	-	-	3	4	5	В	EE
		In Use	buildings.	buildings.							BEC
		Conceptual design	Has general knowledge of the	is able to take part in the							
	Understand the importance	Detailed design	acoustic class of the building, of	discussion within the project							CE
	of evaluating the global		buildings, knows the guide to	regarding the global acoustics						_	AR
CA2	acoustics class of the		building acoustic regulations and	class of the building and to	-	2	3	4	5	В	
	building		the acoustic classification of real	to the dictates of current							EE
		In Use	with current legislation.	legislation.							BEC
				Is able to apply the assessment							
	Evaluate the global	Detailed design	calculating the indicator relating	method for the characterisation							CE
PC1	acoustics class of the		to the global acoustic class of	of the indicator related to the	-	-	3	4	5	В	AR
	ballang	In Use	the building.	building							BEC
		Conceptual design		Is able to participate in the							
	Understand the importance	Detailed design	Has general knowledge of the	discussion within the project							CE
EM2	domotic functions existing		home automation function and	automation functions in buildings	-	2	3	4	5	В	AR
	in buildings		of the rules related to it.	and to implement the contents in							EE
		In Use		the project.							BEC
			Has knowledge of the method								
	Determine the number of	Detailed design	of calculating the indicator	Is able to apply the assessment method for the characterisation							CE
PC1	domotic functions existing		existing home automation	of the indicator related to the	-	-	3	4	5	В	AR
	in buildings		functions in buildings, as it is not	number of domotic functions							EE
		ln l lse	mandatory for CasaClima	existing in buildings							BEC
		Conceptual design									520
	Application of the	Detailed design	Has general knowledge of	Is able to take part in discussion							CE
DI1	integrated design approach	Construction	integrated design methodology	within the project concerning the	-	2	3	4	5	В	AR
		As Built In Use	from an energy point of view.	integrated design approach							EE BEC
		Conceptual design		Is able to interact with area							
504	Application of the	Detailed design	Has a good knowledge of	experts to collect data for the	ie	2		-		CE	
PCI	integrated design approach	As Built	from an energy point of view	calculation of the CASACLIMA	-	-	3	4	5	в	EE
		In Use		indicator							BEC
		Conceptual design	Has a good knowledge of the								
		Detailed design	CASACLINIA calculation								CE
DC1	Understanding and		It includes the methodology of	Is able to apply the CasaClima			2	4	c	P	
, ci	CASACLIMA methodology		the results of the calculations	calculation method	-	_	5	4	5	D	AR
		As Built	referring to the energy requirement and the								EE
		In Use	consequent classes.								BEC
		Concentual design	Has a good knowledge of the								
		Some provin design	CASACLINIA calculation methodology of the contexts and								
			the applicability specifications of								
		Detailed design	the CasaClima Certification.								CE
PC1	CASACLIMA Certification		system, the analysis of the	performance score using the	-	-	3	4	5	в	
	Protocol approach.		dispersing surfaces, the	CasaClima Energy Tool.							AR
			stratigraphy of the building								
		As Built	graphically solve thermal								EE
		In Use	bridges, plant technologies and								BEC
			final results.								
		Conceptual design	CasaClima certification process								
			from its beginning to its	Is able to assist during energy audits and is able to prepare the							
		Detailed design	conclusion: request for	required tests (BDT). Is able to							CE
	Facilitate and support		tables with stratigraphies,	facilitate the efforts of the project							AR
PC2	project teams to achieve the target Protocollo		calculation of dispersing	team (tecnnical specialists, enterprise, craftsmen) by	-	-	3	4	5	В	
	CASACLIMA rating	As Built	surfaces, construction knots,	providing the key inputs during							EE
			installation on site of building	the whole process in order to							
		In Lise	components and all plant	reach the predetermined evaluation.	Ĭ					REC	
		In Use engineering (heating, cooling evaluation.							DEC		
L	1		aa vivicj.		I						1



## 12.4CasaClima Sustainability Consultant

		Stage of the			Requested for the levels			ls of			
Area of Expertis	Learning outcome (LO)	project-	Knowledge	Skill		coi	mpeter	nce	-	Scale	Professions 🗸
	(/				1	2	3	4	5		
											AR
ш1	Understand the importance	Detailed design	Has general knowledge related	Is able to take part in discussion	1	2	3	4	5	B/N	CE
1161	of limiting soil consumption.		to the land consumption aspects.	consumption, and to be proactive	T	2	5	4	5	D/IN	BEC
		In Use									SC
	Evaluate the reduction of	Conceptual design	Has a good knowledge of the	Is able to apply the assessment							SC
PC1	land use encouraging the re-	Detailed design	calculation method of the	method for the characterisation			2	4	c	D/N	AR
FCI	use of soil already		indicator related to land		-	-	5	4	5	D/IN	BEC
	compromised.	In Use	consumption.	'							CE
				Is able to take part in discussion							AR
402	Understand the importance	Detailed design	Has general knowledge related	within the project concerning the	1	2	2	4	c	D/N	EE
ADS	public transport		use of private vehicles	transport, and to be proactive	T	2	5	4	5	D/IN	CE
	· · · · · · ·	In Use		. , .							BEC
		Conceptual design	Has knowledge of the calculation	Is able to apply the CasaClima							SC
		Detailed design	method and the CasaClima	assessment method for the							AR
PC1	Determine the accessibility		indicator relating to accessibility	characterization of the indicator	-	-	3	4	5	B/N	
	to public transport		the application of the Habitat	transport, especially valid in the							BEC
		In Use	Protocol	Habitat Protocol.							CE
				Is able to participate in the							AR
	Understand the importance	Detailed design	Has general knowledge related	discussion within the project							EE
FS2	of the functional mix of		to the benefits generated by a	regarding the functional mix, and	1	2	3	4	5	B/N	CE
	services in the area	In Lise	high functional mix	to be proactive.							BEC
		Conceptual design	Knows the method of calculating	Is able to apply the evaluation							sc
	Determine the functional mix (commercial, culture	Detailed design	the indicator relating to the	method for the characterization							AR
PC1	services, sports, etc.) in the		functional mix in the area	of the indicator relating to the	-	-	3	4	5	B/N	EE
	analysed area	In Lico	especially for the application of	functional mix, valid above all in							CE
	Understand the importance	in ose		Is able to take part in discussion							CE
	Understand the importance of the provimity of buildings	Detailed design	to the analysis of the technical map showing the distribution of the infrastructure networks	within the project concerning							AR
FS3	to the existing			infrastructure networks	-	2	3	4	5	B/N	EE
	infrastructure networks	In Lice								BEC	
		Conceptual design		Is able to apply the assessment							CE
	Verify the proximity of	Detailed design	Knows the calculation method of	method for the characterisation							AR
PC1	buildings to the existing		proximity of buildings to the	of the indicator related to the	-	2	3	4	5	B/N	EE
	Infrastructure networks	In Lise	existing infrastructure networks	proximity of buildings to the existing infrastructure networks							BEC
		inose									50
	Understand the importance	Detailed design	Has general knowledge related	is able to take part in discussion within the project concerning							CE
FS4	of the installation of parking		to green mobility	parking spaces for bicycles, and to	-	2	3	4	5	B/N	AR
	spaces for bicycles	In Lico		be proactive.							EE
		Concentual decigo		Is able to apply the CasaClima							SC
		Dotailod dosign	Has knowledge of the calculation	assessment method for the							CF
	Verify the installation of	Detailed design	indicator relating to the	characterization of the indicator						- (h.	CE
PC1	parking spaces for bicycles		proximity of buildings to the	relating to the installation of	-	-	3	4	5	B/N	AR
			installation of bicycle parking	generally concerning sustainable							EE
		In Use	spaces.	mobility.							BEC
			Has general knowledge related	Is able to participate in the							SC
	Understand the importance	Detailed design	to water needs in buildings and	discussion within the project							CE
WE1	of potable water reduction		water saving systems for	for irrigation and to implement it	-	2	3	4	5	B/N	AR
VVCI	for irrigation		irrigation in accordance with	in the project in accordance with							EE
		In Use	current registation.	current regulations.							BEC
		Conceptual design	Knows the calculation method of	Is able to apply the CasaClima							SC
	Evaluate the building's	Detailed design	the indicator related to the	assessment method for the							CE
PC1	performance concerning the		regarding the potable water	relating to the performance of	-	-	-	4	5	B/N	AR
	potable water reduction for		reduction for irrigation valid for	the building regarding the	f ·					EE	
	in igation	In Lise and the state of the building regard	reduction of drinking water for							PEC	
1	1	11 050	Protocols.	irrigation.							DEC



Area of	Learning outcome	Stage of the project-	Knowledge	Skill	Requested for the levels			s of	Scale	Professions	
Expertis	(LO) 🗡	· · · · · · · · · · · · · · · · · · ·	······································		1	2	3	4	5	· · · · · ·	_ · · · · · · · · · · · · · · · · · · ·
			Has a good knowledge of the	Is able to participate in the							SC
		Detailed design	water needs in buildings and	discussion within the project							CE
WF2	of notable water reduction		water saving systems for internal use	for indoor use, per capita water	-	-	з	4	5	в	AR
	for indoor uses		Knows the per capita water	consumption for the main			5		Ŭ	5	FF
			consumption for the main	domestic activities and to be							DEC.
		In Use	domestic activities.	proactive.							BEC
	Evaluate the building's	Conceptual design	Knows the calculation method of	Is able to apply the evaluation							SC
	performance concerning	Detailed design	the indicator related to the	of the indicator relating to the					_		CE
PC1	the potable water reduction		performance of the building	performance of the building	-	-	-	4	5	В	AR
	for indoor uses		drinking water for internal use.	regarding the potable water							EE
		in Use	Has good knowledge of recycled	Is able to participate in the							BEC
	Understand the importance	Detailed design	and recovered materials for	discussion within the project							CE
MS3	recovered materials in a		building construction and the	regarding recycled and recovered	-	-	3	4	5	В	AR
	building construction	In Lice	classification of technological	materials for the construction of							EE
		mose	Has knowledge of the calculation	buildings and to implement the							SC
	Further the same of an avelo	Detailed design	method and the CasaClima	Is able to apply the CasaClima							CE
PC1	and recovered materials in	Detailed design	indicator relating to the	assessment method for the characterization of the indicator	-	-	-	4	5	В	AP
	a building construction		performance of the building	relating to the use of recycled and						-	FF
		In Lise	and recovered materials.	recovered materials.							BEC
			Has good knowledge of the								SC
			definition of renewable sources								
			and materials for the	Is able to participate in the							
		Detailed design	deriving from renewable	discussion within the project on							CE
	Understand the importance		sources, of the classification of	materials from renewable							
MS4	renewable sources in a		technological systems in	implementing the project with	-	-	3	4	5	В	AR
	building construction		general of environmental	materials that comply with							
			standards with the related	environmental regulations with the consequent labeling							EE
			labeling and self-declarations of	are consequent lasening.							850
		in Ose	impact								BEC
			Has knowledge of the calculation	is able to apply the assessment							SC
	Consider the use of	Detailed design	method and the CasaClima	method for the characterisation	ation the					CE	
PC1	materials from renewable	Detailed design	indicator relating to the	ng to the of the indicator related to the fit building with berformance of the building with	-	-	4	5	В	40	
	sources in a building		performance of the building with	performance of the building with	:h						AK
		In Lice	from renewable.	from renewable.							BEC
		mose	Has a good knowledge of labels	Is able to participate in the							SC
			and environmental declarations	discussion within the project							
	Understand the importance	Detailed design	of materials to be used in the	regarding environmental labels							CE
MS5	in the construction of a		the type of certifications for	to be proactive. Is able to	-	-	3	4	5	В	AR
	building		building materials and all the	implement the contents of the							EE
		In Use	legislation regarding	environmental standards in the							BEC
			environmental aspects.	Is able to apply the CasaClima							SC
	Define the pressore of	Dotailod dosign	Has knowledge of the calculation	assessment method for the							C.
PC1	certified materials in the	Detailed design	indicator relating to the	characterization of the indicator	-	-	-	4	5	В	
	building and their use		presence of certified materials	relating to the presence of certified materials in the building							FF
		In Use	in the building and their use	and their use.			Ì				BEC
	Understand the importance	Conceptual design	Has in-depth knowledge of the	Is able to take part in discussion							SC
EDO	of energy performance of	Detailed design	total energy performance and	within the project concerning the			2	4	-	P	CE
EPU	the building during the		building in accordance with	building during the operational	-	-	э	4	5	D	EE
	operational phase	In Use	current energy legislation.	phase and to be proactive by							BEC
			Knows the Case Cline and all	Is able to apply the CasaClima							SC
	Evaluate the energy	Detailed design	method of the indicator relating	assessment method for the			1				CE
PC1	performance of the building		to the energy performance of	cnaracterization of the indicator	-	-	-	4	5	В	AR
PC1	phase		the building during the	performance of the building							EE
		In Use	operational phase.	during the operational phase.			1				BEC
		Conceptual design	Has in-depth knowledge of the	Is able to take part in the							SC
		Dotailod dosign	thermal energy performance of	discussion within the project							C.
EPO	onderstand the importance	Detalled design	the building using energy	regarding renewable energy for	-	-	3	4	5	В	LE
EPO	for thermal uses		from renewable sources in	thermal use and to be proactive	active 3 4 5		AR				
		les la la	regulations.	the current regulatory content.							EE
		in Use		5 ·····, ·····lia		I					BEC



		Stage of the			Rec	wester	d for th	e level	ls of		
Area of	Learning outcome	project-	Knowledge	Skill	nee	CO	mpeter	nce	.5 01	Scale _	Professions
Expertis	(LO)			· · · · · · · · · · · · · · · · · · ·	1	2	3	1	5	· · · · · ·	
			Has knowledge of the calculation	Is able to apply the CasaClima	-	2	5	4	5		SC
	Define the portion of	Detailed design	method and the CasaClima	assessment method for the							CE
PC1	renewable energy for		indicator relating to the portion	characterization of the indicator	-	-	-	4	5	В	AR
	thermal uses		of renewable energy for thermal	relating to the share of renewable							EE
		In Use	uses.	energy for thermal uses.							BEC_RESI
		Conceptual design	Has in-depth knowledge of the	Is able to take part in the							SC
	Understand the importance	Detailed design	building and the use of energy	discussion within the project							CE
EPO	of using renewable energy		from renewable sources for	regarding renewable energies for	-	-	3	4	5	В	4.0
	for electrical uses		electrical purposes, in	in compliance with current							AR
			accordance with current	regulations.							EE DEC DECL
		In Use	regulations.								BEC-RESI
	Determine the portion of	Detailed design	mas knowledge of the calculation	assessment method for the							CE
PC1	renewable energy for	Detailed design	indicator relating to the share of	characterization of the indicator	-	-	3	4	5	В	AR
	electrical uses		renewable energy for electrical	relating to the share of renewable							EE
		In Use	uses.	energy for electrical uses.							BEC_RESI
		Conceptual design		Is able to participate in the							SC
	Understand the importance	Detailed design	Has in-depth knowledge of	discussion within the project							CE
EPO	of the evaluation of thermal		and the primary energy needs of	needs for heating and cooling.	-	-	3	4	5	В	AR
	energy demand for heating		the building in compliance with	implementing the project in							
			current energy regulations.	compliance with the energy							EE
		In Use		regulations in force.							BEC
		Dotailad desire	Knows the CasaClima calculation	Is able to apply the CasaClima							SC CT
PC1	Evaluate the thermal energy	Detailed design	method of the indicator related	assessment method for the	-	-	_	4	5	в	LE AR
	cooling		to the thermal energy demand	relating to the thermal energy						5	EE
		In Use	for heating and cooling	demand for heating and cooling.							BEC
		Conceptual design	Has in-depth knowledge of the	Is able to take part in the							SC
	Understand the importance	Detailed design	CO2 emissions produced for the	discussion within the project							CE
E D 7	of evaluating energy		operation of the building and	regarding the energy emissions of			2	4	5	D /N	AD
LIV/	during the operational		of the main energy carriers in	the building during the	_	_	5	7	5	D/IN	AN
	phase		harmony with current	operational phase in accordance							EE
		In Use	regulations.	with current energy regulations							BEC
			Has good knowledge of the	Is able to apply the CasaClima							SC
	Evaluate the energy emissions of the building during the energy	Detailed design	emission factors and CO2	assessment method for the							CE
PC1			emissions produced for the	characterisation of the indicator	-	-	-	4	5	В	AR
	phase		compliance with current	ilding, in related to the energy emissions - rrent of the building during the	s						EE
		In Use	regulations	operational phase							BEC
		Conceptual design	Has a good knowledge of	within the project concerning soil							SC
	Understand the importance	Detailed design	reducing soil sealing by	sealing and permeability and to							CF
	to reduce soil sealing by	Caratavatian	improving water permeability.	be proactive.			_		_	D (N)	4.0
HL4	improving the permeability	Construction	Has knowledge of the	is able to applicate permeability	-	-	3	4	5	B/N	AR
	of water through the soil	As Built	relating to the types of surface.	typologies of surface with project							EE
		In Use		implementation.							BEC
				Is able to apply the CasaClima							SC
Der		Detailed design	Knows the method of calculating	assessment method for the			2			D (b)	CE
PCI	Derine soil permeability	Lonstruction	to soil permeability	characterisation of the indicator	-	-	3	4	5	B/N	AK FF
		In Use	to son permeability.	related to the soil permeability.							BEC
				Is able to participate in the			1				SC
			4	discussion within the project							
	Understand the importance	Detailed design	Has general knowledge related	regarding the heat island effect							CE
CT2	of evaluating the causes	Construction	to the causes that generate the	in an urban area. Is able to	-	2	3	4	5	B/N	AR
	which generate "heat		heat island effect .	identify the solar reflection						,	
		As Built		indices of different materials							EE
		In Use		useful for calculating the thermal							BEC
				enection the heat Island.							SC.
	Evoluato the "best island"	Detailed design	Knows the calculation method of	Is able to apply the assessment							CE
PC1	effect		the indicator related to the heat	of the indicator related to the	-	-	3	4	5	B/N	AR
PC1 effe		As Built	island effect	heat island effect							EE
		In Use									BEC
	Understand the importance		Has in-depth knowledge of the	Is able to participate in the							JU
	of preserving the indoor	Detailed design	aspects related to the natural	discussion within the project							CE
CQ3	comfort by evaluating the aspects related to the		buildings also for the design in	regarding ventilation and indoor	-	-	3	4	5	В	AR
	mechanical ventilation in	As Built	compliance with current	designing in compliance with the	in he						FF
	mechanical ventilation in buildings		regulations.	regulations in force.							BEC
L	1	11036	1	1		L					DEC



Area of	Learning outcome	Stage of the project-	Knowledge	Skill	Requested for the level				Requested for the levels of competence		s of	Scale	Professions
Expertis	(10)				1	2	3	4	5				
			Knows the method of calculating	Is able to apply the CasaClima							SC		
PC1	Evaluate the ventilation and	Detailed design	ventilation and indoor air quality	characterisation of the indicator	-	-	-	4	5	В	CE		
	the indoor air quality	As Built	by applying the CasaClima	related to the ventilation and the							EE		
		In Use	Directive on the subject.	indoor air quality							BEC		
			Has a deep knowledge of the	Is able to take part in the							SC		
	Understand the importance	Detailed design	aspects related to the natural	regarding the operating							CE		
CT1	of evaluating the operating		and mechanical ventilation of buildings also for the design in	temperature during the summer	-	-	3	4	5	В	AR		
	summertime	As Built	compliance with current	period and to be proactive in							EE		
		In Use	regulations.	legislation.							BEC		
			Knows the method of calculating	Is able to apply the CasaClima							SC		
DC1	Evaluate the operating	Detailed design	the indicator relating to the	assessment method for the				4	-		CE		
PUI	summertime	As Built	the summer period, applying the	related to the operating	-	-	-	4	5	в	EE		
		In Use	CasaClima Directive	temperature during summertime							BEC		
			Has good knowledge of internal	Is able to participate in the							SC		
	Understand the importance	Detailed design	thermal comfort parameters and	discussion within the project							CE		
CT1	summertime indoor thermal		internal summer temperature in	comfort and be proactive in the	-	-	3	4	5	В	AR		
	comfort	As Built	compliance with current energy	project in accordance with							EE		
		In Use	regulations.	current regulations.							BEC		
			Has good knowledge of internal	Is able to apply the CasaClima							SC		
PC1	Evaluate the summertime	Detailed design	thermal comfort parameters. He knows the method of calculating	assessment method for the characterisation of the indicator	-	-	-	4	5	В	AR		
	indoor thermal comfort	As Built	the indicator relating to internal	related to the summertime						-	EE		
		In Use	summer thermal comfort by	indoor thermal comfort							BEC		
		Conceptual design	Has good knowledge of the values of the	is able to participate in the discussion within the project on							SC		
CV1	Understand the importance	Detailed design	daylight and of the general	the level of natural lighting in	-	-	з	Д	5	в	CE		
	natural lighting in buildings	As Built	criteria for artificial and natural	buildings and to be proactive in			5	-	Ĵ	b	FF		
		In Use	specific legislation in force.	legislation.							BEC		
			Knows the calculation method of								SC		
	Evaluate the level of natural lighting in buildings Detailed design the indicator related of natural lighting and applies the Comparison of the comparison	Detailed design	the indicator related to the level	Is able to apply the CasaClima							CE		
PC1		of natural lighting in buildings	characterisation of the indicator	-	-	-	4	5	В	AR			
		As Built	Directive according to the type	related to the level of natural							EE		
		In Use	of building.	lighting in buildings							BEC		
		Conceptual design		Is able to take part in the							SC		
	Understand the importance	Detailed design	Has in-depth knowledge of the building's acoustic class and on	discussion within the project							CE		
CA2	of evaluating the global	betalled design	the acoustic performance of	concerning the overall acoustic	-	-	3	4	5	В	ΔR		
	building	As Built	buildings, in compliance with	with the acoustic regulations in							EE		
		In Use	current acoustic standards.	force.							BEC		
	Evaluate the global	Dotailed design	Has in-depth knowledge of the	Is able to apply the assessment							SC		
PC1	acoustics class of the	Detailed design	calculation methods in	of the indicator related to the	-	-	-	4	5	В	AR		
	building	As Built	accordance with current acoustic	global acoustics class of the							EE		
		In Use	standards.	building							BEC		
	Understand the importance	Detailed docign	Has general knowledge of the	Is able to participate in the							CF CF		
EMO	of defining the BACS	Detailed design	sources of magnetic and electric	regarding the BACS (Building &		2	2	4		D	AR		
EINIS	Control System) efficiency	As Built	accordance with the current	Automation Control System)	-	2	5	4	5	D	FF		
	class	In Use	standards.	efficiency class in narmony with current legislation.							BEC		
											SC.		
	Define the BACS (Building &	Detailed design	Knows the calculation method of	method for the characterisation							CE		
PC1	Automation Control System)		the indicator related to the BACS (Building & Automation Control	of the indicator related to the	-	-	3	4	5	В	AR		
	efficiency class		System) efficiency class	BACS (Building & Automation							EE		
		In Use		Is able to participate in the							BEC		
	Understand the importance	Dotailod dosign		discussion within the project							сг		
Understand of defining t	of defining the number of	Decalleu design	has general knowledge of the home automation function	regarding the existing home	-	2	3	4	5	в			
	domotic functions existing		based on the current standard.	automation functions in buildings						-	EF		
	in sanangs	In Use		force.							BEC		
		Conceptual design	Knows the method of calculating								SC		
	Define the number of	Detailed design	the indicator related to the	is able to apply the casaClima assessment method for the							CE		
PC1	domotic functions existing		number of home automation	characterisation of the indicator	-	2	3	4	5	В	AR		
	domotic functions existing in buildings		required by the CasaClima	related to the number of domotic	or - 2 otic						EE		
		In Use	Directive.	tunctions existing in buildings							BEC		
	-			+									



Area of Expertis	Learning outcome (LO)	Stage of the project-	Knowledge	Skill	Requested for the levels of competence				ls of •	Scale	Professions 💂
					1	2	3	4	5		
DI1	Application of the integrated design approach	Conceptual design Detailed design Construction As Built In Use	Has general knowledge of the integrated design methodology	Is able to take part in discussion within the project concerning the integrated design approach	-	-	3	4	5	В	SC CE AR EE BEC
PC1	Application of the integrated design approach	Conceptual design Detailed design Construction As Built In Use	Knows the integrated design methodology	Is able to interact with area experts to collect data for the calculation of the CASACLIMA indicator or, if able, apply them directly.	-	-	3	4	5	В	SC CE AR EE BEC
PC1	Understanding and application of the calculation methodology of the CasaClima Sustainability Protocol.	Conceptual design Detailed design As Built In Use	Has knowledge of the methodology of the CasaClima Sustainability Protocol. Has knowledge of the methodology for assigning the final score through all the phases provided for in the Protocol differentiated by areas of intervention	It is able to apply the methodology of the CasaClima Sustainability Protocol differentiated by areas of intervention, from the delivery of documents to the CasaClima Agency up to the delivery of the certification and the plate with the energy class	-	-	3	4	5	В	SC CE AR EE BEC
PC1	Understanding the CasaClima Sustainability Protocol approach.	Conceptual design Detailed design As Built In Use	Has knowledge of the context and of the applicability specifications of the CasaClima Sustainability Protocol and of the related multi-criteria analysis system. Has knowledge of the modular and hierarchical system organized in areas, categories and evaluation criteria.	Is able to calculate the performance score by using the CasaClima Sustainability Protocols differentiated by specificity and needs of different fields of application.	_	-	3	4	5	В	SC CE AR EE BEC
PC2	Facilitate and support project teams to reach the target CasaClima Sustainability Protocol rating.	Conceptual design Detailed design	Has knowledge of the entire certification process based on the CasaClima Sustainability Protocols differentiated by	Is able to identify and prepare the results of the required tests such as BDT, acoustic certification, etc. Is able to facilitate the efforts of the project team by providing key inputs throughout the process in order to achieve the target evaluation including presence during audits.	-	-	3	4	5	В	SC CE AR
		As Built In Use	specificity and needs of different fields of application	Is able to facilitate the efforts of the project team (technical specialists, enterprise, craftsmen) and provide key inputs during the whole process in order to reach the predetermined target evaluation.	-						EE BEC



### 12.5ComuneClima Consultant

Area of	Learning outcome	Stage of the			Requested for the levels of			s of			
Expertis	(LO)		Knowledge	Skill		co	mpetei	nce	-	Scale	Professions
					1	2	3	4	5		AP
		Detailed design		Is able to take part in discussion							CE
HL1	of limiting soil consumption.		Has general knowledge related to the land consumption aspects.	within the project concerning land	1	2	3	4	5	B/N	EE
		In Lico		consumption, and to be proactive							BEC
		Conceptual design		Is able to apply the assessment							SC
	Evaluate the reduction of land use encouraging the re-	Detailed design	Has a good knowledge of the calculation method of the	method for the characterisation of							AR
PC1	use of soil already		indicator related to land	the indicator related to land	-	-	3	4	5	B/N	EE
	compromised.	In Use	consumption.	consumption							CE
				Is able to take part in discussion							AR
482	Understand the importance	Detailed design	Has general knowledge related	within the project concerning the	1	2	2	4	c	D/N	EE
A03	public transport		use of private vehicles	transport, and to be proactive.	T	2	5		5	D/IN	CE
		In Use									BEC
		Conceptual design	Has knowledge of the calculation	Is able to apply the CasaClima							SC
PC1	Determine the accessibility	Detailed design	method and the CasaClima	characterization of the indicator	-	-	3	4	5	B/N	EE
	to the public transport		to public transport.	relating to accessibility to public							BEC
		In Use		transport. Is able to participate in the							CE
	Understand the importance	Detailed design	Has general knowledge related	discussion within the project							EE
FS2	of the functional mix of		to the benefits generated by a	regarding the functional mix and	1	2	3	4	5	B/N	CE
	services in the area	In Use	high functional mix	to be proactive.							BEC
	Determine the functional	Conceptual design	Knows the method of coloulating	Is able to apply the evoluation							SC
	mix (commercial, culture,	Detailed design	the indicator relating to the	method for the characterization of						- (	AR
PC1	services, sports, etc.) in the		functional mix in the area.	the indicator relating to the	-	2	3	4	5	B/N	CF
	area analysed	In Use		functional mix.							BEC
	Understand the importance	0.11111	Has general knowledge related	Is able to take part in discussion							CE
FS3	of the proximity of buildings	Detailed design	to the analysis of the technical	infrastructure networks	-	2	3	4	5	B/N	EE
	to the existing		map showing the distribution of the infrastructure networks	distribution							BEC
	Verify the provimity of	In Use		Is able to apply the assessment							SC
	Verify the proximity of buildings to the existing	Detailed design	Knows the calculation method of	method for the characterisation of							AR
PC1			proximity of buildings to the	the indicator related to the	- 2	2	3	4	5	B/N	EE
	infrastructure networks	In Lise	existing infrastructure networks	proximity of buildings to the existing infrastructure networks							BEC
		intose									
	Understand the importance	Detailed design	Has general knowledge related	within the project concerning		2	-		-	D (1)	CE
F54	of the installation of parking		to green mobility	parking spaces for bicycles, and to	-	2	3	4	5	B/N	AR FF
		In Use		be proactive.							BEC
		Conceptual design	Has knowledge of the calculation	Is able to apply the CasaClima							SC
		Detailed design	method and the CasaClima	assessment method for the							CE
PC1	Verify the installation of		indicator relating to the	relating to the installation of	-	2	3	4	5	B/N	4.0
	parking spaces for bicycles		proximity of buildings to the installation of bicycle parking	bicycle parking spaces and							An
			spaces.	generally concerning sustainable							EE
		in Use									BEC SC
			Has general knowledge related	Is able to participate in the							50
	Understand the importance	Detailed design	to water needs in buildings and	discussion within the project							CE
WE1	of potable water reduction		water saving systems for	for irrigation and to implement it	-	2	3	4	5	B/N	AR
			current legislation.	in the project in accordance with							EE
		In Use		current regulations.							BEC
		Conceptual design	Knows the calculation method	Is able to apply the CasaClima							SC
	Evaluate the performance	Detailed design	of the indicator related to the	assessment method for the							CE
PC1 of 1	to the potable water		performance of the building with	relating to the performance of the	-	-	3	4	5	B/N	AR
	reduction for irrigation		regard to the potable water reduction for irrigation.	building as regards the reduction							EE
		In Use	Badom	of drinking water for irrigation.							BEC
			Has a good knowledge of the	Is able to participate in the							SC
	Understand the importance	Detailed design	water saving systems for	regarding water saving systems							CE
WE2	of potable water reduction	ble water reduction internal use.	internal use.	for indoor use, per capita water	-	-	3	4	5	В	AR
	for indoor uses		Knows the per capita water	consumption for the main domestic activities and to be							EE
		In Use	domestic activities.	proactive.	1						BEC



Area of	Learning outcome	Stage of the project-			Requested for the levels o competence		ls of				
Expertis	(LO)		Knowledge	Skill	1	2	mpetei 3	nce 4	<b>•</b>	Scale	Professions
		Conceptual design		Is able to apply the evaluation							SC
	Evaluate the performance	Detailed design	Knows how CasaClima calculates	method for the characterization of							CE
PC1	of the building with regard		performance of the building as	the indicator relating to the	-	-	3	4	5	В	AR
	to the potable water reduction for indoor uses		regards the reduction of	regarding the potable water							EE
		In Use	drinking water for internal use.	reduction for indoor uses.							BEC
				Is able to participate in the							SC
		Deteiled desire		discussion within the project							CE
	Understand the importance	Detailed design	Has general knowledge related	regarding recycled and recovered							LE
MS3	recovered materials in a		materials for building	buildings and to implement the	-	-	3	4	5	В	AR
	building construction		construction	project by relating the contents of							EE
		In Use		environmental legislation and related labeling.							BEC
											SC
		Detailed design	Has knowledge of the calculation method and the CasaClima	assessment method for the							CE
PC1	Evaluate the use of recycled and recovered materials in		indicator relating to the	characterisation of the indicator	-	-	з	4	5	в	AR
	a building construction		performance of the building	related to the performance of the			5		Ū	5	FF
		Inline	and recovered materials.	recycled and recovered materials.							DEC
		mose									SC
	Understand the importance		Knows the CasaClima calculation	Is able to participate in the							
MCA	of using materials from	Detailed design	to the performance of the	discussion within the project on			2	4	-	D	CE
10154	renewable sources in a		building with regard to the use	materials from renewable sources	-	-	2	4	5	D	AR
	building construction		of materials from renewable sources .	and to be proactive.							EE
		in Use									SC
	Evaluate the use of	Deteiledderiau	Has knowledge of the calculation	Is able to apply the assessment method for the characterisation of							
DC1	materials from renewable	Detailed design	indicator relating to the	the indicator related to the			2		-	D	LE
PCI	sources in a building		performance of the building with	performance of the building with	-	-	3	4	5	в	
	construction		regard to the use of materials from renewable.	regard to the use of materials from renewable.							EE
		in Use	Has a good knowledge of labels	Is able to participate in the							SC
			and environmental declarations	discussion within the project							
	Understand the importance	Detailed design	of materials to be used in the	regarding environmental labels							CE
MS5 of usir in the buildir	in the construction of a		the type of certifications for	to be proactive by implementing	-	-	3	4	5	В	AR
	building		building materials and all the	the contents of environmental							EE
		In Use	legislation regarding environmental aspects.	standards in the project.							BEC
				Is able to apply the CasaClima	-	-					SC
	Determine the presence of	Detailed design	Has knowledge of the calculation method and the CasaClima	assessment method for the							CE
PC1	certified materials in the		indicator relating to the	characterization of the indicator	-	-	-	4	5	В	AR
	building and their use		presence of certified materials	certified materials in the building							EE
		In Use	in the bullding and their use	and their use.							BEC
		Conceptual design		Is able to take part in the							SC
	Understand the importance	Detailed design	Has in-depth knowledge of the	regarding the energy performance							CE
EPO	of energy performance of		primary energy needs of the	of the building during the	-	-	3	4	5	В	AR
	the building during the operational phase		building in accordance with	operational phase and to be							FF
			current energy legislation.	project in harmony with current							050
		in use		legislation.							BEL
	Evaluate the energy		Knows the CasaClima calculation	Is able to apply the CasaClima							JC
	performance of the building	Detailed design	method of the indicator relating	characterization of the indicator						2	CE
PC1	during the operational		to the energy performance of the building during the	relating to the energy	-	-	-	4	5	В	AR
	pnase	Indiac	operational phase.	performance of the building during the operational phase							EE
		in use		and the second phase.							BEL
		Conceptual design	Has in-depth knowledge of the thermal energy performance of	Is able to take part in the discussion within the project							эс СГ
EDO	Understand the importance	Detailed design	the building using energy	regarding renewable energy for			2	4		D	
EPU	for thermal uses		from renewable sources in	thermal use and to be proactive	-	-	3	4	5	в	FE
		In Lise	regulations.	the current regulatory content.							RFC
		in osc	- Has knowledge of the calculation	Is able to apply the CasaClima							SC
D	Determine the share of	Detailed design	method and the CasaClima	assessment method for the							CE
PC1	renewable energy for thermal uses		Indicator relating to the portion	characterization of the indicator	-	-	-	4	5	В	AR
		In Use	uses.	energy for thermal uses.							BEC_RESI
		Conceptual design	Has in-depth knowledge of the								SC
	Understand the importance	Detailed design	energy performance of the building and the use of energy	Is able to take part in the							CE
EPO (	of using renewable energy		from renewable sources for	ascussion within the project regarding renewable energies for	-	3 4 5	5	В	AR		
	for electrical uses		electrical purposes, in	electrical uses and to be proactive			- 3 4				EE
	for electrical uses	In Use	regulations.								BEC-RESI



		Stage of the			Requested for the levels of			s of			
Area of	Learning outcome	project-	Knowledge	Skill	Neg	coi	npeter	nce	3 01	Scale	Professions
Expertis	(LO)	· · · · · · · · · · · · · · · · · · ·	·····•	· · · · · · · · · · · · · · · · · · ·	1	2	2	4	×	••••••	· · · · · · · · · · · · · · · · · · ·
			Has knowledge of the calculation	Is able to apply the CasaClima	1	2	3	4	5		SC
	Determine the share of	Detailed design	method and the CasaClima	assessment method for the							CE
PC1	renewable energy for		indicator relating to the share of	characterization of the indicator	-	-	-	4	5	В	AR
	electrical uses		renewable energy for electrical	relating to the share of renewable							EE
		In Use	uses.	energy for electrical uses.							BEC_RESI
		Conceptual design	l la bas in denski kursudadan of	Is able to participate in the							SC
	Understand the importance	Detailed design	the mas in-depth knowledge of	regarding the thermal energy							CE
EPO	of the evaluation of thermal		and the primary energy needs of	needs for heating and cooling,	-	-	3	4	5	В	AR
	energy demand for heating		the building in compliance with	implementing the project in							FF
	and cooling		current energy regulations.	compliance with the energy							
		In Use		regulations in force.							BEC
			Knows the CasaClima calculation	Is able to apply the CasaClima							SC
PC1	Evaluate the thermal energy	Detailed design	method of the indicator related	assessment method for the			2	Λ	c	P	CE
FCI	cooling		to the thermal energy demand	relating to the thermal energy	-	-	э	4	5	D	FF
	eeeiiiig	In Use	for heating and cooling	demand for heating and cooling.							BEC
		Conceptual design	Has in-depth knowledge of the	Is able to take part in the							SC
	Understand the importance	Detailed design	CO2 emissions produced for the	discussion within the project							CF
EP7	of evaluating energy	Detailed design	operation of the building and	regarding the energy emissions of		2	2	4	-	D/N	
EK/	during the operational		of the main energy carriers in	the building during the operational	-	2	3	4	5	D/IN	AK
	phase		harmony with current	phase in accordance with current							EE
		In Use	regulations.	energy regulations							BEC
			Has good knowledge of the	Is able to apply the CasaClima	-	-					SC
	Evaluate the energy	Detailed design	emission factors and CO2	assessment method for the							CF
PC1	emissions of the building	Detailed design	emissions produced for the	characterisation of the indicator			з	4	5	в	AR
	during the operational		operation of the building, in	related to the energy emissions of			5			0	FF
q	pnase		compliance with current	the building during the operational phase							
		In Use	regulations	is able to take part in discussion							BEC
		Conceptual design	Has a good knowledge of	within the project concerning soil	-	-					SC
	Understand the importance to reduce soil sealing	Detailed design	reducing soil sealing by	sealing and permeability and to be							CE
ши		Construction	improving water permeability. pro uction Has knowledge of the Is a permeability coefficients coe relating to the types of surface typ	proactive.			2	4	-	D /N	AD
<b>NL4</b>	improving the permeability			coefficients related to the			э	4	5	D/IN	An
	of water through the soil	As Built		typologies of surface with project							EE
		In Use		implementation.							BEC
											SC
		Detailed design	Knows the method of calculating	Is able to apply the CasaClima							CE
PC1	Determine soil permeability	Construction	the CasaClima indicator relating	characterisation of the indicator	-	-	3	4	5	B/N	AR
		As Built	to soil permeability.	related to soil permeability.							EE
		mose		Is able to participate in the						-	SC
				discussion within the project	-						
	Understand the importance	Detailed design		regarding the heat island effect							CE
070	of evaluating the causes	Construction	Has general knowledge related	and to perform shading analysis in		2	2		_	D /N	AR
	that generate the heat		heat island effect	an urban area. Is able to identify the solar reflection indices of		2	3	4	5	B/N	
	island effect	As Built		different materials useful for							EE
		In Lice	1	calculating the thermal effect of							RFC
				the heat island.							
		Detailed docigo	Knows the calculation mathed of	Is able to apply the assessment		-					SC
PC1	Evaluate the heat island	Detalled design	the indicator related to the heat	method for the characterisation of	-		3	4	5	B/N	AR
	effect	As Built	island effect	the indicator related to the heat							EE
		In Use									BEC
	Understand the importance		Has in-denth knowledge of the	Is able to participate in the							SC
CQ3	of preserving the comfort	Detailed design	aspects related to the natural	discussion within the project							CF
	indoor evaluating the		and mechanical ventilation of	regarding ventilation and indoor			2	Δ	c	P	
	aspects related to the		buildings also for the design, in	air quality and to be proactive in	-	-	3	4		۵	AR
	mechanical ventilation in	As Built	compliance with current	designing in compliance with the							EE
	bundings	In Use	regulations.	regulations in force.							BEC
			Knows the method of calculating	Is able to apply the CasoClima							SC
		Detailed design	the indicator relating to	assessment method for the							CE
PC1	Evaluate the ventilation and		ventilation and indoor air quality	characterisation of the indicator	ator 4	4	5	В	AR		
	the mooor air quality	As Built	by applying the CasaClima	related to the ventilation and the							EE
		In Use	Directive on the subject.	indoor air quality							BEC
s											



A		Learning outcome project-									
Area of Expertis	Learning outcome (LO)	project-	Knowledge	Skill		co	mpeter	nce	-	Scale	Professions 🖕
					1	2	3	4	5		
			Has a deep knowledge of the	Is able to take part in the							SC
	Understand the importance	Detailed design	aspects related to the natural	regarding the operating							CE
CT1	temperature during		buildings also for the design, in	temperature during the summer	-	-	3	4	5	В	AR
	summertime	As Built	compliance with current	period and to be proactive in compliance with current							EE
		In Use	regulations.	legislation.							BEC
			Knows the method of calculating	Is able to apply the CasaClima							SC
	Evaluate the operating	Detailed design	the indicator relating to the	assessment method for the						-	CE
PC1	temperature during	An Duilt	operating temperature during the summer period, applying the	characterisation of the indicator related to the operating	-	-	3	4	5	В	AR
		In Use	CasaClima Directive	temperature during summertime							BEC
			Has good knowledge of internal	Is able to participate in the							SC
	Understand the importance	Detailed design	thermal comfort parameters and methods of calculating the	discussion within the project							CE
CT1	of evaluating the		internal summer temperature in	regarding indoor summer thermal	-	-	3	4	5	В	AR
	comfort	As Built	compliance with current energy	project in accordance with current							EE
		In Use	regulations.	regulations.							BEC
			Has good knowledge of internal								SC
		Detailed design	thermal comfort parameters. He knows the method of calculating	Is able to apply the CasaClima assessment method for the							CE
PC1	Evaluate the summertime		the indicator relating to internal	characterisation of the indicator	-	-	3	4	5	В	AR
	Indoor thermal comfort	As Built	summer thermal comfort by	related to the summertime indoor							EE
		In Use	applying the CasaClima Directive	thermal comfort							BEC
		Conceptual design	Has general knowledge of the	Is able to participate in the							SC
	Understand the importance	Detailed design	values of the average factor of	discussion within the project on							CE
CV1 c	of evaluating the level of		daylight and of the general	the level of natural lighting in	-	2	3	4	5	В	AR
	natural lighting in buildings	As Built	criteria for artificial and natural	buildings and to be proactive with projects that comply with current							EE
		In Use	specific legislation in force.	legislation.							BEC
			Knows the calculation method of								SC
		Detailed design	the indicator related to the level	Is able to apply the CasaClima							CE
PC1	Evaluate the level of natural		of natural lighting in buildings	characterisation of the indicator	-	-	3	4	5	В	AR
	ingriting in buildings	As Built	It Directive according to the type	related to the level of natural							EE
		In Use	of building.	lighting in buildings							BEC
		Conceptual design	Has in-depth knowledge of the	Is able to take part in the							SC
	of evaluating the global	Detailed design	building's acoustic class e	discussion within the project concerning the overall acoustic							CE
CA2	acoustics class of the		on the acoustic performance of	class of the building in compliance	-	-	3	4	5	В	AR
	building	As Built	current acoustic standards.	with the acoustic regulations in							EE
		III USE	Has in-depth knowledge of the	lorce.							SC
	Evaluate the global	Detailed design	building's acoustic class and	is able to apply the assessment method for the characterisation of							CE
PC1	acoustics class of the	As Built	calculation methods in accordance with current acoustic	the indicator related to the global	-	-	-	4	5	В	AR FF
		In Use	standards.	acoustics class of the building							BEC
	Independent the important	Conceptual design	Hee general knowledge of a	Is able to participate in the							SC
	to determine the BACS	Detailed design	sources of magnetic and electric	discussion within the project							CE
ЕМЗ	(Building & Automation		fields in the building in	regarding the BACS (Building & Automation Control System)	-	2	3	4	5	В	AR
	Control System) efficiency	As Built	accordance with the current	efficiency class in harmony with							EE
		In Use		current legislation.							BEC
D	Determine the BACS		Knows the calculation method of	Is able to apply the assessment							SC
PC1	(Building & Automation	Detailed design	the indicator related to the BACS	method for the characterisation of the indicator related to the BACS	-	-	З	А	5	R	CE
	Control System) efficiency		(Building & Automation Control	(Building & Automation Control			5			5	EE
		In Use	system) eniciency class	System) efficiency class							BEC
		Conceptual design		Is able to participate in the							SC
	Understand the importance	Detailed design	Has general knowledge of the	discussion within the project regarding the existing home							CE
EM2	domotic functions existing		home automation function	automation functions in buildings	2 - 2 3	4	5	В	AR		
	in buildings		based on the current standard. automation functions i based on the current s	based on the current standard in							EE
		In Use		lorce.							BEC



Area of Expertis	Learning outcome (LO)	Stage of the project-	Knowledge	Skill	<ul> <li>Requested for the leve competence</li> <li>1 2 3 4</li> </ul>			ls of	Scale 🖕	Professions 🖕	
		1			1	2	3	4	5		
		Conceptual design	Knows the method of calculating								SC
		Detailed design	the indicator related to the	Is able to apply the casaClima							CE
DC1	demotio functions evicting		number of home automation	assessment method for the		2	2	4	-	D	ΔR
FCI	in buildings		functions existing in buildings, as	related to the number of domotic	-	2	3	4	5	Б	55
	in punungs		required by the CasaClima	functions existing in buildings							EE
		In Use	Directive.	ranetions existing in ballarings							BEC
		Conceptual design									SC
	Application of the	Detailed design	Has general knowledge of the	Is able to take part in discussion							CE
DI1	integrated design approach	Construction	integrated design methodology	within the project concerning the	-	-	3	4	5	В	AR
	integratea acoigii approach	As Built	integrated design methodology	integrated design approach							EE
		In Use									BEC
		Conceptual design		Is able to interact with area							SC
	Application of the	Detailed design	Knows the integrated design	experts to collect data for the					_		CE
PC1	integrated design approach	Construction	methodology from an energy	calculation of the CASACLIMA	-	-	3	4	5	В	AR
		As Built	point of view.	Indicator.							EE
		In Use									BEC
		Conceptual design	Has knowledge of the methodology for obtaining the	Is able to apply the methodology for obtaining the ComuneClima							SC
	Understanding and	Detailed design	ComuneClima mark.	mark throughout the process,							CE
PC1	application of the methodology for obtaining		Has knowledge of the methodology for assigning the	supporting the Municipality and the energy team in the	-	-	3	4	5	В	AR
1	the ComuneClima mark.	As Built	final score through all the phases foreseen in the	implementation of the activities envisaged by the ComuneClima /							EE
		In Use	ComuneClima Program.	KlimaGemeinde Program.							BEC
		Conceptual design	sign Has knowledge of the contexts sc and the specific applicability of th the ComuneClima Method, in m	Is able to perform performance							SC
	Understanding of the	Detailed design		contexts scoring calculations according to							CE
PC1	approach of the			the Measurement Catalog (eea	-	-	з	4	5	в	ΔR
	methodology for obtaining	As Built		management tool) and via the			5		Ŭ	5	FF
	the ComuneClima mark.	As built	order to create the Brand.	Energy Report Online energy							
		In Use		accounting software.							BEC
		Conceptual design		Is able to accompany municipalities in addressing critical issues relating to the energy sector and climate							SC
		Detailed design	Has knowledge of the the whole process concerning the ComuneClima Program in order	protection, illustrating their objectives and opportunities. Is able to lays the foundations for strategies, planning and energy							CE
PC2	Facilitate and support the project teams to reach the target CasaClima		to obtain the ComuneClima mark.	management with an appropriate study of an Action Plan. Through the Measurement Catalog (eea Management Tool) action areas	-	-	3	4	5	В	AR
102	target CasaClima Sustainability Protocol rating.	As Built		are formulated for the related improvements and through the Energy Report Online energy accounting software is able to							EE
		In Use		draw up the final Energy Report. After constant dialogue with the CasaClima Agency, this process allows the achievement of the ComuneClima brand.							BEC



## 12.6Craftsman CasaClima Expert

Area of	Learning outcome	Stage of the project-	Knowledge	Skill	Requested for the level competence				ls of	Scale	Professions
Expertis	(10)			_	1	2	3	4	5		
	Inderstand the importance			Is summarily able to participate in							Br
	of using recycled and		Has basic knowledge of recycled	the discussion within the project					-		FW
MS3	recovered materials in a	Construction	and recovered materials for	regarding recycled and recovered	-	2	3	4	5	В	11
	building construction	In Use	building construction.	buildings.							C
			line has in here with the states								Br
			methodology for calculating the	Is able to be operational in the							E) M/
	Evaluate the use of recycled	<b>a</b>	indicator relating to the	correct installation of recycled					-		F VV
PC1	and recovered materials in a building construction	Construction	performance of the building with	and recovered materials in a	-	2	3	4	5	В	11
	a building construction	As Built	regard to the use of recycled	building construction							WI
		In Use	and recovered materials.								С
			Has basic knowledge related to	Is able to participate in the							Br
	Understand the importance		the definition of renewable	discussion within the project on							FW
MS4	of using materials from	Construction	sources and materials for the	materials from renewable	-	2	3	4	5	В	
	building construction	As Built	deriving from renewable	sources.							WI
		In Use	sources.								С
			Has basic knowledge for the								Br
	Evaluate the use of		calculation of the indicator	Is able to be operational in the							FW
PC1	materials from renewable	Construction	relating to the performance of	correct installation and in the use	-	-	3	4	5	В	
	sources in a building	As Built	the building with regard to the	of materials from renewable			-			-	14/1
	construction	As Dunt	use of materials from renewable	sources							C
		in Use	5001025	Is summarily able to participate in							Br-EM - C
	Understand the importance		Has a basic knowledge	the discussion within the project							FW
MS5	of using certified materials	Construction	concerning labels and declarations for building	regarding environmental labels	-	2	3	4	5	В	Ш
	building	As Built	materials.	and declarations for materials.							R
	<b>.</b>	In Use									WI Dr FM C
			Has basic knowledge concerning	Is able to apply in a simple way,							BI-FIVI - C
	Determine the presence of		the methodology for calculating	the evaluation method for the							FW
PC1	certified materials in the	Construction	the indicator relating to	relating to the presence of	-	-	3	4	5	В	Ш
	building and their use	As Built	presence of certified materials	certified materials in the building							R
		In Use	in the building and their use.	and their use							WI
	Understand the importance		Has very basic knowledge of the	the discussion within the project							
EPO	of energy performance of	Construction	total energy performance and r primary energy needs of the pullding.	regarding the energy	-	2	3	4	5	В	P
	the building during the	As Built		performance of the building							VI
	operational phase	In Use	Sanang.	during the operational phase.							WI
			Has basic knowledge of the	Is able to apply in a simple way,							Ш
	Evaluate the energy		methodology for calculating the	the indicator relating to the							Ρ
PC1	performance of the building	Construction	indicator relating to	energy performance of the	-	-	3	4	5	В	RESI
	during the operational	As Built	energy performance of the building during the operational	pullding during the operational phase. He is skilled in the correct							VI
	phase	In Use	phase.	installation of the systems							WI
			Has very general knowledge of								EI
	Understand the importance		the energy performance for	is summarily able to take part in							Р
EPO	of using renewable energy	Construction	thermal uses of the building	concerning renewable energies	-	2	3	4	5	В	RESI
	for thermal uses	As Built	deriving from renewable	for thermal uses.							VI
		111 USE	Sources.	Is able to apply, in a simple wav.							EI
			Has knowledge of the method	the evaluation method for the							
	Determine the share of		for calculating the indicator	characterization of the indicator							Р
PC1	renewable energy for	Construction	relating to the share of	relating to the share of renewable	-	-	3	4	5	В	RESI
	thermal uses	As Built	renewable energy for thermal	skilled in the correct installation							VI
		In Use		of the systems.							
				It is summarily able to take part in							EI
	Understand the importance		Has basic knowledge about the	the discussion within the project							P
EPO	of using renewable energy	Construction	use of renewable energy for	concerning renewable energies	-	2	3	4	5	В	RESI
	Tor electrical uses	In Use	ereculicar pul poses	for electrical uses.							VI
				Is able to apply, in a simple way,							EI
	-		Has basic knowledge of the	the method for the							p
	Determine the share of	Construction	method for calculating the	characterization of the indicator			2			5	הבנו
PC1	renewable energy for	Construction	indicator relating to the share of	relating to the share of renewable	-	-	3	4	5	В	RESI
	cicculical uses	As Built	uses	skilled in the correct installation							VI
		In Use		of the systems.							



		Stage of the			Requested for the levels of			s of			
Area of	Learning outcome	project-	Knowledge	Skill		co	mpeter	nce	-	Scale 🖕	Professions 🖕
LAPELUS	(10)				1	2	3	4	5		
	Understand the importance		Has very general knowledge	It iable to participate in the							EI
FO	of the evaluation of thermal	Construction	about the thermal energy	discussion within the project	-	2	3	4	5	В	RESI
	energy demand for heating	As Built	performance and the energy	regarding the thermal energy		_	_			_	VI
	and cooling	In Use	needs of the building.	needs for neating and cooling.							
				Is able to implement what is							EI
PC1	evaluate the thermal energy	Construction	to evaluate the thermal energy	required based on winter and	-	-	з	4	5	в	RESI
101	cooling	As Built	demand for heating and cooling.	summer energy needs.			5	-		D	VI
	_	In Use									
	Understand the importance		Has basic knowledge related to	Is able to participate in the							EI
603	of preserving the comfort	Construction	the installation of controlled	discussion within the VMC project	-	2	з	Д	5	в	RESI
CQJ	aspects related to the	As Built	mechanical ventilation of	and is able to carry out the		2	5	-		D	VI
	mechanical ventilation in	In Use	buildings.	correct installation.							
				Is able to apply in a simple way							
	Further also constitution and		Has general knowledge of the	the method of evaluating the							EI
PC1	the indoor air quality	Construction	method for calculating the relative indicator ventilation and	and indoor air quality and is	-	-	3	4	5	В	
		As Built	indoor air quality.	skilled in the correct installation							RESI
		In Use		of the systems.							VI
	Understand the importance		Has very general knowledge								
CT1	of evaluating the operating	Construction	about the evaluation of the	Is able to interact in the		2	2		-	P	WI
	temperature during	As Built	summer operating temperature	operating temperature	-	2	3	4	5	В	VI
	summertime	In Use	inside confined spaces.	operating temperature							P
				Is able to apply, in a simple way,							Ш
	Evaluate the operating		Has very general knowledge of	the method of evaluating the							WI
PC1 t	temperature during	Construction	the relative indicator	indicator relating to the operating	-	-	3	4	5	В	RESI
	summertime	Ac Puilt	at operating temperature during	temperature in the summer							VI
		As Built	the summer period.	installation of the systems.							VI D
		in ose		,							г Ш
	Understand the importance of evaluating the summertime indoor thermal		Has very general knowledge of	Is able to participate in the							WI
CT1		Construction	nternal thermal comfort	aiscussion within the project	-	2	3	4	5	В	RESI
	comfort	As Built	regulations on the subject.	thermal comfort.							VI
		In Use									P
			Has knowledge of the method	Is able to apply, in a simple way,							
	Evaluate the summertime		for calculating the relative	indicator relating to indoor							VVI
PC1	indoor thermal comfort	Construction	indicator	summer thermal comfort and is	-	-	3	4	5	В	RESI
		As Built	comfort.	able to correctly install the							VI
		In Use		systems.							Р
		Conceptual design									Br-FM - C
DI1	Application of the	Detailed design	Has a very general	is able to take part in discussion		2	3	4	5	R	FW-II R=\//I
011	integrated design approach	As Built	design methodology	integrated design approach		2	5	4	,	U U	EI-P
		In Use	1								RESI-VI
		Conceptual design		Is able to interact with experts							Br-FM- C
PC1	Application of the	Construction	knows the integrated design methodology based on the	to operate the required	-	2	З	4	5	в	FW-II R-W/
101	integrated design approach	As Built	category of interest.	methodologies.		2	5	-		D	EI-P
		In Use									RESI-VI
			Has a basic knowledge of the								Br-FM
	Understanding and		LasaClima methodology.	Is able to interact with area							FW-II
PC1	application of the CasaClima	Construction	the results of the calculations	experts regarding the data for the	1	2	3	4	5	В	R-WI
	methodology	As Built	referring to the energy	calculation of the CASACLIMA							EI-P
		In Use	requirement and the								RESI-VI
			consequent classes.								Br-EM C
Understandir	Understanding of the		Has a basic knowledge of the	Is able to interact with area							FW-II
Underst PC1 Protoco	Protocollo CASACLIMA		contexts and specifics of	experts regarding the data for the	1	2	3	4	5	В	R-WI
	approach		Certification	indicator							EI-P
		In Use									RESI-VI
	Facilitate and support		Has knowledge of the CasaClima	Is able to make himself available							WI
PC2	project teams to achieve		certification process from its	to perform the tests requested by	1	2	3	4	5	В	EI-P
	CASACLIMA rating		energy label.	control phase.							RESI
	CASACLIMA rating	In Use									VI



### 12.7LEED Green Associate

Area of	Learning outcome	Stage of the	Ka suda das	ci-iii	Requested for the le competence			ne level	s of	Cash	Dusfassiana
Experti	(LO) 👻	project 🗾	Knowledge	Skill 🗸	1	2	mpete	nce	-	Scale	Profession
	Understand the basis of LEED	Conceptual design	Knows the basis of the LEED certification process, including:	Can basically manage the LEED	T	2	5	4	5		UP
	certification process and	Detailed design	rating system selection criteria, certification levels, LEED tools	certification process							AR
PL1	fundamentals of USGBC	Construction	and instruments, third party verification process, registration of		1	2	3	4	5	B/N	CE
	organization		the project on LEED Online and role of documentation								SC
	Understand the principles	In Use	Submission.	Cap explain the principles behind the							Faivi
	behind the LEED rating	Conceptual design	structure, impact category definition and points allocation	LEED assessment methodology and							UF
	system	Detailed design	process, LEED development process (consensus-based process;	the LEED development process					-	D (1)	AR
PLI		Construction	stakeholder and volunteer involvment; rating system updates		1	2	3	4	5	B/N	CE
			and evolution process) and regional alternative compliance								SC
	Learn the internetional	In Use	paul.	la abla ta l'at tha safaanaa		-					FaM
	Learn the international Standards that are	Detailed design	knows, for each area, the main reference standards that should be applied applicable internationaly or on a regional scale	is able to list the reference							UP AR
PL1	recognized by LEED	Construction	be appreaded internationally of on a regional scale	LEED	1	2	3	4	5	B/N	CE
										-	SC
		In Use									FaM
	Understand the value of the	Conceptual design	Has a general knowledge of the basic principles of an	Can explain the basis of an integrative							SC
	integrative design process	Detailed design	approach (system thinking, early analysis of interrelations	and cons with simple examples.							AR
DI1	and the basic principles	Construction	among systems), the benefits (cost-effective project outcomes,		-	-	3	4	5	в	EE
	behind	As built	), the methods (charrette, workshop, recurrent analysis,) and								CE
		In Use	available instruments (dinamic simulation, LCA,)								BEC
	Understand the basic	Conceptual design	Understands within a project the main interrelations among	Can identify the major							SC
	interrelation among systems	Detailed design	systems (building systems, building and natural ecosystem,)	interrelationship among systems.							AR
DI1	affecting the environmental	Construction	and identify some integrated sustainability strategies for the		-	-	3	4	5	В	EE
	performance of a building	As built	projects								CE
	Understand the basic	In Use	Use a general knowledge of the main interrelations among LEEP	Cap identify the impact of different							BEC
	interrelation among LEED	Detailed Design	categories and credits being able to identify the impact of	design strategies on LEED credits.							AR
PL1	categories and credits	Construction	different design strategies on the LEED rating and score		1	2	3	4	5	в	EE
											UP
		In Use									
		Conceptual design	-	Discusses about the impacts of the							UP
	Understand the impacts of	Detailed Design	Has a general knowledge about the main environmental and	built environment (energy and							AR
QV2	the built environment and the definition of green	Construction	social impacts of the built environment in Europe and all around	resource use in buildings,	1	2	3	4	5	B/N	CE
	building		bottom line concept	generation,) and the basic concept							EE
	-	In Use		of green building							SC
		Conceptual design				-					UP
	Understand the values of	Detailed Design	Has a general knowledge about the costs and values of a green	Discusses about the values of a green							AR
QV1	sustainable design		savings over time, money savings due to healthier indoor	understanding of environmental and	1	2	3	4	5	В	CE
		As built	environments, money-saving incentives,)	social but also economic benefits							EE
		Concentual design	Has a general knowledge of the environmental impact of	Is able to discuss different type of							SC AR
	Understand strategies able to	Detailed Design	different transportation mode and of basic strategies, at	alternative transportation, access and							CE
OA1	support alternative		building and district scale, that can support the use of	quality criteria and design principles	1	2	3	4	5	B/N	SC
	transportation modes	la lla s	alternative transportation (proximity to public transportation,	to support eco-friendly transportation							EE
	Understand the importance	In Use Concentual design	Has a general knowledge of sustainable site selection	modes		-					LIP
	of site selection to reduce	Detailed Design	understanding the value of targeting sites in previously	Is able to support sustainable site							AR
HL2	the potential environmental		developed and brownfilelds or avoiding sensitive habitat, of	selection with general qualitative	1	2	3	4	5	B/N	CE
	impact of new development		locating buildings close to existing inrastructure and nearby	considerations.							SC
	uuring construction and	in Use	uses.	Is able to list some common principles							LE
	Understand the potential		Has a general knowledge of strategies to mitigate the	and strategies to be implemented							AR
HL3	environmental impacts	Construction	environmental impact due to demolition and construction	during demolition and construction	1	2	3	4	5	B/N	CE
	activities		activities	activities to mitigate the							SC
		Concentual docigo		environmental impact							EE LID
	U-4	Detailed design	Has a general knowledge of principles and strategies for	Can take part to the discussion in a							AR
HL1	Understand the value of site		sustainable developments and exterior design. The main topics	project team suggesting strategies to	1	2	3	4	5	B/N	CE
	development strategies		availability, light pollution reduction, heat island reduction.	develop sustainable sites							SC
	Understand the importance	Concentual design		Can take part to the discussion in a		-					LIP
	of developing rainwater	Detailed design	Has a general knowledge of strategies to replicate the natural	project team suggesting strategies to							AR
HL3	management strategies on		hydrology and water balance of the site and manage and treat	manage rainwater on site reducing	1	2	3	4	5	B/N	CE
	site to reduce runoff volume		infiltration ponds, rainwater collection and reuse,)	the environmental burden od new							SC
	and improve water quality	Concentual design		uevelopments Can explain the best strategies that							LE
	Understand the	Detailed Design	Has a general knowledge of potential strategies to reduce the	can be implemented during design							AR
MW1	environmental impacts of	Construction	amount of waste generated during construction activities and to	and construction to reduce the waste	1	2	3	4	5	B/N	CE
	waste generation		from landfill.	generated by the construction sector							SC
<u> </u>	Understand the water	Concentual docigo	Has a general knowledge of notential design strategies to	ouring the lifespan of a building							EE LIP
	consumption patterns in	Detailed design	reduce water consumption for irrigation based on the efficiency	Can take part to the discussion in a							AR
WE1	building and strategies to		first concept (reduce the water demand through efficient	project team suggesting strategies to	1	2	3	4	5	B/N	EE
	reduce water consumption		landscaping design, use alternative water source for irrigation,	design sustainable landscape areas.							SC
	tor outdoor uses	In Use	use smart sensor technology irrigation controls)								\$C
	consumption patterns in	Detailed design	reduce water consumption for indoor uses based on the	Can take part to the discussion in a							AR
WE2	building and strategies to		efficiency-first concept (reduce the water demand through low-	project team suggesting strategies to	1	2	3	4	5	В	CE
	reduce water consumption		flush and low-flow fixture and fittings, use alternative water	indoor uses.							
1	lfor indoor uses	In Use	source for flushing toilets)								



Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the le competence		e level: nce	s of	Scalr 🗸	Profession	
Expertis	(10)	project		· -	1	2	3	4	5		
	Understand the energy	Conceptual design		Can take part to the discussion in a	-	_	5				SC
	consumption patterns of	Detailed Design	Has a general knowledge of energy generation technologies,	project team being able to identify			1				AR
EPO	buildings and strategies for		renewable energy systems and offsetting strategies (heat	energy efficient generation	-	2	3	4	5	B/N	FaM
	thermal and electrical energy		pumps, CHP, PV, thermal solar panels, green energy, carbon	technologies, renewable energy		1	i i				BEC
	generation through high	In Use	onsets,)	systems and their integration at the							
	Understand the energy	Conceptual design	Has a general knowledge of passive and active energy reduction	Can take part to the discussion in a							SC
	consumption patterns of	Detailed design	measures that can be implemented at the building scale (e.g.	project team being able to identify		1	i i				AR
FR4	buildings and strategies to	Detailed design	insulation, orientation of buildings, optimum WWR, solar gains,	notential passive and active design	-	2	3	4	5	в	FaM
5114	reduce the energy demand of		management of internal loads, energy efficient tecnologies and	strategies that should be assessed in		-		-	5	D	
	buildings through passive and		regolation strategies, such as LED combined with DALI	the design development		1	i i				UP
	active strategies.	In Use	systems,)	the design development.							BEC
	Understand the energy	Conceptual design	-	Can take part to the discussion in a			1				SC
	consumption patterns of	Detailed Design	Has a general knowledge of energy management tools and	project team being able to list some		1	i i				AR
EM3	buildings and instruments and		strategies useful to minimize the energy consumption of	energy management strategies at the	-	2	3	4	5	B/N	FaM
	tools for implementing cost-		buildings and optimize the integration with the grid	building and district scale (eg. Energy			1				BEC
	effective energy management	In Use		metering and monitoring, demand			<u> </u>				
		Conceptual design	Has a general knowledge of the two main threats to the	Can take part to the discussion in a			i i				SC
	Understand the impact of	Detailed Design	environment posed by refrigerants used in HVAC systems: their	project team being able to address			i i				BEC
ER7	refrigerants used on HVAC		ozone depletion potential (ODP) and global warming potential	the use of refrigerants in HVAC	1	2	3	4	5	В	FaM
	systems on climate change		(GWP).	systems			i i				
		In Use	· · ·	,			<u> </u>				
	Understand the value of		4	Is able to explain the meaning and the							SC
	implementing the	Detailed design	Has a general knowledge of the basis of the commisisoning	value of implementing a						_	AR
NP1	commissioning process during	Construction	process, pros and cons.	commissioning process, benefits and	1	2	3	4	5	В	CE
	design, construction and			COSTS.			1				FaiM
	operation of a building	In Use					—			-	BEC
	Understand the importance of	Dotailed design		Is able to list possible strategies to			1				30
MD1	designing buildings in a way	Detailed design	Has a general knowledge of the main strategies able to reduce	reduce primary resources depletion			i i				AI
	that resources depletion and		primary resourses depletion and waste generation (e.g. reuse	and waste generation over the	1	2	3	4	5	В	CE
	waste generation are		of buildings and/or components, design for disassembly,)	lifespan of a building			1				SC
	minimized						1				
	Understand the principles of a	Conceptual design									SC
	life cycle assessment Detailed design approach to reduce the Construction	Detailed design	Has a general knowledge of the life cycle assessment	Is able to explain the basis of a life			1				AR
MS1		Construction	methodology and its potential in the reduction of the	cycle approach and its value	1	2	3	4	5	В	EE
	environmental impact of the		environmental impact of the construction sector	cycle approach and its value			1				
	built environment										
	Understand the meaning of	Conceptual design		Is able to list some environmental			i i				SC
	different environmental labels	Detailed design	Has a genenral knowledge of different types of environmental	labels available for building products			i i				AR
MS2	available for the construction	Construction	labels, their significance and utility in the green building sector	and components in relation to	1	2	3	4	5	В	FaM
	sector			different sustainability features and			1				
		In Use		requirements			<u> </u>				
	Understand the main	Detailed dea'	line a second beauticated of contained the content of the U.S.	Is able to list the main sustainability							SC
	sustainability criteria for	Detailed design	Has a general knowledge of sustainability criteria for building	criteria recognized by LEED and the					-		AR
MSZ	building materials and		material content, regulability, disclosure of chamical content	main sustainability rating systems for	1	2	3	4	5	в	Faivi
	components	In Lico	material content, recyclability, disclosure of chemical content.	building materials and components.							
		Concentual design	Use a gaparal knowledge of the main principles and strategies				<u> </u>				50
	Understand the importance of	Detailed docigo	to guarantee good indoor air inside a building such as	Is able to list the main design,							
<b>CO3</b>	indoor air quality to contribute	Detailed design	ventilation (natural mechanical hybrid ventilation)	construction and operation strategies	1	2	2	4	5	D	PEC
CQ2	to the comfort and well-being		contaminants emission reduction (indoor and outdoor smoking	to guarantee indoor air quality inside	T	2		4	5	Б	6
	of building occupants	in Lise	prohibition low-emitting materials indoor air quality	a building			1				CE
		Concentual design	promotion, fow emitting materials, major an quanty							-	SC
	Understand the importance of	Detailed design		Can take part to the discussion in a			i i				AR
CV1	daylight to contribute to the		Has a general knowledge of the benefits of daylight and the	project team being able to discuss	1	2	3	4	5	в	BEC
	comfort and well-being of		main design strategies applicable at the building level	basic principles and design strategies			1				CE
	building occupants		1	for daylit spaces							
	Understand the importance of	Concept design		Can take part to the discussion in a							SC
	interior lighting quality to	Detailed design	1 Contract the source of the set of the s	project team being able to discuss							AR
CV2	contribute to the comfort and		Has a general knowledge of the definition of quality of artificial	strategies for artificial lighting to	1	2	3	4	5	В	BEC
	well-being of building		ngurung	guarantee optimum visual comfort							CE
	occupants			conditions							
	Inderstand the importance of	Concept design		Can take part to the discussion in a							SC
	acoustic comfort to contribute	Detailed design	Has a general knowledge of the basis of acoustic comfort inside	project team being able to discuss							AR
CA1	to the comfort and well-being		a huilding	hasic principles and strategies for	1	2	3	4	5	В	CE
	of building occupants		a source b	acoustic comfort inside a building							
1	a. a anoma o coopanto	1									



## 12.8LEED AP (BD+C)

Area of Experti	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Re	queste co	d for th mpete	ne level nce	s of •	Scalr	Profession -
					1	2	3	4	5		1
	Understand the basis of LEED	Conceptual design	Knows the basis of the LEED certification process, including:	Can basically manage the LEED							UP
	certification process and	Detailed design	rating system selection criteria, certification levels, LEED tools	certification process							AR
PL1	fundamentals of USGBC	Construction	and instruments, third party verification process, registration of		1	2	3	4	5	B/N	CE
	organization		the project on LEED Online and role of documentation								SC
		In Use	submission.								FaM
	Understand the principles	Conceptual design	Knows the assessment methodology, including rating system	Can explain the principles behind the							UP
	behind the LEED rating system	Detailed design	structure, impact category definition and points allocation	LEED assessment methodology and the							AR
DI 1		Construction	process, LEED development process (consensus-based process;	LEED development process	1	2	2	4	5	D/N	
		CONSTRUCTION	stakeholder and volunteer involvment; rating system updates		1	2 ×	5	-+		D/ N	CE
			and evolution process) and regional alternative compliance path.								SC
		In Use									FaM
	Learn the international	Conceptual design	Knows, for each area, the main reference Standards that should	Is able to list the reference							UP
	Standards that are recognized	Detailed design	be applied applicable internationaly or on a regional scale	international standards that support							AR
PL1	by LEED	Construction		LEED	1	2	3	4	5	B/N	CE
											SC
		In Use									FaM
	Learn how to manage a LEED	Conceptual design	Knows the practical rules, implications and steps to manage the	Is able to define a LEED work plan to							SC
	certification process	Detailed design	LEED certification during the design and construction process	manage the certification process							AR
PL2		Construction		during the design and construction of a	-	-	3	4	5	В	CE
		As built		building.							
		In Use				I					I
	Learn how to manage a LEED	Conceptual design	Knows how to define a LEED strategy for the project, being able	Is able to support the design and		1					SC
	certification process	Detailed design	to guide the establishment of project goals and to support the	construction team in developing a		1					AR
PL2		Construction	development of sustainability strategies conpliant with the	project compliant with the LEED	-	-	3	4	5	В	CE
			targeted LEED credits	targets.		1					
<u> </u>	Understand has a	In Use				<u> </u>					
	understand how to manage	Conceptual design	Knows the general rules that should be considered to manage	is able to manage special project		1					SC
	special recurring project	Detailed design	special situations (e.g. Mixed use projects, Multitenant complex,	situations and control the LEED					-		AR
PLI	situation and mantain	Construction	multiple building projects,) and to assure consistency	assessment project to guarantee	-	-	3	4	5	В	CE
	consistency in the LEED		throughtout the assessment, documentation and submission of	consistency across credits							
	assessment		LEED creats.								
	Learn now to support the	Conceptual design	Knows now to document prerequisites and credits in a way that	is able to guide and draft the							SC
	project team in pursuing the	Detailed design	the third party certification process is facilitated and streamlined	documentation of LEED prerequisites			2		-	P	AR
PLZ	LEED certification	Construction	-	and credits	-	-	3	4	5	в	UE .
		In Line									1
	Linderstand the value of the	Concentual design	Use a general knowledge of the basic principles of an integrative	Cap availate the basis of an integrative							50
	implementation of on	Conceptual design	Has a general knowledge of the basic principles of an integrative	can explain the basis of an integrative							SC
	integrative design process and	Detailed design	thinking early apply sis of interrolations among systems), the	design approach and can explain pros							AR
DI1	the basic principles behind	Construction	banafits (cost affective project outcomes ) the methods	and cons with simple examples.	-	-	3	4	5	в	EE
	the basic principles benind	As built	(charrette workshop recurrent analysis ) and available				-			-	CF
		In Line	instruments (dinamic simulation LCA )								
		III OSE	instruments (unturne simulation, ECA,)								BEC
	Understand the basic	Conceptual design	Understands within a project the main interrelations among	Can identify the major							SC
	Understand the basic interrelation among systems	Detailed design	systems (building systems, building and natural ecosystem,) and	interrelationship among systems.							AR
DI1	affecting the environmental	Construction	identify some integrated sustainability strategies for the projects		-	-	3	4	5	В	EE
	performance of a building	As built									CE
		In Use									BEC
	Understand how to guide the	Conceptual design	Knows how to guide the implementation of integrative design	Is able to guide the discovery phase to:							SC
	implementation of an		studies, identifying and using opportunities to achieve synergies	<ul> <li>Perform a preliminary "simple box"</li> </ul>							1
	integrative design workflow to		across disciplines and building systems.	energy modeling analysis that explores							l
	inform the optimization of the	Detailed design		how to reduce energy loads in the							
	energy and water			building and accomplish related		1					
	consumption of a building	Construction	1	sustainability goals by questioning		1					[
DI1				default assumptions;	-	-	3	4	5	в	CE
-·-				- Perform a preliminary water budget		1				-	
		As built		analysis before the completion of		1					
				scnematic design that explores how to		1					1
			4	reduce potable water loads in the		1					
		In Use		pulicing and accomplish related		1					1
				sustailidullity godis.		1					1
	Understand the basis	Concentual data	Use a general knowledge of the serie intersectations on 1955	Capidantify the incret of different							
	interrelation among LEED	Dotailed Design	catagories and credits being able to identify the investor	decign strategies on LED and the							20
	Interrelation among LEED	Detailed Design	categories and credits being able to identify the impact of	design strategies on LEED credits.					-		AR
, ru	categories and credits	Construction	omerent design strategies on the LEED failing and score		1	2	3	4	2	в	
		In Line									UP
<u> </u>		Concontual desire		Discusses shout the 1 state of the							LID
		conceptual design	Use a general knowledge at such the sector of the state	built onvironment (see							UP
	Understand the impacts of the	Detailed Design	nas a general knowledge about the main environmental and	puncenvironment (energy and							AR
QV2	built environment and the	Construction	the world and the basis of a gross building based on the time	environmental externalities	1	2	3	4	5	B/N	CE
	definition of green building		the world and the basis of a green building based on the triple	environmental externalities, waste							FF
	- -	In Lise	bottom line concept	generation, and the pasic concept of							
<u> </u>				Riccu pullullik						-	SC.
		Conceptual design	Has a general knowledge about the costs and values of a green	Discusses about the values of a green							UP
011	Understand the values of	Detailed Design	building (eg. Hard costs, soft costs, life cycle costs, energy	building to support the general	1	_	-		-		AK
UV1	sustainable design	Achuite	savings over time, money savings due to healthier indoor	understanding of environmental and	1	2	3	4	5	В	CE FF
	-	As built	environments, money-saving incentives,)	social but also economic benefits							EE CC
		In Use		1							SC CC
	Understand which are the	Conceptual design	Use a general knowledge about a seriels in series start of the	Is able to discuss with developers and							SC AD
0.51	most effective and more	Detailed design	nas a general knowledge about possible incentive strategies to	stakeholders the most effective and	1	_			-	P	АК
QF1	popular strategies to		financial or structural incentives)	popular strategies to incentivize the	1	2	3	4		в	
	encourage green building	in Lise	information of structural incentives)	spread of green certified buildings							



Area of Experti	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Re	questeo co	d for th mpeter	e level: 1ce	s of •	Scale	Profession -
					1	2	3	4	5		
OA1	Understand strategies able to support alternative transportation modes	Conceptual design Detailed Design In Use	Has a general knowledge of the environmental impact of different transportation mode and of basic strategies, at building and district scale, that can support the use of alternative transportation (proximity to public transportation, bycicle facilities, green vehicles infrastructures,)	Is able to discuss different type of alternative transportation, access and quality criteria and design principles to support eco-friendly transportation modes	1	2	3	4	5	B/N	AR CE SC EE
PL1	Learn criteria to find sustainable locations for a new building	Conceptual design Detailed Design	Knows which criteria can be used to avoid the development of environmentally sensitive lands and reduce the environmental impact from the location of a building on a site.	Is able to documents the Sensitive Land Protection and High Priority Site credits	-	-	3	4	5	В	AR UB SC
HL2	Understand the importance of site selection to reduce the potential environmental impact of new development during construction and	Conceptual design Detailed design	Has a general knowledge of sustainable site selection, understanding the value of targeting sites in previously developed and brownfilelds or avoiding sensitive habitat, of locating buildings close to existing inrastructure and nearby uses.	Is able to support sustainable site selection with general qualitative considerations.	1	2	3	4	5	B/N	UP AR CE SC EE
PL1	Learn how to verify the Location&Transportation credits through calculations and analysis	Concept Detailed design	Knows how to asses the walkability, the transportation efficiency, the proximity of services of a site	Is able to document the Surrounding Density and Diverse Uses credit	-	-	3	4	5	В	AR UB SC
PL1	Learn how to verify the Location&Transportation credits through calculations and analysis	Concept Detailed design	Knows how a site and building design can support the use of bicycles for daily transfer.	Is able to document the Bicycle Facilities credit	-	-	3	4	5	В	AR UB SC
PL1	Learn how to verify the Location&Transportation credits through calculations and analysis	Concept Detailed design	Knows criteria to assess how a project minimizes the environmental harms associated with parking facilities, including automobile dependence, land consumption, and rainwater runoff.	Is able to document the Reduced Parking Footprint credit	-	-	3	4	5	В	AR UB SC
HL3	Understand the potential environmental impacts generated by construction activities	Construction	Has a general knowledge of strategies to mitigate the environmental impact due to demolition and construction activities	Is able to list some common principles and strategies to be implemented during demolition and construction activities to mitigate the environmental impact	1	2	3	4	5	B/N	UP AR CE SC EE
HL1	Understand the value of site development strategies	Conceptual design Detailed design	Has a general knowledge of principles and strategies for sustainable developments and exterior design. The main topics are: habitat conservation and restoration, open space availability, light pollution reduction, heat island reduction.	Can take part to the discussion in a project team suggesting strategies to develop sustainable sites	1	2	3	4	5	B/N	UP AR CE SC EE
TS1	Learn the basic principles and strategies to manage pollution generated by construction activities	Construction	Has a general knowledge of accepted strategies and reference standards to reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust.	Is able to list environmental protection measures that reduce construction project disturbances to neighboring properties, rainwater systems, and the site itself.	-	-	3	4	5	B/N	UP AR SC EE
HL1	Understand the information and data needed to complete a comprehensive site assessment	Conceptual design Detailed design	Has a general knowledge of information and data required to assess site conditions before design to evaluate sustainable options and inform related decisions about site design.	Can take part to the discussion in a project team defining the main content of a preliminary site assessment	1	2	3	4	5	B/N	UP AR SC
PL1	Learn how to verify the Sustainable Sites credits through calculations and analysis	Conceptual design Detailed design	Knows criteria to assess the if a project conserves existing natural areas or restores damaged areas to provide habitat and promote biodiversity and have sufficient open spaces to encourage interaction with the environment, social interaction, passive recreation, and physical activities	Is able to document the Site development-Protect or Restore habitat and Open space credits	-	2	3	4	5	B/N	UP AR SC
HL3	Understand the importance of developing rainwater management strategies on site to reduce runoff volume and improve water quality	Conceptual design Detailed design	Has a general knowledge of strategies to replicate the natural hydrology and water balance of the site and manage and treat rainwater runoff on site (soil permeability, raingardens, infiltration ponds, rainwater collection and reuse,)	Can take part to the discussion in a project team suggesting strategies to manage rainwater on site reducing the environmental burden od new developments	1	2	3	4	5	B/N	UP AR CE SC EE
PL1	Learn how to assess the project ability reduce runoff volume and improve water quality by replicating the natural hydrology and water balance of the site, based on historical conditions and undeveloped ecosystems in the region.	Conceptual design Detailed design	Has a general knowledge of criteria to assess the effectiveness of rainwater management strategies	Can take part to the discussion in a project team suggesting strategies criteria to verify the effectivenss and suitability of rainwater management strategies	-	2	3	4	5	B/N	UP AR SC
PL1	Learn strategies and method to assess the reduction of heat island effect	Conceptual design Detailed design	Knows best strategies and design criteria to minimize effects on microclimates and human and wiidlife habitats by reducing heat islands. Know how to assess the effectiveness of heat island reduction strategies.	Is able to document the Heat Island Reduction credit	-	2	3	4	5	B/N	UP AR SC
HL3	Learn strategies to mitigate the outdoor light pollution and criteria to be considered.	Conceptual design Detailed design	Has a general knowledge of criteria to and assessment methods to evaluate the effectiveness of light pollution reduction strategies	Can take part to the discussion in a project team suggesting ways and ways and assessment methods to reduce the outdoor light pollution	-	2	3	4	5	B/N	UP AR SC
WE1	Understand the water consumption patterns in building and strategies to reduce water consumption for outdoor uses	Conceptual design Detailed design In Use	Has a general knowledge of potential design strategies to reduce water consumption for irrigation based on the efficiency-first concept (reduce the water demand through efficient landscaping design, use alternative water source for irrigation, use smart sensor technology irrigation controls)	Can take part to the discussion in a project team suggesting strategies to design sustainable landscape areas.	1	2	3	4	5	B/N	UP AR EE SC
PL1	Learn methods to estimate the outdoor water demand for irrigation	Conceptual design Detailed design In Use	Has a general knowledge of criteria, methods and tools to calculate the water demand for irrigation	Can take part to the discussion in a project team with landscape designer, agronomist, etc. suggesting methods to assess the reduction of outdoor water use demand in compliance with LEED requirements and assessment methods.	-	2	3	4	5	B/N	SC AR CE



Area of	Learning outcome	Stage of the	Kapudadaa	cl.:II	Re	queste	d for th	e level	s of	Seale	Drofossions
Experti	(LO)	project 🗾		SKIII	1	201	mpeter	ice	×	Scal	Protession
	Understand the water	Conceptual design	Has a general knowledge of potential design strategies to reduce		1	2	3	4	5		SC
	consumption patterns in	Detailed design	water consumption for indoor uses based on the efficiency-first	Can take part to the discussion in a project team suggesting strategies to							AR
WE2	building and strategies to reduce water concumption for		concept (reduce the water demand through low-flush and low- flow fixture and fittings, use alternative water source for flushing	reduce the water consumption for	1	2	3	4	5	В	CE
	indoor uses	In Use	toilets)	indoor uses.							
		Conceptual design									SC
DI 1	Learn methods to estimate the	Detailed design	Have a general knowledge of criteria, methods and tools to	Is able to document the Indoor Water		2	2	4	F	P	AR
	indoor uses		calculate the water demand for indoor uses	Use Reduction credit	-	2	5	4	5	, D	CL
		In Use									
	11- d d - d - d - d - d - d - d -	Conceptual design		Can take part to the discussion in a							SC
WE3	reduce the water consumption	Detailed design	Knows criteria to asses the water consumption for cooling	assess the reduction of potable water	-	2	3	4	5	в	CE
	for cooling towers		towers make-up	consumption for cooling towers make		_	-			-	BEC
		In Use		up							
	Understand the energy	Conceptual design		Can take part to the discussion in a							SC
	buildings and strategies for	Detailed Design	Has a general knowledge of energy generation technologies,	project team being able to identify							AR FaM
EPO	thermal and electrical energy		pumps, CHP, PV, thermal solar panels, green energy, carbon	technologies, renewable energy	-	2	3	4	5	B/N	1 divi
	generation through high efficient and renewable		offsets,)	systems and their integration at the							BEC
	energy systems	In Use		building and district scale							
	Understand the energy	Conceptual design	Has a general knowledge of passive and active energy reduction	Can take part to the discussion in a							SC
	consumption patterns of	Detailed design	measures that can be implemented at the building scale (e.g.	project team being able to identify							AR
ER4	reduce the energy demand of		insulation, orientation of buildings, optimum WWR, solar gains,	potential passive and active design	-	2	3	4	5	В	FaM
	buildings through passive and		management of Internal loads, energy efficient tecnologies and regolation strategies, such as IED combined with DALL systems. 1	strategies that should be assessed in the design development							UP
	active strategies.	In Use	GG,G CO CONDUCT WITI DAE SYSTEMS,)								BEC
	Understand the energy	Conceptual design		Can take part to the discussion in a							SC
	buildings and instruments and	Detailed Design	Has a general knowledge of energy management tools and	project team being able to list some							AR
ЕМЗ	tools for implementing cost-		strategies useful to minimize the energy consumption of	energy management strategies at the building and district scale (eg. Energy	-	2	3	4	5	B/N	FaM
	effective energy management		buildings and optimize the integration with the grid	metering and monitoring, demand							BEC
	operation	In Use		response program partecipation,)							
	learn strategies to support	Conceptual design									SC
	energy management and	Detailed Design	Knows how to address the design of advanced Energy Metering	Can take part to the discussion in a							AR
ЕМЗ	identify opportunities for		Systems to effectively track energy uses during the operation of	design of the Energy Monitoring	-	-	3	4	5	В	FaM
a ti s'	additional energy savings by tracking building-level and		a building	System in compliance with LEED							BEC
	system-level energy use.	In Use		requirements							
		Conceptual design	Knows basic principles and tools for energy benchmarking (e.g.,	Can advise project team in identify							SC
	Understand tools and methods	Detailed Design	metrics used; proposed building performance rating/ baseline	energy benchmarks for the building to			2		-		AR
EM	for energy benchmarking		building performance rating; comparing building energy performance against similar buildings or historical data; tools and	assess both design and operation of a	-	-	3	4	5	в	BEC
		In Use	standards [ASHRAE, CBECS, Portfolio Manager])	building							
	Learn the basis of methods	Conceptual design	Knows basic principles and tools for energy assessment in	Con advice and instance in a forming							SC
PL1	recognized by LEED to assess	Detailed Design	compliance with LEED requirements (e.g., prescriptive,	riptive, to determine	-	-	3	4	5	В	CE
	the energy performance of buildings		performance paths; energy simulation; criteria to determine performance levels: tools and standards:)	compliance with LEED requirements							
		In Use		is able to document Renowable Energy							50
	Learn the basis of methods	Detailed Design	·	credit starting from the calculations							BEC
PL1	the renewable energy		production offsetting the total energy cost of a building	and documents prepared by Energy	-	-	3	4	5	В	CE
	production	In Lise		specialist in compliance with ASHRAE & LEED requirements							
	Learn how to design building	Conceptual design		Can take part to the discussion in a							SC
	and equipment for	Detailed Design	Knows how to address the design of building systems to allow	project team being to address the					-	D (1)	BEC
EWI	response programs through		the participation in demand response programs.	partecipation in demand response programs through the design of ready-	-	-	3	4	5	B/IN	CE
	load shedding or shifting.	In Use		buildings							
	Inderstand the impact of	Conceptual design	Has a general knowledge of the two main threats to the	Can take part to the discussion in a							SC
ER7	refrigerants used on HVAC	Detailed Design	environment posed by refrigerants used in HVAC systems: their	project team being able to address the	1	2	3	4	5	в	FaM
	systems on climate change		ozone depletion potential (ODP) and global warming potential (GWP).	use of refrigerants in HVAC systems							
	linderstand the value of	In Use		Is able to explain the meaning and the							50
	implementing the	Detailed design		value of implementing a							AR
NP1	commissioning process during	Construction	process, pros and cons.	commissioning process, benefits and	1	2	3	4	5	В	CE
	design, construction and operation of a building	In Lise	· · · ·	costs.							FaM
	Understand the value of	inose									SC
	implementing the	Detailed design	LEED requirements, including: reference standards, type of	Is able to explain the main steps and							BEC
NP1	commissioning process during design construction and	Construction	commissioning, main required activities, main documents, CxA	requirements that LEED require in perfroming Commissioning activities	-	-	3	4	5	В	CE FaM
	operation of a building	In Use	requirements	pernoning commissioning activities							Taivi
		Conceptual design		Can explain the best strategies that can							UP
		Detailed design	Has a general knowledge of potential strategies to reduce the	be implemented during design and							AR
MW1	Understand the environmental	Construction	amount of waste generated during construction activities and to	generated by the construction sector	1	2	3	4	5	B/N	CE
	Impacts of waste generation		Increase the percentage of waste recycled, reused and diverted from landfill.	during the lifespan of a building (during							SC
				construction, through the use stage							FF
		Concertual									50
	Learn LEED criteria to reduce construction and demolition	Dotailed design		Is able to guide design and construction							AD
D/ 1	waste disposed of in landfills	Construction	Has a general knowledge of LEED criteria to address waste	team in implementing effective waste		2	2		-	D /NI	AK CF
PLI	and incineration facilities by	Construction	reduction and recycling potential in construction activities	construction and to document related	lated -	2	3	4	5	D/IN	FF
	recovering, reusing, and recycling materials			LEED credits							LL
1			1	1	1						



Area of	Learning outcome	Stage of the	Kapulada	ch:II	Re	queste	d for th	e level	of	Seals	Drofossion
Experti	(LO)	project 🗾	knowledge _	SKIII	1	2	a s	4	×	Scall	Protession
	Understand the importance of	Conceptual design		Is able to list possible strategies to		2	5				SC
	designing buildings in a way	Detailed design	Has a general knowledge of the main strategies able to reduce	reduce primary resourses depletion		_			-		AR
MDI	waste generation are		primary resources depiction and waste generation (e.g. reuse of buildings and/or components, design for disassembly,)	and waste generation over the lifespan	1	2	3	4	5	в	SC
	minimized			of a building							
		Conceptual design		Is able to explain the basis of a life							SC
	Understand the principles of a	Detailed design		cycle assessment (e.g. primary and secondary data: quantify impacts:							AR
MS1	life cycle assessment	Construction	Has a basic knowledge of the life cycle assessment methodology	whole-building life cycle assessment;		2	2	4	5	Б	
WIJI	environmental impact of the	Construction	the construction sector	environmental attributes used in	-	2	5	4	5	ь	CC
	built environment			[EPD]; Product Category Rules [PCR])							
				and LEED criteria for LCA development							
	Learn which criteria are	Conceptual design	Knows accepted strategies and related LEED points to reduce the	Can take part to the discussion with							SC
PI 1	recognized by LEED to demonstrate reduced	Construction	impact of construction: reusing existing building resources or	design team and LCA specialist to guide strategies and documentation	-	-	3	4	5	в	FF
	environmental effects during		demonstrating a reduction in materials use and environmental impact through life-cycle assessment	submission in compliance with LEED			-			-	
	initial project decision-making.	Concentual design		requirements	_						50
	Understand the meaning of	Detailed design		labels available for building products							AR
MS2	available for the construction	Construction	labels, their significance and utility in the green building sector	and components in relation to different	1	2	3	4	5	В	FaM
	sector	in Lise		sustainability features and requirements							
	Inderstand the main			Is able to list the main sustainability							SC
MGD	sustainability criteria for	Detailed design	Has a general knowledge of sustainability criteria for building materials, such as recycled content, regionality, repoweble	criteria recognized by LEED and the	1	2	3	4	5	R	AR FaM
14132	building materials and		material content, recyclability, disclosure of chemical content.	main sustainability rating systems for	1	2	5	4		U	C
	components	In Use		ounding materials and components.							
	Learn accepted environmental	Detailed design	Knows which environmental labels are recognized by LEED to	Can select eco-friendly materials							SC AR
PL1	labels for building materials	Construction	demonstrate the use of materials for which life-cycle	compliant with LEED criteria and	-	-	3	4	5	В	C
	materials)		economically, and socially preferable life-cycle impacts.	document LEED compliance							
			Knows which environmental labels are recognized by LEED to								SC
	Learn accepted environmental	Detailed design	demonstrate the use of materials for which the chemical	Can select healthy materials compliant							AR
PL1	and components (healthy	Construction	ingredients in the product are inventoried using an accepted methodology and disclosed to the market and for which the use	with LEED criteria and document LEED compliance	-	-	3	4	5	В	С
	materials)		and generation of harmful substances is minimized	compliance							
	Understand the importance of	Conceptual design	Has a general knowledge of the main principles and strategies to								SC
	inderstand the importance of	Detailed design	guarantee good indoor air inside a building such as ventilation	Is able to list the main design,							AR
CQ2	contribute to the comfort and	Construction	(natural, mechanical, hybrid ventilation), contaminants emission reduction (indoor and outdoor smoking prohibition, low-emitting	construction and operation strategies to guarantee indoor air quality inside a	1	2	3	4	5	В	BEC
	well-being of building occupants		materials, indoor air quality management during construction)	building							С
	occupants	In Use	interior cross-contamination prevention.								CE
		Conceptual design	Knows which products categories should be considered in the								SC
	learn accented labels and	Detailed design	design and construction to reduce concentrations of chemical contaminants that can damage air quality, human health	Can select low-emitting materials compliant to LEED requirements being							AR
PL1	requirements for low-emitting	Construction	productivity, and the environment (e.g. paints and coatings,	able to evaluate environmental claims	-	-	3	4	5	В	С
	materials		adhesives and sealants, flooring, thermal and acoustic insulation,	and MSDS (Material Safety Data Sheet)							FaM
		In Use	emissions and content.	or products and components							
	Learn how to assess the	Conceptual design		Can take part to the discussion in							SC
PI 1	effectiveness of natural ventilation strategies to	Detailed design	Knows natural ventilation principles, design criteria and	project team to guide the design and	_	_	3	л	5	в	CE
	guarantee good indoor air		monitoring requirements recognized by LEED	operation of effective naturally-			5	-	5	5	BEC
	quality	In Use		vennated buildings							FaM
	Learn accepted standards and	Conceptual design Detailed design		Can take part to the discussion in							CE
PL1	pasic principles for the design of mechanically-ventilated		Knows principles, design criteria and monitoring requirements for mechanically-ventilated buildings recognized by LFED	project team to guide the design and operation of effective mechanically-	-	-	3	4	5	В	EE
	building	In Lise	,	ventilated buildings							BEC FaM
		Conceptual design	Knows principles, design and construction criteria to manage and	Can take nart to the discussion in							SC
	Learn recognized management	Detailed design	improve the indoor air quality during construction and operation	project team to guide the design,							CE
CQ2	of and improvements to	Construction	of buildings (e.g., source control; filtration and dilution;	construction and operation of effective	-	-	3	4	5	В	AR
	indoor air quality strategies	la L'	construction indoor air quality; air testing; outdoor air level ongoing monitoring,)	strategies to manage and improve indoor air quality in buildings							BEC
		Conceptual design		Contribution of the state							SC
	Understand the importance of davlight to contribute to the	Detailed design	Has a general knowledge of the benefits of davlight and the main	Can take part to the discussion in a project team being able to discuss							AR
CV1	comfort and well-being of		design strategies applicable at the building level	basic principles and design strategies	1	2	3	4	5	В	BEC CF
	building occupants			for daylit spaces							
	learn recognized motion to	Conceptual design	Has a basic knowledge of recognized standards, criteria and	Can take part to the discussion with							SC AP
CV1	assess the daylight availability		methods to assess and verify the daylight availability and glare	guide strategies and documentation	-	-	3	4	5	В	CE
	inside a building		probability inside a building	submission in compliance with LEED							
		In Use Concentual design		requirements Can take part to the discussion with							SC
	Learn advanced strategies to	Detailed design	Has a basic knowledge of strategies and assessment criteria to	design team and space planning							AR
PL1	guarantee connection to the		guarantee connection to outdoor environments by providing	specialist about strategies to guarantee	-	-	3	4	5	В	
	natural outdoor environment	In Use	quanty views	recognized by LEED							
	Understand the importance of	Concept design		Can take part to the discussion in a							SC
CV2	Interior lighting quality to contribute to the comfort and	Detailed design	Has a general knowledge of the definition of quality of artificial	project team being able to discuss strategies for artificial lighting to	1	2	з	4	5	R	AR
	well-being of building		lighting	guarantee optimum visual comfort	-	2				5	CE
	occupants			conditions							



Area of Experti	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Red	questeo co	d for th mpeter	ie level nce	s of •	Scalr	Profession
					1	2	3	4	5		
PL1	Learn accepted criteria and values to assess the interior lighting quality inside a building	Concept design Detailed design In Use	Knows lighting quality cirteria recognized by LEED that can contribute to improve occupants' comfort and productivity (e.g. tradeoffs [color, efficiency]; surface reflectance; types of fixtures)	Can take part to the discussion with design team and Lighting specialist to guide strategies and documentation submission in compliance with LEED requirements	-	-	3	4	5	В	SC AR BEC CE
CA1	Understand the importance of acoustic comfort to contribute to the comfort and well-being of building occupants	Concept design Detailed design	Has a general knowledge of the basis of acoustic comfort inside a building	Can take part to the discussion in a project team being able to discuss basic principles and strategies for acoustic comfort inside a building	1	2	3	4	5	В	SC AR CE
PL1	Learn accepted criteria and values to assess acoustic comfort conditions inside a building	Concept design Detailed design	Knows acoustic comfort cirteria and reference standards recognized by LEED that guarantee effective acoustic design (e.g. exterior and interior noise; background noise; dead vs. live spaces)	Can take part to the discussion with design team and Acoustic specialist to guide strategies and documentation submission in compliance with LEED requirements	-	-	3	4	5	В	SC AR CE
CT1	Learn accepted criteria and values to assess thermal comfort conditions inside a building	Concept design Detailed design	Knows basic principles, design strategies and assessment methods to provide quality thermal comfort in occupied indoor spaces (e.g. strategies to promote occupants' productivity and comfort; values of occupant satisfaction)	Can take part to the discussion with design team and MEP specialist to guide strategies and documentation submission in compliance with LEED requirements	-	-	3	4	5	В	SC AR CE BEC
PL1	Learn how to earn and document Innovation and Regional Priority credits	Concept design Detailed design In Use	Knows how to earn and document Innovation credits, Regional Priority credits and Pilot credits	Is able to manage the LEED assessment for the Innovation and Regional Priority categories	-	-	3	4	5	B/N	SC


## 12.9LEED AP (ID+C)

Area of	Learning outcome	Stage of the			Requested for the levels of						
Experti	(LO)	project 🗾	Knowledge	Skill	e leve	<b>co</b>	mpete 3	nce 4	- 5	Scale	Profession
	Understand the basis of LEED	Conceptual design	Knows the basis of the LEED certification process, including:	Can basically manage the LEED							UP
PL1	fundamentals of USGBC	Detailed design	rating system selection criteria, certification levels, LEED tools and instruments, third party verification process, registration	certification process	1	2	3	4	5	B/N	AR CE
	organization		of the project on LEED Online and role of documentation								SC
	Understand the principles	In Use	submission.	Can explain the principles behind the							FaM
	behind the LEED rating system	Conceptual design	structure, impact category definition and points allocation	LEED assessment methodology and the							UP
DI 1		Detailed design	process, LEED development process (consensus-based	LEED development process	1	2	2	4	5	D/N	AR
1		Construction	process; stakeholder and volunteer involvment; rating system		1	2		4	5	D/ N	CE
		In Use	compliance path.								FaM
	Learn the international	Conceptual design	Knows, for each area, the main reference Standards that	Is able to list the reference							UP
D11	Standards that are recognized	Detailed design	should be applied applicable internationaly or on a regional	international standards that support	1				_	D /N	AR
PLI		Construction	scale	LEED	1	2	3	4	5	B/ N	SC
		In Use									FaM
	Learn how to manage a LEED	Conceptual design	Knows the practical rules, implications and steps to manage the	Is able to define a LEED work plan to							SC AR
PL2	certification process	Construction	LEED certification during the design and construction process	the design and construction of a	-	-	3	4	5	В	CE
		As built		building.							
	learn how to manage a LEED	In Use Conceptual design	Knows how to define a LEED strategy for the project being able	Is able to support the design and							sc
	certification process	Detailed design	to guide the establishment of project goals and to support the	construction team in developing a							AR
PL2		Construction	development of sustainability strategies conpliant with the	project compliant with the LEED targets.	-	-	3	4	5	В	CE
		In Use	targeted LEED credits								
	Understand how to manage	Conceptual design	Knows the general rules that should be considered to manage	Is able to manage special project							SC
PI 1	special recurring project situation and mantain	Detailed design	special situations (e.g. Mixed use projects, Multitenant	situations and control the LEED			3	4	5	в	AR
	consistency in the LEED	Construction	consistency throughtout the assessment, documentation and	consistency across credits				-		D	CL
	assessment		submission of LEED credits.								
	project team in pursuing the	Detailed design	the third party certification process is facilitated and	documentation of LEED prerequisites							AR
PL2	LEED certification	Construction	streamlined	and credits	-	-	3	4	5	В	CE
		In Lise									
	Understand the value of the	Conceptual design	Has a general knowledge of the basic principles of an	Can explain the basis of an integrative							SC
	implementation of an	Detailed design	integrative design process compared to a standard linear	design approach and can explain pros							AP
DI1	the basic principles behind	Construction	among systems), the benefits (cost-effective project outcomes,	and cons with simple examples.	-	-	3	4	5	в	FE
		As built	), the methods (charrette, workshop, recurrent analysis,) and								CE
		In Use	available instruments (dinamic simulation, LCA,)								BEC
	Understand the basic	Conceptual design	Understands within a project the main interrelations among	Can identify the major interrelationship							SC
	interrelation among systems	Detailed design	systems (building systems, building and natural ecosystem,)	among systems.			_		_	_	AR
DI1	affecting the environmental Construction performance of a building As built	Construction As built	and identify some integrated sustainability strategies for the projects		-	-	3	4	5	В	EE CE
		In Use									BEC
	Understand how to guide the implementation of an	Conceptual design	Knows how to guide the implementation of integrative design studies identifying and using opportunities to achieve	Is able to guide the discovery phase to:							SC
	integrative design workflow to		synergies across disciplines and building systems.	analysis							
	inform the optimization of the	Detailed design		- Perform a preliminary "simple box"							
	of a building			how to reduce energy loads in the							EE
		Construction		building and accomplish related							
DI1				sustainability goals by questioning	-	-	3	4	5	В	CE
		As built		- Perform a preliminary water budget							
				analysis before the completion of							
		In Use		reduce potable water loads in the							
				building and accomplish related							
	Understand the basic	Conceptual design	Has a general knowledge of the main interrelations among	sustainability goals. Can identify the impact of different							SC
	interrelation among LEED	Detailed Design	LEED categories and credits being able to identify the impact of	design strategies on LEED credits.							AR
PL1	categories and credits	Construction	different design strategies on the LEED rating and score		1	2	3	4	5	В	EE
		In Use									Or
		Conceptual design		Discusses about the impacts of the built							UP
	Understand the impacts of the	Detailed Design	Has a general knowledge about the main environmental and	environment (energy and resource use							AR
QV2	built environment and the	Construction	around the world and the basis of a green building based on	in buildings, environmental	1	2	3	4	5	B/N	CE
	definition of green building		the triple bottom line concept	externalities, waste generation,) and the basic concept of green building							EE
L		in Use		, . 0							SC
		Conceptual design Detailed Design	Has a general knowledge about the costs and values of a green	Discusses about the values of a green							AR
QV1	Understand the values of sustainable design		puliaing (eg. Hard costs, soft costs, life cycle costs, energy savings over time, money savings due to healthier indoor	punding to support the general understanding of environmental and	1	2	3	4	5	В	CE
		As built	environments, money-saving incentives,)	social but also economic benefits							EE
	Inderstand which are the end	Conceptual design		Is able to discuss with development							SC
QF1	effective and more popular	Detailed design	Has a general knowledge about possible incentive strategies to	stakeholders the most effective and						-	AR
	strategies to encourage green	popular     inancial or structural incentives)	1	2	3	4	5	В			
	strategies to encourage green	In Use		spread of green certified buildings							



Area of Experti	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Requested for the level competence			ie level nce	s of v	Scale	Profession -
		Conceptual design			e leve	2	3	4	5		AD
	Understand strategies able to	Detailed Design	Has a general knowledge of the environmental impact of different transportation mode and of basic strategies, at	Is able to discuss different type of							CE
OA1	support alternative		building and district scale, that can support the use of	quality criteria and design principles to	1	2	3	4	5	B/N	SC
	transportation modes		alternative transportation (proximity to public transportation,	support eco-friendly transportation							EE
		In Use	bycicle facilities, green vehicles infrastructures,)	modes							
	Understand the importance of	Conceptual design	Use a general knowledge of custoinable site selection								UP
	site selection to reduce the	Detailed design	understanding the value of targeting sites in previously	Is able to support sustainable site							AR
HL2	potential environmental impact		developed and brownfilelds or avoiding sensitive habitat, of	selection with general qualitative	1	2	3	4	5	В	CE
	of new development during		locating buildings close to existing inrastructure and nearby	considerations.							SC
	construction and operation	In Use	uses.								EE
		Concept	Knows how to asses the walkability, the transportation	Is able to document the Surrounding							AR
	Learn how to verify the	Detailed design	efficiency, the proximity of services of a site	Density and Diverse Uses credit							UB
PL1	credits through calculations and				-	-	3	4	5	В	SC
	analysis										
	Learn how to verify the	Concept	Knows how a site and building design can support the use of	Is able to document the Bicycle							AR
	Location&Transportation	Detailed design	bicycles for daily transfer.	Facilities credit							UB
PL1	credits through calculations and				-	-	3	4	5	В	SC
	analysis										
	learn how to verify the	Concept	Knows criteria to assess how a project minimizes the	Is able to document the Reduced							AR
	Location&Transportation	Detailed design	environmental harms associated with parking facilities,	Parking Footprint credit							UB
PL1	credits through calculations and		including automobile dependence, land consumption, and rainwater runoff		-	-	3	4	5	В	SC
	analysis										
	Understand the potential			Is able to list some common principles						-	UP
	environmental impacts	Construction	Has a general knowledge of strategies to mitigate the	and strategies to be implemented	1	2		4	5	D /NI	AR
11.5	generated by construction	Construction	activities	activities to mitigate the environmental	1	2	2	4	5	D/ IN	SC
	activities			impact							EE
		Conceptual design	Has a general knowledge of principles and strategies for								UP
HL1	Understand the value of site	Detailed design	sustainable developments and exterior design. The main topics	Can take part to the discussion in a project team suggesting strategies to	1	2	3	4	5	B/N	CE
	development strategies		are: habitat conservation and restoration, open space	develop sustainable sites	-	-				0/11	SC
	Understand the importance of		availability, light pollution reduction, heat island reduction.								EE
HL3	Understand the importance of developing rainwater management strategies on site to reduce runoff volume and improve water quality	Conceptual design	Has a general knowledge of strategies to replicate the natural	Can take part to the discussion in a							UP
		Detailed design	hydrology and water balance of the site and manage and treat	manage rainwater on site reducing the	1	2	3	4	5	B/N	CE
			rainwater runoff on site (soil permeability, raingardens,	environmental burden od new							SC
	improve water quality	a		developments							EE
	Understand the water Concer consumption patterns in Detai building and strategies to	Detailed design	Has a general knowledge of potential design strategies to reduce water consumption for irrigation based on the	Can take part to the discussion in a							AR
WE1			efficiency-first concept (reduce the water demand through	project team suggesting strategies to	1	2	3	4	5	B/N	EE
	reduce water consumption for		efficient landscaping design, use alternative water source for	design sustainable landscape areas.							SC
	outdoor uses	In Use	irrigation, use smart sensor technology irrigation controls)								50
	consumption patterns in	Detailed design	reduce water consumption for indoor uses based on the	Can take part to the discussion in a							AR
WE2	building and strategies to		efficiency-first concept (reduce the water demand through low-	project team suggesting strategies to reduce the water consumption for	1	2	3	4	5	В	CE
	reduce water consumption for	le lles	flush and low-flow fixture and fittings, use alternative water	indoor uses.							
	Indoor uses	Concentual design	source for hushing tollets)								sc
	Learn methods to estimate the	Detailed design	Usua a gaparal knowledge of criteria, methods and tools to	Is able to desument the Indeer Water							AR
PL1	indoor water demand for		calculate the water demand for indoor uses	Use Reduction credit	-	2	3	4	5	В	CE
	mudor uses	In Use									
	Understand the energy	Conceptual design									SC
	consumption patterns of	Detailed Design	Has a general knowledge of energy generation technologies	can take part to the discussion in a project team being able to identify							AR
EDO	buildings and strategies for		renewable energy systems and offsetting strategies (heat	energy efficient generation		-			-	D /N	FaM
EPU	generation through high		pumps, CHP, PV, thermal solar panels, green energy, carbon	technologies, renewable energy	-	2	3	4	5	D/ N	DEC
	efficient and renewable energy		offsets,)	systems and their integration at the							BEC
	systems	In Use		Samanig and district state							
	Understand the energy	Conceptual design	Has a general knowledge of passive and active energy	Can take part to the discussion in a							SC
	consumption patterns of	Detailed design	reduction measures that can be implemented at the building	project team being able to identify							AR
ER4	buildings and strategies to reduce the energy demand of		scale (e.g. insulation, orientation of buildings, optimum WWR, solar gains, management of internal loads, energy efficient	potential passive and active design	-	2	3	4	5	В	FaM
	buildings through passive and		tecnologies and regolation strategies, such as LED combined	strategies that should be assessed in							UP
	active strategies.	In Use	with DALI systems,)	the design development.							BEC
	Understand the energy	Conceptual design		Can take part to the discussion in -	1						SC
	consumption patterns of	Detailed Docigo		project team being able to list some							ΔD
EM3	pundings and instruments and	Detailed Design	Has a general knowledge of energy management tools and strategies useful to minimize the energy consumption of	energy management strategies at the	-	2	3	4	5	R/N	EDM4
L1413	effective energy management		buildings and optimize the integration with the grid	building and district scale (eg. Energy	-	2				D/ IN	rdiVi
	strategies of buildings during			response program partecipation							BĘC
	operation	In Use									
	Learn strategies to support	Conceptual design		Can take part to the discussion in a							SC
	energy management and identify opportunities for	Detailed Design	Knows how to address the design of advanced Energy Metering	project team being able to guide the							AR
ЕМЗ	additional energy savings by		Systems to effectively track energy uses during the operation	design of the Energy Monitoring	-	-	3	4	5	В	FaM
EM3	tracking building-level and		of a building	System in compliance with LEED							BEC
	tracking building-level and system-level energy use	In Use		r equitemento							



Area of	Learning outcome	Stage of the			Requested for the levels		s of				
Experti 👗	(LO)	project 🗾	Knowledge	Skill		co	mpete	nce	<b>•</b>	Scale	Profession -
		Conceptual design			e ieve	1 2	3	4	5		SC
	Learn the basis of methods recognized by LEED to assess	Detailed Design	Knows basic principles and tools for energy assessment in compliance with LEED requirements (e.g., prescriptive.	Can advise project team in perfroming							BEC
PL1	the energy performance of		performance paths; energy simulation; criteria to determine	the energy assessment of a building in compliance with LEED requirements	-	-	3	4	5	В	CE
	buildings	In Use	performance levels; tools and standards;)	' '							
	Learn the basis of methods	Dotailed Design	•	Is able to document Renewable Energy							SC
PL1	recognized by LEED to assess	Detailed Design	Knows how to verify the percentage of renewable energy	documents prepared by Energy	-	-	3	4	5	В	CE
	the renewable energy production		production offsetting the total energy cost of a building	specialist in compliance with ASHRAE &							
	•	In Use Conceptual design		LEED requirements							SC
	Understand the impact of	Detailed Design	Has a general knowledge of the two main threats to the	Can take part to the discussion in a							BEC
ER7	refrigerants used on HVAC		their ozone depletion potential (ODP) and global warming	project team being able to address the	1	2	3	4	5	В	FaM
	systems on chinate change	In Use	potential (GWP).	use of refigerants in type systems							
	Understand the value of			Is able to explain the meaning and the							SC
NP1	commissioning process during	Construction	Has a general knowledge of the basis of the commisisoning	value of implementing a commissioning	1	2	3	4	5	в	CE
	design, construction and		process, pros and cons.	process, benefits and costs.							FaM
	operation of a building	In Use									BEC
	implementing the	Detailed design	Knows the details of a Commissioning process compliant with	Is able to explain the main steps and							BEC
NP1	commissioning process during	Construction	commissioning, main required activities, main documents, CXA	requirements that LEED require in	-	-	3	4	5	В	CE
	operation of a building	In Use	requirements	perfroming Commissioning activities							Faivi
		Conceptual design		Can explain the best strategies that can							UP
		Detailed design	Has a general knowledge of potential strategies to reduce the	be implemented during design and							AR
MW1	Understand the environmental	Construction	amount of waste generated during construction activities and	generated by the construction sector	1	2	3	4	5	B/N	CE
	impacts of waste generation		to increase the percentage of waste recycled, reused and diverted from landfill.	during the lifespan of a building (during							SC
				construction, through the use stage and end of life)							FF
	Learn LEED criteria to reduce	Conceptual design									SC
	construction and demolition	Detailed design		Is able to guide design and construction							AR
PL1	waste disposed of in landfills	Construction	Has a general knowledge of LEED criteria to address waste	management strategies during	-	2	3	4	5	B/N	CE
	recovering, reusing, and		reduction and recycling potential in construction activities	construction and to document related							EE
	recycling materials			LEED credits							
Understa	Understand the importance of	Conceptual design		Is able to list possible strategies to							SC
MD1	that resources depletion and	Detailed design	Has a general knowledge of the main strategies able to reduce primary resourses depletion and waste generation (e.g. reuse	reduce primary resourses depletion	1	2	3	4	5	В	CF
	waste generation are		of buildings and/or components, design for disassembly,)	and waste generation over the lifespan of a building							SC
	minimized	Concentual design		or a banang							50
	recognized by LEED to	Detailed design	Knows accepted strategies and related LEED points to reduce	Can take part to the discussion with							AR
PL1	demonstrate reduced	Construction	and interior partition or demonstrating a reduction in materials	documentation submission in	-	-	3	4	5	В	EE
	initial project decision-making		use and environmental impact through life-cycle approach	compliance with LEED requirements							
	Understand the meaning of	Conceptual design		Is able to list some environmental							SC
MS2	different environmental labels	Detailed design Construction	Has a genenral knowledge of different types of environmental	labels available for building products and components in relation to different	1	2	3	4	5	в	AR FaM
	available for the construction sector		labels, their significance and utility in the green building sector	sustainability features and	-	_	-			-	
	30000	In Use		requirements							50
	Understand the main	Detailed design	Has a general knowledge of sustainability criteria for building	Is able to list the main sustainability							AR
MS2	building materials and		materials, such as recycled content, regionality, renewable	main sustainability rating systems for	1	2	3	4	5	В	FaM
	components	In Use	material content, recyclability, disclosure of chemical content.	building materials and components.							С
	Learn accepted environmental		Knows which environmental labels are recognized by LEED to								SC
PI 1	labels for building materials	Detailed design	demonstrate the use of materials for which life-cycle	Can select eco-friendly materials			3	4	5	в	AR
	and components (eco-friendly materials)	Construction	information is available and that have environmentally,	document LEED compliance			5	·		5	
			Very which environment to the terror of terror			<u> </u>					<u>در</u>
	Learn accepted environmental	Detailed design	demonstrate the use of materials for which the chemical	Can select healthy materials compliant							AR
PL1	labels for building materials and components (healthy	Construction	ingredients in the product are inventoried using an accepted	with LEED criteria and document LEED	-	-	3	4	5	В	С
	materials)		methodology and disclosed to the market and for which the	compliance							
		Concentual design	Has a general knowledge of the main principles and strategies								SC
	Inderstand the importance of	Detailed design	to guarantee good indoor air inside a building such as	Is able to list the main design							AR
<b>602</b>	indoor air quality to contribute	Construction	ventilation (natural, mechanical, hybrid ventilation), contaminants emission reduction (indoor and outdoor smoking	construction and operation strategies to	1	2	3	4	5	R	BEC
Cuz	to the comfort and well-being	Construction	prohibition, low-emitting materials, indoor air quality	guarantee indoor air quality inside a	1	2	5	4	5	Б	C
	or building occupants	in Lise	management during construction) interior cross-contamination	banang							CF
		Concentual desi-	prevenuon. Knows which products categories should be considered in the								SC
		Detailed dosign	design and construction to reduce concentrations of chemical	Can select low-emitting materials							AD
D/ 1	Learn accepted labels and	Construction	contaminants that can damage air quality, human health,	compliant to LEED requirements, being			2		_	P	~n
PL1	materials	Construction	adhesives and sealants, flooring, thermal and acoustic	and MSDS (Material Safety Data Sheet)	-	-	3	4	2	В	E 244
		Jo Lice	insulation,) and related acceptable volatile organic compound	of products and components							rdiví
	Learn how to assess the	Concentual design	(VUC) emissions and content.			-					SC
	effectiveness of natural	Detailed design	Knows natural ventilation principles, design criteria and	Can take part to the discussion in project team to guide the design and							CE
PL1	ventilation strategies to		monitoring requirements recognized by LEED	operation of effective naturally-	-	-	3	4	5	В	EE
	quality	In Use		ventilated buildings							FaM



Area of Experti	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Requested for the levels of competence					Scale	Profession -
					e level	2	3	4	5		
	Learn accented standards and	Conceptual design		Can take part to the discussion in							SC
	basic principles for the design	Detailed design	Knows principles, design criteria and monitoring requirements	project team to guide the design and							CE
PL1	of mechanically-ventilated		for mechanically-ventilated buildings recognized by LEED	operation of effective mechanically-	-	-	3	4	5	В	EE
	building			ventilated buildings							BEC
		In Use		-							FaM
		Dotailod dosign	Knows principles, design and construction criteria to manage	Can take part to the discussion in							SC CE
	Learn recognized management	Construction	and improve the indoor air quality during construction and	project team to guide the design,					_		AR
CQ2	of and improvements to indoor	Construction	operation of buildings (e.g., source control; filtration and dilution; construction indeer air quality; air testing; outdoor air	strategies to manage and improve	-	-	3	4	5	в	BEC
	an quality strategies	in Lise	level ongoing monitoring	indoor air quality in buildings							FaM
		Concentual design		indeer an quarty in banangs							56
	Understand the importance of	Dotailod dosign		Can take part to the discussion in a							SC AR
CV1	daylight to contribute to the	Detailed design	Has a general knowledge of the benefits of daylight and the	project team being able to discuss basic	1	2	3	Л	5	в	BEC
	comfort and well-being of		main design strategies applicable at the building level	principles and design strategies for	-	2		7	- T	D	CE
	building occupants		-	daylit spaces							
		Conceptual design		Can take part to the discussion with							SC
	Learn recognized metrics to	Detailed design	Has a basic knowledge of recognized standards, criteria and	design team and Daylight specialist to							AR
CV1	assess the daylight availability		methods to assess and verify the daylight availability and glare	guide strategies and documentation	-	-	3	4	5	В	CE
	inside a building		probability inside a building	submission in compliance with LEED							
		In Use		requirements							
		Conceptual design		Can take part to the discussion with							SC
	Learn advanced strategies to	Detailed design	Has a basic knowledge of strategies and assessment criteria to	design team and space planning			_		_	_	AR
PL1	guarantee connection to the		guarantee connection to outdoor environments by providing	specialist about strategies to guarantee	-	-	3	4	5	В	
	natural outdoor environment	la llas	quality views	quality views for occupants as							
	Understand the importance of	Concent design		Can take part to the discussion in a							sc
	interior lighting quality to	Detailed design	-	project team being able to discuss							AR
CV2	interior lighting quality to contribute to the comfort and	Detailed design	Has a general knowledge of the definition of quality of artificial	strategies for artificial lighting to	1	2	3	4	5	в	BEC
	well-being of building		lighting	guarantee optimum visual comfort							CE
	occupants			conditions							
		Concept design	Knows lighting quality cirtoria recognized by LEED that can	Can take part to the discussion with							SC
	Learn accepted criteria and	Detailed design	contribute to improve occupants' comfort and productivity (e.g.	design team and Lighting specialist to							AR
PL1	values to assess the interior		tradeoffs [color, efficiency]: surface reflectance: types of	guide strategies and documentation	-	-	3	4	5	В	BEC
	lighting quality inside a building		fixtures)	submission in compliance with LEED							CE
		In Use	· ·	requirements							
	Understand the importance of	Concept design	-	Can take part to the discussion in a							SC
CA1	acoustic comfort to contribute	Detailed design	Has a general knowledge of the basis of acoustic comfort inside	project team being able to discuss basic	1	2	3	Λ	5	в	CE
CAI	to the comfort and well-being		a building	principles and strategies for acoustic	-	2		7	٦ I	D	CL
	of building occupants			comfort inside a building							
	Learn accorded onto a sed	Concept design		Can take part to the discussion with							SC
	Learn accepted criteria and	Detailed design	knows acoustic control cirteria and reference standards	design team and Acoustic specialist to							AR
PL1	comfort conditions inside a		le g exterior and interior poise: background poise: dead vs	guide strategies and documentation	-	-	3	4	5	В	CE
	building		live spaces)	submission in compliance with LEED							
				requirements							
	Learn accepted criteria and	Concept design	Knows basic principles, design strategies and assessment	Can take part to the discussion with							SC
CT1	values to assess thermal	Detailed design	methods to provide quality thermal comfort in occupied indoor	uesign team and weP specialist to			3	4	5	в	CE
CII	comfort conditions inside a		spaces (e.g. strategies to promote occupants' productivity and	submission in compliance with LEED	-	-	5	4		Б	BEC
	building		comfort; values of occupant satisfaction)	requirements							
		Concept design									SC
	Learn how to earn and	Detailed design		Is able to manage the LEED assessment							
PL1	document Innovation and		Priority credits and Pilot credits	for the Innovation and Regional Priority	-	-	3	4	5	B/N	
	Regional Priority credits		r nonty creats and Phot creats	categories							
1		Inlise									



## 12.10 GBC HOME AP

Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels of competence					Scale	Profession
Experti	(LO)	project 🞽		·	1	2	3	4		· · · · · ·	· · · · · ·
	Understand the basis of LEED	Conceptual design	Knows the basis of the LEED certification process, including:	Can basically manage the LEED	1	2	5	4	5		UP
	certification process and	Detailed design	rating system selection criteria, certification levels, LEED tools	certification process							AR
PL1	fundamentals of USGBC	Construction	and instruments, third party verification process, registration		1	2	3	4	5	B/N	CE
	organization		of the project on LEED Online and role of documentation								SC
		In Use	submission.								FaM
	Understand the basis of GBC	Conceptual design	Knows the basis of the GBC HOME certification process,	Can basically manage the GBC HOME							SC
PG1	and fundamentals of GBC	Construction	tools and instruments third party verification process (e.g.	certification process	1	2	з	4	5	в	
101	Italia organization	Construction	OVA and IQ, GBC Italia), registration of the project and		-	-				5	SC
	-		documentation submission management.								
	Understand the principles	Conceptual design	Knows the assessment methodology, including rating system	Can explain the principles behind the							UP
	behind the LEED rating	Detailed design	structure, impact category definition and points allocation	LEED assessment methodology and the							AR
PL1	system	Construction	process, LEED development process (consensus-based	LEED development process	1	2	3	4	5	B/N	CE
			undates and evolution process) and regional alternative								SC
		In Use	compliance path.								FaM
	Learn the international	Conceptual design	Knows, for each area, the main reference Standards that	Is able to list the reference international							UP
	Standards that are	Detailed design	should be applied applicable internationaly or on a regional	standards that support LEED							AR
PL1	recognized by LEED	Construction	scale		1	2	3	4	5	B/N	CE
			-								SC
		In Use									FaM
	Learn the Italian and	Conceptual design	Knows, for each area, the main reference Standards and	Is able to list the reference standards and regulation that support GPC HOME							SC
PG1	regulation recognized by GBC	Construction	regulations that should be applied	assessment methodology	1	2	3	4	5	в	CE
	HOME rating system	construction	-	assessment methodology	-	-				5	02
	• .										
	Learn how to manage the	Conceptual design	Knows the practical rules, implications and steps to manage the	Is able to define a work plan to manage							SC
	GBC HOME certification	Detailed design	GBC HOME certification during the design and construction	the certification process during the design							AR
PG2	process	Construction	process	and construction of a building.	-	-	3	4	5	В	CE
	Learn how to support the	Conceptual design	Knows how to define a GBC HOME strategy for the project.	Is able to support the design and							SC
	project team in pursuing the	Detailed design	being able to guide the establishment of project goals and to	construction team in developing a project							AR
PG2	GBC HOME certification	Construction	support the development of sustainability strategies compliant	compliant with the GBC HOME targets.	-	-	3	4	5	В	CE
			with the targeted GBC HOME credits.								
		In Use									
	Learn now to support the	Conceptual design	Knows now to document prerequisites and credits in a way	is able to guide the documentation of GBC							SC AP
PG2	GBC HOME certification	Construction	streamlined	nome prerequisites and credits	-	-	3	4	5	в	CE
		In Use									
	Understandthe applicability	Conceptual design	Knows the applicability requirements for GBC HOME projects	Is able to verify the GBC HOME							SC
PG1	of GBC HOME rating system	Construction	and general rules that should be considered to assure	applicability control the GBC HOME			2		5	D	AR
101	consistency in the GBC	Construction	submission of credits.	consistency across credits	-	-	5	4	5	в	CL
	HOME assessment										
	Understand the value of the	Conceptual design	Has a general knowledge of the basic principles of an	Can explain the basis of an integrative							SC
	implementation of an	Detailed design	integrative design process compared to a standard linear	design approach and can explain pros and							٨R
	integrative design process	Construction	approach (system thinking, early analysis of interrelations	cons with simple examples.			_		_	_	55
DI1	and the basic principles	construction	among systems), the benefits (cost-effective project		-	-	3	4	5	В	EE
	benind	As built	analysis) and available instruments (dinamic simulation, LCA.								CE
		In Use	)								BEC
	Understand the basic	Conceptual design	Understands within a project the main interrelations among	Can identify the major interrelationship							SC
	interrelation among systems	Detailed design	systems (building systems, building and natural ecosystem,)	among systems.							AR
DI1	affecting the environmental	Construction	and identify some integrated sustainability strategies for the		-	-	3	4	5	В	EE
	performance of a building	As built	projects								CE
	Understand the basic	Conceptual design	Has a general knowledge of the main interrelations among	Can identify the impact of different							SC
	interrelation among LEED	Detailed Design	LEED categories and credits being able to identify the impact of	design strategies on LEED credits.							AR
PL1	categories and credits	Construction	different design strategies on the LEED rating and score		1	2	3	4	5	В	EE
			-								UP
	Undensional the basts	In Use	Use a general knowledge of the main interval-time -	Can identify the import of different							50
	understand the basic	Detailed Design	GBC HOME categories and credits being able to identify the	design strategies on GBC HOME credits							SC.
PG1	HOME categories and credits	Construction	impact of different design strategies on the GBC HOME rating	design strategies on obe nome creats.	1	2	3	4	5	в	FF
			and score							-	-
		In Use									
	Understand the impacts of	Conceptual design	Has a general knowledge about the main environmental and	Discusses about the impacts of the built							UP
	the built environment and	Detailed Design	social impacts of the built environment in Europe and all	environment (energy and resource use in			_			n /··	AR
QV2	the definition of green	Construction	around the world and the basis of a green building based on	buildings, environmental externalities,	1	2	3	4	5	B/N	CE
	building	In Line	the triple bottom line concept	waste generation,) and the basic concept of green building							EE C
		Conceptual design		Discusses about the impacts of the built							SC
	Understand the impacts of	Detailed Design	Has a general knowledge of the main intents and positive	environment (energy and resource use in							AR
QV2	the banefit of groop	Construction	outcomes behind the application of GBC HOME prerequisites	buildings, environmental externalities,	1	2	3	4	5	В	CE
	buildings		and credits	waste generation,) and the basic							EE
1		In Use	1	concept of green building							



Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels competence				s of	Scale	Profession
Laperti	(10)	project			1	2	3	4	5		
OA1	Understand strategies able to support alternative transportation modes	Conceptual design Detailed Design	Has a general knowledge of the environmental impact of different transportation mode and of basic strategies, at building and district scale, that can support the use of alternative transportation (proximity to public transportation, bycicle facilities, green vehicles infrastructures,)	Is able to discuss different type of alternative transportation, access and quality criteria and design principles to support eco-friendly transportation modes	1	2	3	4	5	B/N	AR CE SC EE
PG1	Learn criteria to find sustainable locations for a new residential building	Conceptual design Detailed Design	Knows which are the GBC HOME criteria to avoid the development of environmentally sensitive lands and reduce the environmental impact from the location of a building on a site.	Is able to documents the "Site Selection" credit	-	-	3	4	5	В	AR UB SC
HL2	Understand the importance of site selection to reduce the potential environmental impact of new development during construction and operation	Conceptual design Detailed design In Use	Has a general knowledge of sustainable site selection, understanding the value of targeting sites in previously developed and brownfilelds or avoiding sensitive habitat, of locating buildings close to existing inrastructure and nearby uses.	Is able to support sustainable site selection with general qualitative considerations.	1	2	3	4	5	В	UP AR CE SC EE
PG1	Learn how to verify the Sustainable Site credits through calculations and analysis	Concept Detailed design	Knows how to asses the walkability, the transportation efficiency, the proximity of services of a site	Is able to document the Diverse Uses and alternative Transportation credit	-	-	3	4	5	В	AR UB SC
HL3	Understand the potential environmental impacts generated by construction activities	Construction	Has a general knowledge of strategies to mitigate the environmental impact due to demolition and construction activities	Is able to list some common principles and strategies to be implemented during demolition and construction activities to mitigate the environmental impact	1	2	3	4	5	B/N	UP AR CE SC EE
TS1	Learn the basic principles and strategies to manage pollution geenrated by construction activities	Construction	Has a general knowledge of accepted strategies and reference standards to reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust.	Is able to list environmental protection measures that reduce construction project disturbances to neighboring properties, rainwater systems, and the site itself.	-	-	3	4	5	B/N	SC AR EE
HL1	Understand the value of site development strategies	Conceptual design Detailed design	Has a general knowledge of principles and strategies for sustainable developments and exterior design. The main topics are: habitat conservation and restoration, open space availability, light pollution reduction, heat island reduction.	Can take part to the discussion in a project team suggesting strategies to develop sustainable sites	1	2	3	4	5	B/N	UP AR CE SC EE
PG1	Learn how to verify the Sustainable Sites credits through calculations and analysis	Conceptual design Detailed design	Knows criteria to assess the if a project conserves existing natural areas or restores damaged areas to provide habitat and promote biodiversity	Is able to document the Site development credit	-	2	3	4	5	В	UP AR SC
HL3	Understand the importance of developing rainwater management strategies on site to reduce runoff volume and improve water quality	Conceptual design Detailed design	Has a general knowledge of strategies to replicate the natural hydrology and water balance of the site and manage and treat rainwater runoff on site (soil permeability, raingardens, infiltration ponds, rainwater collection and reuse,)	Can take part to the discussion in a project team suggesting strategies to manage rainwater on site reducing the environmental burden od new developments	1	2	3	4	5	B/N	UP AR CE SC EE
PG1	Learn how to assess the project ability to reduce runoff volume and improve water quality by replicating and protecting the natural hydrology and water balance of the site	Conceptual design Detailed design	Has a general knowledge of criteria to assess the effectiveness of rainwater management strategies recognized by GBC HOME	is able to document the Rainwater and Green spaces credit	-	2	3	4	5	В	SC AR EE
PG1	Learn strategies and method to assess the reduction of heat island effect	Conceptual design Detailed design	Knows best strategies and design criteria to minimize effects on microclimates and human and wildlife habitats by reducing heat islands. Know how to assess the effectiveness of heat island reduction strategies.	Is able to document the Heat Island Reduction credit	-	2	3	4	5	В	UP AR SC
WE1	Understand the water consumption patterns in building and strategies to reduce water consumption for outdoor uses	Conceptual design Detailed design In Use	Has a general knowledge of potential design strategies to reduce water consumption for irrigation based on the efficiency-first concept (reduce the water demand through efficient landscaping design, use alternative water source for irrigation, use smart sensor technology irrigation controls)	Can take part to the discussion in a project team suggesting strategies to design sustainable landscape areas.	1	2	3	4	5	B/N	UP AR EE SC
PG1	Learn methods to estimate the outdoor water demand for irrigation	Conceptual design Detailed design In Use	Has a general knowledge of criteria, methods and tools to calculate the water demand for irrigation	Can take part to the discussion in a project team with landscape designer, agronomist, etc. suggesting methods to assess the reduction of outdoor water use demand in compliance with LEED requirements and assessment methods.	-	2	3	4	5	B/N	SC AR CE
WE2	Understand the water consumption patterns in building and strategies to reduce water consumption for indoor uses	Conceptual design Detailed design In Use	Has a general knowledge of potential design strategies to reduce water consumption for indoor uses based on the efficiency-first concept (reduce the water demand through low- flush and low-flow fixture and fittings, use alternative water source for flushing toilets)	Can take part to the discussion in a project team suggesting strategies to reduce the water consumption for indoor uses.	1	2	3	4	5	В	SC AR CE
PG1	Learn methods to estimate the indoor water demand for indoor uses	Conceptual design Detailed design In Use	Have a general knowledge of criteria, methods and tools to calculate the water demand for indoor uses	Is able to document the Indoor Water Use Reduction credit	-	2	3	4	5	В	SC AR CE
EPO	Understand the energy consumption patterns of buildings and strategies for thermal and electrical energy generation through high efficient and renewable energy systems	Conceptual design Detailed Design In Use	Has a general knowledge of energy generation technologies, renewable energy systems and offsetting strategies (heat pumps, CHP, PV, thermal solar panels, green energy, carbon offsets,)	Can take part to the discussion in a project team being able to identify energy efficient generation technologies, renewable energy systems and their integration at the building and district scale	-	2	3	4	5	B/N	SC AR BEC



Area of	Learning outcome	Stage of the			Requested for the levels of				of		
Experti	(LO)	project 🗾	Knowledge	Skill	1	c0	npeter	nce	<b>•</b>	Scale 🖕	Profession
	Understand the energy	Conceptual design	Has a general knowledge of passive and active energy		1	2	5	4	5		SC
	consumption patterns of	Detailed design	reduction measures that can be implemented at the building	project team being able to identify							AR
ER4	reduce the energy demand of		solar gains, management of internal loads, energy efficient	potential passive and active design		2	3	4	5	В	BEC
	buildings through passive and		tecnologies and regolation strategies, such as LED combined	design development.							UP
	understand the energy	In Use	with DALI systems,)								SC
	consumption patterns of	Detailed Design		Can take part to the discussion in a							AR
EMB	buildings and instruments and tools for implementing	Detailed Design	Has a general knowledge of energy management tools and	energy management strategies at the		2	3	1	5	B/N	BEC
	cost-effective energy		buildings and optimize the integration with the grid	building and district scale (eg. Energy metering and monitoring demand		2	5	7	5	0/14	
	management strategies of buildings during operation	In Use		response program partecipation,)							
	Learn the basis of methods			Is able to document Energy &							SC
PG1	recognized by GBC HOME to	Detailed Design	Knows basic principles and methods for energy assessment in	Atmosphere credits starting from the calculations and documents prepared by	-	-	3	4	5	в	CF
	assess the energy performance of buildings		compliance with GBC HOME requirements	Energy specialist in compliance with the							
		In Use		Italian legislation							SC
	Learn the basis of methods recognized by GBC HOME to	Detailed Design	Knows how to verify the percentage of renewable energy	Is able to document Renewable Energy credit starting from the calculations and							BEC
PG1	assess the renewable energy		production offsetting the total energy consumption	documents prepared by Energy specialist	-	-	3	4	5	В	CE
	production	In Use		in compliance with the Italian legislation							
	Learn the criteria for high-	Detailed Design									SC BEC
PG1	efficient appliances for		Knows criteria and requirements to select energy efficient appliances	Is able to document Appliances credit	-	-	3	4	5	В	CE
	residential use	In Use									
		Conceptual design	Has a general knowledge of the two main threats to the								SC
ER7	Understand the impact of refrigerants used on HVAC	Detailed Design	environment posed by refrigerants used in HVAC systems:	Can take part to the discussion in a project team being able to address the	1	2	3	4	5	в	BEC FaM
	systems on climate change		their ozone depletion potential (ODP) and global warming potential (GWP).	use of refrigerants in HVAC systems		_	-				
	Inderstand the value of	In Use									SC
	implementing the	Detailed design	Has a general knowledge of the basis of the commissioning	Is able to explain the meaning and the							AR
NP1	commissioning process during design, construction	Construction	process, pros and cons.	process, benefits and costs.	1	2	3	4	5	В	CE FaM
	and operation of a building	In Use									BEC
		Conceptual design		Can explain the best strategies that can be implemented during design and							UP
	Understand the	Detailed design	Has a general knowledge of potential strategies to reduce the amount of waste generated during construction activities and	construction to reduce the waste							AR
MW1	environmental impacts of waste generation	Construction	to increase the percentage of waste recycled, reused and diverted from landfill	generated by the construction sector during the lifespan of a building (during	1	2	3	4	5	B/N	CE
			diverted from landfill.	construction, through the use stage and							SC
	Learn GBC HOME criteria to	Concontual design		end of life)							SC
	reduce construction and	conceptual design		Is able to guide design and construction							۸P
PG1	demolition waste disposed of in landfills and incineration	Construction	Has a general knowledge of GBC HOME criteria to address waste reduction and recycling potential in construction	team in implementing effective waste management strategies during		2	3	4	5	в	CE
	facilities by recovering,	Construction	activities	construction and to document related							EE
	reusing, and recycling materials			GBC HOME credits							
	Understand the importance	Conceptual design									SC
	of designing buildings in a	Detailed design	Has a general knowledge of the main strategies able to reduce	Is able to list possible strategies to reduce		_	_			_	AR
MDI	and waste generation are		of buildings and/or components, design for disassembly,)	generation over the lifespan of a building	1	2	3	4	5	в	SC
	minimized										
		Concept design Detailed design		Is able to document the Reuse of							SC AR
PG1	Learn how to assess the level of reuse of buildings		knows criteria and requirements recognized by GBC HOME to assess the level of reuse of buildings	structural and non-structural building	-	-	3	4	5	В	С
	U U			creat							
	Understand the meaning of	Conceptual design		Is able to list some environmental labels							SC
MS2	different environmental	Construction	Has a general knowledge of different types of environmental	available for building products and	1	2	3	4	5	в	FaM
	construction sector	la Lla a	labers, their significance and utility in the green building sector	sustainability features and requirements							
	linderstand the main	in use		Is able to list the main sustainability							SC
MED	sustainability criteria for	Detailed design	Has a general knowledge of sustainability criteria for building	criteria recognized by LEED/GBC and the	1	2	2	4	-	D	AR
WI32	building materials and	Construction	material content, recycled content, regionanty, renewable material content, recyclebility, disclosure of chemical content.	main sustainability rating systems for	1	2	2	4	5	D	C
		In Use		senang materials and components.							<u>در</u>
	Learn accepted	Datailad dasige	Knows which any isopmontal lakely and a second by 200	Can select eco-friendly materials							20
PC1	environmental labels for	Construction	HOME to demonstrate the use of materials for which life-cycle	able to document GBC HOME credits that			2		5	P	An
101	components (eco-friendly	Construction	information is available and that have environmentally,	reward the use of sustainable materials	-	-	5	4		в	C
	materials)		conomicany, and socially preferable ine-cycle impacts.	recycled content, renewable materials,)							
		Conceptual design	Has a general knowledge of the main principles and strategies								SC
	Understand the importance	Detailed design	to guarantee good indoor air inside a building such as	Is able to list the main design,							AR
CQ2	contribute to the comfort	Construction	contaminants emission reduction (indoor and outdoor smoking	construction and operation strategies to	1	2	3	4	5	в	BEC
	and well-being of building		prohibition, low-emitting materials, indoor air quality	guarantee motor air quality inside a building							С
	occupants	In Use	prevention.								CE
-					_	_		-	_	-	



Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels				s of	Scale	Profession
Experti	(LO)	project		· · · · · · · · · · · · · · · · · · ·	1	2	3	4	5		Ľ
		Conceptual design	Knows which products categories should be considered in the			_	-				SC
		Detailed design	design and construction to reduce concentrations of chemical	Can select low-emitting materials							AR
DC1	Learn accepted labels and	Construction	contaminants that can damage air quality, human health,	compliant to GBC requirements, being			2	4	-	P	
PG1	emitting materials	Construction	adhesives and sealants. flooring, thermal and acoustic	and MSDS (Material Safety Data Sheet) of	-	-	2	4	5	D	
			insulation,) and related acceptable volatile organic compound	products and components							
		In Use	(VOC) emissions and content.								
	Learn how to assess the	Conceptual design									SC
PG1	effectiveness of natural ventilation strategies to	Detailed design	Knows natural ventilation principles, design criteria and	Can take part to the discussion in project	_		з	л	5	в	CE
101	guarantee good indoor air		requirements recognized by GBC HOME	effective naturally-ventilated buildings			5	7		5	BEC
	quality	In Use		,							
	Learn basic principles and	Conceptual design	Knows principles and air extraction requirements in residential	Can take part to the discussion in project							SC
DC1	GBC HOME requirements to	Detailed design	rooms with contaminant or odors generation (bathroom,	team to guide the design of buildings in			2	4	-		CE
-01	avoid contaminant emission		kitchen, garage,) and requirements for cross-contamination	"Control of contaminations generated by		- 1	5	4	5	В	BEC
	source control	In Use	control	human activities"							
	Learn accepted standards	Conceptual design		Can take part to the discussion in project							SC
DC1	and basic principles for the	Detailed design	Knows principles, design criteria and requirements for	team to guide the design and operation of			2		5		CE
101	design of mechanically-		mechanically-ventilated buildings recognized by GBC HOME	effective mechanically-ventilated	-	-	3	4		D	BEC
	ventilated building	In Use		buildings							
	Learn how to minimize			Is able to define and control the							SC
TC1	occupants exposure to indoor	Construction	Knows criteria and strategies to manage and improve the	implementation of an indoor air quality			2		5		CE
121	air contaminants during	As built	occupancy of buildings	management plan during construction	-	- 1	3	4	5	в	BEC
	occupancy			compliant with GBC HOME requirements.							
	Understand the importance	Conceptual design	Knows how to preliminarily establish the radop risk class by	Can take part to the discussion in a							SC
604	of reducing and controlling	Detailed design	consulting the "Radon Prone Areas" document issued by the	project team being able to verify radon	1		2	4	-		AR
CQ4	radon exposure of building		regional ARPA and knows mitigation and control strategies	risk class and suggest mitigation and	1	2	5	4	5	D	
	occupants		required in case of documented risk exposure	control strategies							
	Understand the importance	Conceptual design		Can take part to the discussion in a							SC
0/1	of daylight to contribute to	Detailed design	Has a general knowledge of the benefits of daylight and the	project team being able to discuss basic	1		2		_		AR
CVI	the comfort and well-being		main design strategies applicable at the building level	principles and design strategies for daylit	1	2	3	4	5	в	CE
	of building occupants			spaces							
		Conceptual design									SC
0/1	Learn recognized metrics to	Detailed design	Knows recognized standards, criteria and methods to assess	Is able to calculate the FLD indicator and			2	4	-		AR
CV1	availability inside a building		living)	document the Daylight credit	-	- 1	5	4	5	В	
	Understand the importance	Concept design		Can take part to the discussion in a							SC
0/2	of interior lighting quality to	Detailed design	Has a general knowledge of the definition of quality of artificial	project team being able to discuss	1		2	4	-		AR
CV2	and well-being of building		lighting	guarantee optimum visual comfort	1	2	5	4	5	В	CE
	occupants			conditions							
	Understand the importance	Concept design		Can take part to the discussion in a							SC
CA1	or acoustic comfort to	Detailed design	Has a general knowledge of the basis of acoustic comfort	project team being able to discuss basic	1	2	2	4	E.	Р	
CAI	and well-being of building		inside a building	principles and strategies for acoustic	1	2	5	4	5	В	
	occupants			comfort inside a building							
	Learn accepted criteria and	Concept design		Can take part to the discussion with							SC
PG1	values to assess acoustic	Detailed design	Knows acoustic comfort criteria and reference standards recognized by GBC HOME that guarantee effective acoustic	design team and Acoustic specialist to	-	-	з	4	5	в	CE
101	comfort conditions inside a		design (e.g. acoustic innsulation, background noise level,)	submission in compliance with GBC			5	7		5	
	building			HOME requirements							
	1	Concept design									SC
PG1	Learn now to earn and document Regional Priority	Detailed design	Knows how to earn and document Regional Priority credits	Is able to find Regional Priority for	-	-	з	4	5	в	
	credits			different project locations						-	
		Concept design									SC
PG1	Learn how to earn and	Detailed design	Knows how to earn and document Innovation credits	Is able to document Innovation credits	-	-	3	4	5	в	
	document Innovation credits									-	
	Learn how to ensure the	Dotailad desire		Can take part to the discussion with							SC AD
PG1	optimization over time of the	Detailed design	Knows criteria and main contents of Operation & Maintenance	design & Construction team to efficiently	-		3	4	5	в	AK CF
. 31	performance and durability	As built	Plan of the building	main operation and maintenance			2			J	
	of the building	In use		strategies							



## 12.11 GBC HISTORICAL BUILDING AP

Area of Expertis	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels of competence				Scale 🖕	Profession -	
Expertit	(20)	project	1	1	1	2	3	4	5		
	Understand the basis of LEED	Conceptual design	Knows the basis of the LEED certification process, including:	Can basically manage the LEED							UP
	certification process and	Detailed design	rating system selection criteria, certification levels, LEED tools	certification process						1	AR
PL1	fundamentals of USGBC	Construction	and instruments, third party verification process, registration		1	2	3	4	5	B/N	CE
	organization		of the project on LEED Online and role of documentation							1	SC
		In Use	submission.							<b> </b>	FaM
	Understand the principles	Conceptual design	Knows the assessment methodology, including rating system	Can explain the principles behind the						1	UP
	behind the LEED rating system	Detailed design	structure, impact category definition and points allocation	LEED assessment methodology and the						1	AR
PL1		Construction	process, LEED development process (consensus-based	LEED development process	1	2	3	4	5	B/N	CE
			process; stakeholder and volunteer involvment; rating system								50
			compliance path							1	SC
		In Use	compnance path.							<b> </b>	FaM
	Learn the international	Conceptual design	Knows, for each area, the main reference Standards that	Is able to list the reference international						1	UP
	Standards that are recognized	Detailed design	should be applied applicable internationaly or on a regional	standards that support LEED			_		_	- 41	AR
PL1	by LEED	Construction	scale		1	2	3	4	5	B/N	CE
		la lla s	-							1	SC E-MA
		In Use	Knows the practical rules, implications and stops to manage	ls able to define a LEED work plan to	<u> </u>	-					Faivi
	certification process	Dotailod dosign	the LEED contification, during the decign and construction	manage the certification process during						1	AP
PI 2	certification process	Construction	nrocess	the design and construction of a building	-		з	4	5	в	CE
		As built		are design and construction of a banding.						1	02
		In Use								1	
	Learn how to manage a LEED	Conceptual design	Knows how to define a LEED strategy for the project, being	Is able to support the design and						1	SC
	certification process	Detailed design	able to guide the establishment of project goals and to	construction team in developing a project						1	AR
PL2		Construction	support the development of sustainability strategies conpliant	compliant with the LEED targets.	-	-	3	4	5	В	CE
			with the targeted LEED credits							1	
		In Use								<b> </b>	
	Understand how to manage	Conceptual design	Knows the general rules that should be considered to manage	Is able to manage special project						1	SC
	special recurring project	Detailed design	special situations (e.g. Mixed use projects, Multitenant	situations and control the LEED					-		AR
PL1	situation and mantain	Construction	complex, multiple building projects,) and to assure	assessment project to guarantee	-	-	3	4	5	в	CE
	consistency in the LEED		submission of LEED credits	consistency across credits						1	
	Learn how to support the	Concentual design	Knows how to document prerequisites and credits in a way	Is able to guide and draft the		-					SC
	project team in pursuing the	Detailed design	that the third party certification process is facilitated and	documentation of LEED prerequisites and						1	AR
PL2	LEED certification	Construction	streamlined	credits	-	-	3	4	5	В	CE
			1							1	
		In Use								ļ	
	Understand the basis of GBC	Conceptual design	Knows the basis of the GBC HB certification process,	Can basically manage the GBC HB						1	SC
	Historic Building (HB)	Detailed design	including: rating system selection criteria, certification levels,	certification process						1	AR
PG1	certification process and	Construction	tools and instruments, third party verification process (e.g.		1	2	3	4	5	В	CE
	fundamentals of GBC Italia		OVA and IQ, GBC Italia), registration of the project and							1	SC
	organization	a	documentation submission management.		<u> </u>	<u> </u>					
	Learn the Italian and European	Conceptual design	Knows, for each area, the main reference Standards and	is able to list the reference standards and						1	SC AR
PG1	scandards and regulation	Construction	regulations that should be applied	assassment methodology	1	2	2	4	5	D	
101	sstem	construction	1	assessment methodology	1	ŕ		-		1	CL
	botem									1	
	Learn how to manage the GBC	Conceptual design	Knows the practical rules, implications and steps to manage	Is able to define a work plan to manage						1	SC
	HB certification process	Detailed design	the GBC HB certification during the design and construction	the certification process during the design						1	AR
PG2		Construction	process	and construction of a building.	-	-	3	4	5	В	CE
										1	
	 				_	—					_
	Learn how to support the	Conceptual design	Knows how to define a GBC HB strategy for the project, being	Is able to support the design and	1					l	SC
	project team in pursuing the	Detailed design	able to guide the establishment of project goals and to	construction team in developing a project					-		AR
PGZ	GBC HB certification	Construction	support the development of sustainability strategies	compliant with the GBC HB targets.	-	-	3	4	5	в	CE
		in Lise	compliant with the targeted GBC HB credits.							1	
	Learn how to support the	Concentual design	Knows how to document prerequisites and credits in a way	Is able to guide the documentation of GBC		-					SC
	project team in pursuing the	Detailed design	that the third party certification process is facilitated and	HB prerequisites and credits						1	AR
PG2	GBC HB certification	Construction	streamlined		-	-	3	4	5	В	CE
			]							1	
		In Use								<b></b>	
	Understandthe applicability of	Conceptual design	Knows the applicability requirements for GBC HB projects and	Is able to verify the GBC HB applicability	_						SC
	GBC HB rating system and	Detailed design	general rules that should be considered to assure consistency	control the GBC HB assessment project to	1					l	AR
PG1	rules to mantain consistency	Construction	throughtout the assessment, documentation and submission	guarantee consistency across credits		-	3	4	5	В	CE
	In the GBC HB assessment		or creats.		1					l	
	Understand the basis	Concentral dest	Use a general knowledge of the main internal-tions	Considentify the impost of different							50
	Interrelation among GPC UP	Detailed Dosign	GBC HB categories and credits being able to identify the	design strategies on GPC UP crodits						l	SC AP
PG1	categories and credits	Construction	impact of different design strategies on the GRC HOME rating	action of a contraction of the c	1	2	3	А	5	в	FF
	Conce and Cicults	Construction	and score			É.				1	
		In Use	1							l	
	Understand the basic	Conceptual design	Understands within a project the main interrelations among	Can identify the major interrelationship		<u> </u>					SC
	interrelation among systems	Detailed design	systems (building systems, building and natural ecosystem,)	among systems.	1					l	AR
DI1	affecting the environmental	Construction	and identify some integrated sustainability strategies for the		-	-	3	4	5	В	EE
	performance of a building	As built	projects		1					l	CE
1	1	In Lise		1	1	1					BEC



Area of	Learning outcome	Stage of the			Requested for the levels of			of			
Expertis -	(LO)	project	Knowledge	Skill		co	mpeter	nce	*	Scale 🖕	Profession
	Understand how to guide the	Concontual design	Knows how to guide the implementation of integrative design	Is able to guide the discovery phase to:	1	2	3	4	5		sc
	implementation of an	conceptual design	studies, identifying and using opportunities to achieve	- Perform a preliminary "simple box"							30
	integrative design workflow to inform the optimization of the energy and water	Detailed design	synergies across disciplines and building systems.	energy modeling analysis that explores how to reduce energy loads in the building and accomplish related							EE
DI1	consumption of a building	Construction		sustainability goals by questioning default assumptions;	-	-	3	4	5	В	CE
		As built		analysis before the completion of schematic design that explores how to reduce potable water loads in the building							
		In Use		and accomplish related sustainability goals.							
	Understand the basic	Conceptual design	Has a general knowledge of the main interrelations among	Can identify the impact of different							SC
DI 1	interrelation among LEED	Detailed Design	LEED categories and credits being able to identify the impact of different design strategies on the LEED rating and score	design strategies on LEED credits.	1	2	3	л	5	в	AR
,	categories and credits	Construction	or unrerent design strategies on the LEED rating and score		-	-	5	-	5	D	UP
		In Use									
	Understand the impacts of the	Conceptual design	Has a general knowledge about the main environmental and	Discusses about the impacts of the built							UP
QV2	built environment and the	Construction	social impacts of the built environment in Europe and all	buildings, environmental externalities,	1	2	3	4	5	B/N	CE
	definition of green building		around the world and the basis of a green building based on the triple bottom line concept	waste generation,) and the basic							EE
		In Use		concept of green building		-					SC
	Understand the impacts of the	Detailed Design	Has a general knowledge of the main intents and positive	Discusses about the impacts of the built environment (energy and resource use in							AR
QV2	built environment and the	Construction	outcomes behind the application of GBC HB prerequisites and	buildings, environmental externalities,	1	2	3	4	5	В	CE
	benefit of green buildings	,	credits	waste generation,) and the basic							EE
		In Use		concept of green historic buildings							LID
		Detailed Design	Has a general knowledge about the costs and values of a	Discusses about the values of a green							AR
QV1	Understand the values of sustainable design		green building (eg. Hard costs, soft costs, life cycle costs, energy savings over time, money savings due to healthior	pulicing to support the general understanding of environmental and	1	2	3	4	5	В	CE
	e a cantabre acoiBit	As built	indoor environments, money-saving incentives,)	social but also economic benefits							EE
		In Use Conceptual design				<u> </u>					SC SC
	Understand which are the	Detailed design	Has a general knowledge about possible incentive strategies	Is able to discuss with developers and							AR
QF1	popular strategies to		to encourage green building (incentivize the market through	popular strategies to incentivize the	1	2	3	4	5	В	
	encourage green building	In Lise	financial or structural incentives)	spread of green certified buildings							
	Understand the value of	Conceptual design		Can take part to the discussion in a							AR
	historic analysis and survey to	Detailed Design	Has a general knowledge of survey methodologies and	project team suggesting methods and							CE
DI3	support the sustainable design of renovation and restoration		operating principles to study and investigate the positive	criteria to develop preliminary analysis	1	2	3	4	5	В	SC
	of renovation and restoration		values of historic buildings.	and survey to study in deep the							
	projects			knowledge of historic buildings		<u> </u>					
	Learn criteria and	Conceptual design	Knows which are the minimum contents required by GBC HB	Can take part to the discussion in a							AR
	requirements for preliminary	Detailed Design	understanding the following building features: structures,	criteria to develop preliminary analysis							CE
PG1	analysis compliant with GBC		materials consistency, deterioration of building materials,	and survey compliant to GBH HB	-	-	3	4	5	В	SC
	HB prerequisites and credit		uses and building systems, thermal performance of the building envelope, energy performance of the building	requirements and is able to verify the							
	requirements		structural integrity.	provided documentation.							
	Learn how to document the	Conceptual design		Can take part to the discussion in a							AR
<b>DC1</b>	reversibility level of	Detailed Design	Knows criteria and methods to demonstrate the reversibility	project team suggesting methods and			2		-		CE
PGI	restoration interventions of a		level of an interventions based on GBC HB criteria.	criteria to assess the reversibility of	-	-	3	4	5	В	SC
	building			restoration.							
	Understand the concept of	Conceptual design	Has a general knowledge on compatibility issues in case of	Can take part to the discussion in t							AR
UM4	"compatibility" applied to	Detailed Design	interventions on historic buildings. It can be declined in	project team discussion the concept of	1	2	3	4	5	в	SC
	renovation and refurbishment		compatibility of uses, material compatibility and structural	compatibility							
	S. Satura Sunumga	Consertual		Con take part to the diam.							40
	Learn how to document the	Conceptual design Detailed Design		can take part to the discussion in a project team suggesting methods and		1					CF
PG1	compatibility of an		Knows criteria and methods to demonstrate the compatibility	criteria to assess the compatibility of	-	-	3	4	5	В	SC
	GBC HB requirements			refurbishment and restoration of historic							
	Understand the importance of	Conceptual design		buildings							AR
	programmed maintenance	Detailed Design	Usua a ganaral knowledge of contents and methods for	Can take part to the discussion in a							CE
UI1	activities to guarantee better		implementing programmed maintenance activities	project team suggesting the minimum	1	2	3	4	5	В	SC
	performance and conservation of a building during the			contents of a maintenance plan							
		Conceptual design									AR
	application of maintenance	Detailed Design	Knows the minimum contents that a maintenance plan shoud	Is able to guide the draft of maintenance							CE
PG1	programs compliant to GBC		have to be compliant with GBC HB requirements	plans compliant to GBC HB requirements	-	-	3	4	5	В	SC
	HB requirements	l				1					
	Understand (0. 100	Conceptual design									AR
	Understand the importance of integrating in the design and	Detailed Design									CE
DI1	construction team specialists		Have a general knowledge of required knowledge and skills to	Is able to define appropriate integrative	1	2	3	4	5	В	SC.
	in historic building		Proper Bride Lestor and Lhi Dients	acaign reams for restoration projects.							
	returbishment and restoration										
		Conceptual design	Has a general knowledge of the environmental impact of	Is able to discuss different type of							AR
	Understand strategies able to	Detailed Design	different transportation mode and of basic strategies, at	alternative transportation, access and						p. /s.:	CE
OA1	support alternative		pulliging and district scale, that can support the use of alternative transportation (provimity to public transportation)	quality criteria and design principles to support eco-friendly transportation	1	2	3	4	5	B/N	SC EF
		In Use	bycicle facilities, green vehicles infrastructures,)	modes							
					and the second se				-		



Area of Expertis	Learning outcome (LO)	Stage of the	Knowledge	Skill	Requested for the levels of competence					Scale	Profession
					1	2	3	4	5		
PL1	Learn criteria to find sustainable locations for a new building	Conceptual design Detailed Design	Knows which criteria can be used to avoid the development of environmentally sensitive lands and reduce the environmental impact from the location of a building on a site.	Is able to documents the Sensitive Land Protection and High Priority Site credits	-	-	3	4	5	В	AR UB SC
PG1	Learn criteria to document High Priority Site credit	Conceptual design Detailed Design	Knows which criteria can be used to demonstrate the environmental remediation of contaminated sites in compliance with GBC HB requirements	Is able to documents the GBC HB Remediation of Degraded Sites credits	-	-	3	4	5	В	AR UB SC
HL2	Understand the importance of site selection to reduce the potential environmental impact of new development during construction and operation	Conceptual design Detailed design In Use	Has a general knowledge of sustainable site selection, understanding the value of targeting sites in previously developed and brownfilelds or avoiding sensitive habitat, of locating buildings close to existing inrastructure and nearby uses.	Is able to support sustainable site selection with general qualitative considerations.	1	2	3	4	5	В	UP AR CE SC EE
PL1	Learn how to verify the Location&Transportation credits through calculations and analysis	Concept Detailed design	Knows how to asses the walkability, the transportation efficiency, the proximity of services of a site	Is able to document the Surrounding Density and Diverse Uses credit	-	-	3	4	5	В	AR UB SC
PL1	Learn how to verify the Location&Transportation credits through calculations and analysis	Concept Detailed design	Knows how a site and building design can support the use of bicycles for daily transfer.	Is able to document the Bicycle Facilities credit	-	-	3	4	5	В	AR UB SC
PL1	Learn how to verify the Location&Transportation credits through calculations and analysis	Concept Detailed design	Knows criteria to assess how a project minimizes the environmental harms associated with parking facilities, including automobile dependence, land consumption, and rainwater runoff.	Is able to document the Reduced Parking Footprint credit	-	-	3	4	5	В	AR UB SC
PG1	Learn criteria to document Alternative Transportation credits	Conceptual design Detailed Design	Knows which are criteria that support alternative transportation modes: walkability, the transportation efficiency, the proximity of services, facilities that can support the use of bicycles for daily transfer, reduced parking availability, preferred parking for green vehicles or recharge stations.	Is able to document alternative Transportation credits	-	-	3	4	5	В	AR UB SC
HL3	Understand the potential environmental impacts generated by construction activities	Construction	Has a general knowledge of strategies to mitigate the environmental impact due to demolition and construction activities	Is able to list some common principles and strategies to be implemented during demolition and construction activities to mitigate the environmental impact	1	2	3	4	5	B/N	UP AR CE SC EE
HL1	Understand the value of site development strategies	Conceptual design Detailed design	Has a general knowledge of principles and strategies for sustainable developments and exterior design. The main topics are: habitat conservation and restoration, open space availability, light pollution reduction, heat island reduction.	Can take part to the discussion in a project team suggesting strategies to develop sustainable sites	1	2	3	4	5	B/N	UP AR CE SC EE
TS1	Learn the basic principles and strategies to manage pollution geenrated by construction activities	Construction	Has a general knowledge of accepted strategies and reference standards to reduce pollution from construction activities by controlling soil erosion, waterway sedimentation, and airborne dust, acoustic impact, water and energy consumption.	Is able to list environmental protection measures that reduce construction project disturbances to neighboring properties, rainwater systems, and the site itself.	-	-	3	4	5	B/N	UP AR SC EE
HL1	Understand the information and data needed to complete a comprehensive site assessment	Conceptual design Detailed design	Has a general knowledge of information and data required to assess site conditions before design to evaluate sustainable options and inform related decisions about site design.	Can take part to the discussion in a project team defining the main content of a preliminary site assessment	1	2	3	4	5	B/N	UP AR SC
PL1	Learn how to verify the Sustainable Sites credits through calculations and analysis	Conceptual design Detailed design	Knows criteria to assess the if a project conserves existing natural areas or restores damaged areas to provide habitat and promote biodiversity and have sufficient open spaces to encourage interaction with the environment, social interaction, passive recreation, and physical activities	Is able to document the Site development- Protect or Restore habitat and Open space credits	-	2	3	4	5	B/N	UP AR SC
PG1	Learn how to assess the project ability to restore open spaces and green historic area	Conceptual design Detailed design	Has a general knowledge of criteria to assess the effectiveness of restorative strategies for open space	Is able to document the Site development: restore open spaces credit	-	2	3	4	5	В	SC AR EE
HL3	Understand the importance of developing rainwater management strategies on site to reduce runoff volume and improve water quality	Conceptual design Detailed design	Has a general knowledge of strategies to replicate the natural hydrology and water balance of the site and manage and treat rainwater runoff on site (soil permeability, raingardens, infiltration ponds, rainwater collection and reuse,)	Can take part to the discussion in a project team suggesting strategies to manage rainwater on site reducing the environmental burden od new developments	1	2	3	4	5	B/N	UP AR CE SC EE
PG1	Learn how to assess the project ability to reduce runoff volume and improve water quality by replicating and protecting the natural hydrology and water balance of the site	Conceptual design Detailed design	Has a general knowledge of criteria to assess the effectiveness of rainwater management strategies recognized by GBC HB	Is able to document the Rainwater management: quantity and quality control credit in compliance with GBC HB requirements	-	2	3	4	5	В	SC AR EE
PG1	Learn strategies and method to assess the reduction of heat island effect	Conceptual design Detailed design	Knows best strategies and design criteria to minimize effects on microclimates and human and wildlife habitats by reducing heat islands. Know how to assess the effectiveness of heat island reduction strategies in compliance with GBC HB requirements.	Is able to document the Heat Island Reduction credit in compliance with GBC HB requirements	-	2	3	4	5	В	UP AR SC
PG1	Learn strategies and method to assess the light pollution reduction effect	Conceptual design Detailed design	Knows best strategies and design criteria to minimize outdoor light pollution	Can take part to the discussion with design team and Lighting specialist to guide strategies and documentation submission in compliance with GBC HB requirements	-	2	3	4	5	В	UP AR SC



Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels of competence				sof	Scale	Profession
Expertis	(LO)	project			1	2	3	4	5	June -	
	Learn how to assess the	Conceptual design									UP
	volume and improve water	Detailed design		Can take part to the discussion in a							AR
PI 1	quality by replicating the natural bydrology and water		Has a general knowledge of criteria to assess the	project team suggesting strategies criteria		2	з	4	5	B/N	sc
	balance of the site, based on		effectiveness of rainwater management strategies	to verify the effectivenss and suitability of rainwater management strategies		2	5	-	5	0,14	
	historical conditions and undeveloped ecosystems in		-	rannater management strategies							
	the region.										
	Learn strategies and method	Conceptual design Detailed design	Knows best strategies and design criteria to minimize effects	Is able to document the Heat Island Reduction credit							UP AR
PL1	to assess the reduction of		heat islands.		-	2	3	4	5	B/N	SC
	heat island effect		Know how to assess the effectiveness of heat island reduction strategies.								
		Conceptual design		Can take part to the discussion in a							UP
HL3	the outdoor light pollution and	Detailed design	methods to evaluate the effectiveness of light pollution	project team suggesting ways and ways	-	2	3	4	5	B/N	SC
	criteria to be considered.		reduction strategies	outdoor light pollution							
	Understand the water	Conceptual design	Has a general knowledge of potential design strategies to								UP
WE1	consumption patterns in building and strategies to	Detailed design	reduce water consumption for irrigation based on the efficiency-first concept (reduce the water demand through	Can take part to the discussion in a project team suggesting strategies to	1	2	3	4	5	B/N	AR FF
	reduce water consumption for		efficient landscaping design, use alternative water source for	design sustainable landscape areas.							SC
	outdoor uses	In Use	irrigation, use smart sensor technology irrigation controls)	Can take part to the discussion in a							SC
	Learn methods to estimate	Detailed design		project team with landscape designer,							
PL1	the outdoor water demand for		Has a general knowledge of criteria, methods and tools to calculate the water demand for irrigation	agronomist, etc. suggesting methods to assess the reduction of outdoor water use	-	2	3	4	5	B/N	
	irrigation	la Lice	-	demand in compliance with LEED							
		Concentual design		Can take part to the discussion in a							SC
	Learn methods to estimate	Detailed design	Has a general knowledge of criterial methods and tools to	project team with landscape designer,							
PG1	the outdoor water demand for		calculate the water demand for irrigation in compliance to	agronomist, etc. suggesting methods to assess the reduction of outdoor water use	-	2	3	4	5	B/N	
	irrigation		GBC HB requirements	demand in compliance with GBC HB							
	Understand the water	In Use		requirements and assessment methods.	_						
WE2	consumption patterns in	Detailed design	reduce water consumption for indoor uses based on the	Can take part to the discussion in a							AR
	building and strategies to reduce water consumption for		efficiency-first concept (reduce the water demand through low-flush and low-flow fixture and fittings use alternative	reduce the water consumption for indoor	1	2	3	4	5	В	CE
	Learn methods to estimate	In Use	water source for flushing toilets)	uses.							
PL1	Learn methods to estimate	Conceptual design Detailed design									SC AR
	the indoor water demand for		Have a general knowledge of criteria, methods and tools to calculate the water demand for indoor uses	Is able to document the Indoor Water Use Reduction credit	-	2	3	4	5	В	CE
	indoor uses	In Use	-								
	Learn methods to estimate	Conceptual design Detailed design	Have a general knowledge of criteria, methods and tools to	Is able to document the Indoor Water Use							SC AR
PG1	the indoor water demand for		calculate the water demand for indoor uses in compliance to	Reduction credit in compliance to GBC HB	-	2	3	4	5	В	CE
	indoor uses	In Use	GBC HB requirements	requirements							
	linderstand strategies to	Conceptual design		Can take part to the discussion in a							SC
WE3	reduce the water consumption	Detailed design	Knows criteria to asses the water consumption for cooling	project team suggesting methods to	-	2	3	4	5	В	CE
	for cooling towers	In Lise	towers make-up	consumption for cooling towers make up							BEC
	Understand the energy	Conceptual design		Can take part to the discussion in a							SC
	consumption patterns of buildings and strategies for	Detailed Design	Has a general knowledge of energy generation technologies,	project team being able to identify energy							AR
EPO	thermal and electrical energy		renewable energy systems and offsetting strategies (heat pumps, CHP, PV, thermal solar panels, green energy, carbon	efficient generation technologies, renewable energy systems and their	-	2	3	4	5	B/N	FaM
	generation through high efficient and renewable		offsets,)	integration at the building and district							BEC
	energy systems	In Use		scare							
	Understand the energy consumption patterns of	Conceptual design	Has a general knowledge of passive and active energy reduction measures that can be implemented at the building	Can take part to the discussion in a							20
ER4	buildings and strategies for	Detailed design	scale (e.g. insulation, orientation of buildings, optimum WWR,	project team being able to identify potential passive and active design	-	2	3	4	5	в	FaM
	reduce the energy demand of buildings through passive and		solar gams, management of internal loads, energy efficient tecnologies and regolation strategies, such as LED combined	strategies that should be assessed in the							UP
	active strategies.	In Use	with DALI systems,)	acagn acveropittett.							BEC
	Understand the energy consumption natterns of	Conceptual design	4	Can take part to the discussion in a							SC
	buildings and instruments and	Detailed Design	Has a general knowledge of energy management tools and	project team being able to list some energy management strategies at the							AR Fold
ÉM3	tools for implementing cost- effective energy management		strategies usetul to minimize the energy consumption of buildings and optimize the integration with the grid	building and district scale (eg. Energy	-	2	3	4	5	B/N	
	strategies of buildings during	ln Lleo		rretering and monitoring, demand response program partecipation,)							DEC
		Concentual docim									SC
	Learn strategies to support energy management and	Detailed Design		Can take part to the discussion in a							AR
EM3	identify opportunities for		Metering Systems to effectively track energy uses during the	project team being able to guide the	-	-	3	4	5	в	FaM
	tracking building-level and		operation of a building	in compliance with LEED requirements							BEC
	system-level energy use.	In Use									
		Conceptual design	Knows basic principles and tools for energy benchmarking								SC
	Understand tools and methods	Detailed Design	(e.g., metrics used; proposed building performance rating/ baseline building performance rating; comparing building	Can advise project team in identify energy							AR
001	for energy benchmarking	ols and methods         baseline building performance rating; comparing building         comparing building         comparing building           nchmarking         energy performance against similar buildings or historical         both design and operation of a building         both design and operation of a building	-	-	3	4	5	В	FaM BEC		
U01		In Use	data; tools and standards [ASHRAE, CBECS, Portfolio Manager])								DEC
		-	l	1		I					



Area of Expertis	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Requested for the lev competence			Requested for the levels of competence				ested for the levels of competence		Professior
					1	2	3	4	5					
	Learn the basis of methods	Conceptual design	Knows basic principles and tools for energy assessment in								SC			
	recognized by LEED to assess	Detailed Design	compliance with LEED requirements (e.g., prescriptive,	Can advise project team in perfroming the							BEC			
PL1	the energy performance of		performance paths; energy simulation; criteria to determine	energy assessment of a building in	-	-	3	4	5	В	CE			
	buildings	In Lise	performance levels; tools and standards;)	compliance with LEED requirements										
		in obc		is able to document Renewable Energy							SC			
	Learn the basis of methods	Detailed Design		credit starting from the calculations and							BEC			
PL1	recognized by LEED to assess		Knows now to verify the percentage of renewable energy	documents prepared by Energy specialist	-	-	3	4	5	В	CE			
	production		production on setting the total energy cost of a building	in compliance with ASHRAE & LEED										
		In Use		requirements							50			
	Learn how to design building	Detailed Design		Can take part to the discussion in a							BEC			
FM1	narticipation in demand		Knows how to address the design of building systems to allow	partecipation in demand response		-	3	4	5	B/N	FaM			
	response programs through		the participation in demand response programs.	programs through the design of ready-			5			5,11	CE			
	load shedding or shifting.	In Use		buildings										
		Conceptual design	Has a general knowledge of the two main threats to the								SC			
	Understand the impact of	Detailed Design	environment posed by refrigerants used in HVAC systems:	Can take part to the discussion in a							BEC			
ER7	refrigerants used on HVAC		their ozone depletion potential (ODP) and global warming	project team being able to address the	1	2	3	4	5	В	FaM			
	systems on climate change	In Lise	potential (GWP).	use of reirigerants in HVAC systems										
	Understand the value of	in ose									SC			
	implementing the	Detailed design		Is able to explain the meaning and the							AR			
NP1	commissioning process during	Construction	Has a general knowledge of the basis of the commisisoning	value of implementing a commissioning	1	2	3	4	5	В	CE			
	design, construction and		process, pros and cons.	process, benefits and Costs.							FaM			
	operation of a building	In Use									BEC			
				Is able to document Energy &							SC			
	Loorn the basis of mathed	Detailed Docigo		Atmosphere credits starting from the							BEC			
	recognized by GBC HB to	Detailed Desigli	Knows basic principles and methods for energy assessment in	Energy specialist in compliance with the							DEC			
PG1	assess the energy		compliance with GBC HB requirements	Italian legislation or can Energy specialist	-	-	3	4	5	В	CE			
	performance of buildings			in performing the energy assessment of										
		In Use		a building in compliance with ASHRE										
		90.1.2007								SC				
	Learn the basis of methods	s of methods Detailed Design Knows how to verify the percentage of renewable energy Is able to document Renewable Energy								BEC				
PG1	recognized by GBC HB to		chows now to verify the percentage of renewable energy	credit starting from the calculations and	-	-	3	4	5	В	CE			
	production		production on secting the total energy consumption	documents prepared by Energy specialist										
		In Use									50			
	Learn the basis of methods	Detailed Design	-	Can take part to the discussion in a							BEC			
PG1	PG1 guarantee the ongoing	Ŭ	Knows how to implement Measurements and Verifications	project team being able to address the	-	-	3	4	5	в	CE			
	monitoring of energy		protocols during the operation of a building	Implementation of energy monitoring										
	performance of a building	In Use		pians										
	Understand the value of		Knows the details of a Commissioning process compliant with								SC			
ND1	implementing the	Detailed design	LEED requirements, including: reference standards, type of	Is able to explain the main steps and			2	4	-	D	CE			
NPI	design, construction and	construction	commissioning, main required activities, main documents, CxA	perfroming Commissioning activities	-	-	2	4	5	Б	FaM			
	operation of a building	In Use	requirements											
		Conceptual design		Can explain the best strategies that can							UP			
		Detailed design	Has a general knowledge of potential strategies to reduce the	be implemented during design and							AR			
MW1	Understand the environmental	Construction	amount of waste generated during construction activities and	construction to reduce the waste	1	2	2	4	5	D/N				
	impacts of waste generation	construction	to increase the percentage of waste recycled, reused and	during the lifespan of a building (during	1	-	5	-	- <sup>-</sup>	0,11	CL			
			diverted from landfill.	construction, through the use stage and							SC			
				end of life)							EE CC			
	Learn LEED criteria to reduce	Conceptual design		Is able to guide design and construction							SC			
	construction and demolition	Detailed design	Has a general knowledge of LEED criteria to address waste	team in implementing effective waste							AR			
PL1	and incineration facilities by	Construction	reduction and recycling potential in construction activities	management strategies during	-	2	3	4	5	B/N	CE			
	recovering, reusing, and			LEFD credits							EE			
	recycling materials		1											
	Learn GBC HB criteria to	Conceptual design									SC			
	reduce construction and	Detailed design		Is able to guide design and construction							AR			
PG1	in landfills and incineration	Construction	Has a general knowledge of GBC HB criteria to address waste	management strategies during		2	3	4	5	в	CE			
	facilities by recovering,		reduction and recycling potential in construction activities	construction and to document related		Ĺ				5	EF			
	reusing, and recycling			GBC HB credits										
	materials													
	understand the importance of designing buildings in a way	Conceptual design	Has a general knowledge of the main strategies able to	Is able to list possible strategies to reduce							SC AR			
MD1	that resources depletion and		reduce primary resources depletion and waste generation	primary resourses depletion and waste	1	2	3	4	5	В	CE			
	waste generation are		(e.g. reuse of buildings and/or components, design for disassembly)	generation over the lifespan of a building							SC			
	minimized	Concent di												
		Detailed design	pt design ed design							AR				
PG1	Learn how to assess the level	betailed design	Knows criteria and requirements recognized by GBC HB to	Is able to document the Reuse of building	-	-	3	4	5	В	C			
	or reuse or buildings	assess the level of reuse of buildings credits												
		Is able to evolving the basic of a life quele							50					
		Conceptual design		assessment (e.g. primary and secondary							JC			
	Understand the principles of a	Detailed design	Has a basic knowledge of the life such association	data; quantify impacts; whole-building life							AR			
MS1	approach to reduce the	Construction	methodology and its potential in the reduction of the	cycle assessment; environmental	-	2	3	4	5	В	FF			
	environmental impact of the		environmental impact of the construction sector	attributes used in Environmental Product										
	built environment			[PCR]) and LEED criteria for LCA										
	built environment	built environment			development									



Area of	Learning outcome	Stage of the	Knowledge	Skill	Rec	uesteo co	d for th mpete	ne level nce	s of	Scale 🖕	Profession
Expertis	(10)	project			1	2	3	4	5		_
	Learn which criteria are	Conceptual design									SC
	recognized by LEED to	Detailed design	Knows accepted strategies and related LEED points to reduce	Can take part to the discussion with	l						AR
PL1	demonstrate reduced	Construction	the impact of construction: reusing existing building resources	design team and LCA specialist to guide	-	-	3	4	5	В	EE
	initial project decision-		environmental impact through life-cycle assessment.	in compliance with LEED requirements	1						
	making.				l						
	Understand the meaning of	Conceptual design		Is able to list some environmental labels							SC
1462	different environmental labels	Detailed design	Has a genenral knowledge of different types of environmental	available for building products and	1		2		-		AR
MSZ	available for the construction	Construction	sector	components in relation to different	1	2	3	4	5	в	Faivi
	sector	In Use		sustainability features and requirements							
	Understand the main	Detailed desires	the second here of contractions in the state of the second state o	Is able to list the main sustainability							SC
MS2	sustainability criteria for	Construction	materials, such as recycled content, regionality, renewable	criteria recognized by LEED and the main	1	2	3	4	5	в	FaM
	building materials and		material content, recyclability, disclosure of chemical content.	sustainability rating systems for building							С
	components	In Use		materials and components.	<u> </u>					-	
	Learn accepted environmental	cepted environmental Detailed design demonstrate the use of materials		Can select eco-friendly materials	l						AR
PL1	labels for building materials	Construction	demonstrate the use of materials for which life-cycle	compliant with LEED criteria and	-	-	3	4	5	В	C
	materials)		economically, and socially preferable life-cycle impacts.	document LEED compliance	l						
			Knows which onvironmental labels are seen with the 1550 to		├──	├──					sc
	Learn accepted environmental	Detailed design	demonstrate the use of materials for which the chemical	Can select healthy materials compliant	ł						AR
PL1	apels for building materials	Construction	ingredients in the product are inventoried using an accepted	with LEED criteria and document LEED	- 1	-	3	4	5	В	С
	materials)		methodology and disclosed to the market and for which the	compliance	l						
			use and generation of narmful substances is minimized		⊢	├					50
		Can select eco-friendly materials I Detailed design Knows which environmental labels are recognized by GBC HB compliant with GBC HB criteria and is able		ł						JC 4.D	
	learn accepted environmental labels for building materials	Detailed design	to demonstrate the use of materials for which life-cycle	to document GBC HB criteria and is able	l						AK
PG1	and components (eco-friendly	Construction	information is available and that have environmentally,	the use of sustainable materials (regional	-	-	3	4	5	В	С
	materials)		economically, and socially preferable life-cycle impacts.	materials, certified materials, recycled	l						
				content,)							
		Conceptual design	Has a general knowledge of the main principles and strategies								SC
	indoor air quality to	Detailed design	ventilation (natural, mechanical, hybrid ventilation),	Is able to list the main design,							AR
CQ2	contribute to the comfort and	Construction	contaminants emission reduction (indoor and outdoor	construction and operation strategies to	1	2	3	4	5	В	BEC
	well-being of building		smoking prohibition, low-emitting materials, indoor air quality	building							C
	occupants	In Use	contamination prevention.								CE
		Conceptual design	Knows which products categories should be considered in the								SC
		Detailed design	design and construction to reduce concentrations of chemical Can select low-emitting materials								ΔR
PL1	Learn accepted labels and requirements for low-emitting materials	Construction	contaminants that can damage air quality, human health, productivity, and the environment (e.g. paints and coatings,	compliant to LEED requirements, being able to evaluate environmental claims and	-	-	3	4	5	в	,
		Construction	adhesives and sealants, flooring, thermal and acoustic	, flooring, thermal and acoustic MSDS (Material Safety Data Sheet) of ed acceptable volatile organic products and components	is and : f		-			-	FaM
		la Llas	insulation,) and related acceptable volatile organic	products and components	1						Fdivi
		in Use	Knows which products categories should be considered in the		<u> </u>	<u> </u>					SC
		Conceptual design	design and construction to reduce concentrations of chemical	Can select low-emitting materials	l						
DC1	Learn accepted labels and	Detailed design	contaminants that can damage air quality, human health,	compliant to GBC requirements, being	l		2	4	-	D	AR
PGI	materials	Construction	adhesives and sealants, flooring, thermal and acoustic	MSDS (Material Safety Data Sheet) of	-	-	2	4	5	D	С
		la Lico	insulation,) and related acceptable volatile organic	products and components	1						
	Learn how to assess the	Conceptual design	compound (VOC) emissions and content.		<u> </u>	├──					SC
	effectiveness of natural	Detailed design	Knows notural vantilation principlas, design criteria and	Can take part to the discussion in project	l						CE
PL1	ventilation strategies to		monitoring requirements recognized by LEED	team to guide the design and operation of	- 1	-	3	4	5	В	EE
	guarantee good indoor air quality	In Lice	,	ettective naturally-ventilated buildings	l						BEC FaM
	Learn accented standards and	Conceptual design		Can take part to the discussion in project							SC
DI A	basic principles for the design	Detailed design	Knows principles, design criteria and monitoring requirements	team to guide the design and operation of	ł						CE
PLI	of mechanically-ventilated		for mechanically-ventilated buildings recognized by LEED	effective mechanically-ventilated		-	3	4	5	в	BEC
	pullaing	In Use		buildings	<b> </b>						FaM
	Learn accepted standards and	Conceptual design		Can take part to the discussion in project	l						SC
PG1	of natually-ventilated or	Detailed design	Knows principles, design criteria and requirements for	team to guide the design and operation of	-	-	3	4	5	в	EE
	mechanically-ventilated		venuiation systems recognized by GBC HB	enective naturally-ventilated or mechanically-ventilated buildings	ł						BEC
	buildins	In Use		,	⊢	<u> </u>					sc
	Learn basic principles and GBC	Detailed design	Knows principles and air extraction requirements to sucid	Can take part to the discussion in project	ł						CE
PG1	contaminant emission source		cross-contamination control	compliance with the GBC HB credits and	-	-	3	4	5	В	EE
	control	In Use		requirements in the field	l						BEC
		In Use Conceptual design Knows principles, design and construction criteria to manage Conceptual design Knows principles, design and construction criteria to manage Conceptual design Conceptua	(						SC		
	Learn recognized management	Detailed design	and improve the indoor air quality during construction and	team to guide the design, construction	ł						CE
CQ2	of and improvements to indoor air quality strategies	Construction	operation of buildings (e.g., source control; filtration and dilution: construction indoor air quality: air testing: outdoor	and operation of effective strategies to manage and improve indoor air quality in	-	-	3	4	5	В	BEC
		In Use	air level ongoing monitoring,)	buildings	ł						FaM
	Learn how to minimize			Is able to define and control the	(						SC
TS1	occupants exposure to indoor air contaminants during	Construction	Knows criteria and strategies to manage and improve the indoor air quality during construction activities and first	implementation of an indoor air quality	l -	_	3	4	5	R	CE AR
131	construction and first	As built	occupancy of buildings	management plan during construction	i -	<sup>-</sup>	5	4		U	BEC
	TS1 air contaminants during construction and first occupancy		-	compliant with GBC HB requirements.	L						



Area of Expertis	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Re	queste co	d for th mpete	ne level nce	s of •	Scale 🛫	Profession
					1	2	3	4	5		
	Understand the importance of	Conceptual design	-	Can take part to the discussion in a							SC
	daylight to contribute to the	Detailed design	Has a general knowledge of the benefits of daylight and the	project team being able to discuss basic			_			_	AR
CV1	comfort and well-being of		main design strategies applicable at the building level	principles and design strategies for daylit	1	2	3	4	5	В	BEC
	building occupants			spaces							CE
		Concentual design		Can take part to the discussion with							50
	Learn recognized metrics to	Dotailed design	Has a basic knowledge of recognized standards, criteria and	design team and Davlight specialist to							SC.
CV1	assess the daylight availability	Detailed design	methods to access and verify the daylight availability and	guide strategies and documentation	-		3	л	5	в	CE
	inside a building		glare probability inside a building	submission in compliance with LEED			5	-		D	CL
	inorae a pananig	In Use	Build broodbirty inside a banang	requirements							
		Conceptual design		Can take part to the discussion with							SC
	Learn advanced strategies to	Detailed design	Has a basic knowledge of strategies and assessment criteria	design team and space planning specialist							AR
PL1	guarantee connection to the		to guarantee connection to outdoor environments by	about strategies to guarantee quality	-	-	3	4	5	В	
	natural outdoor environment		providing quality views	views for occupants as recognized by							
		In Use		LEED							
	Understand the importance of	Concept design		Can take part to the discussion in a							SC
	interior lighting quality to	Detailed design	Has a general knowledge of the definition of quality of	project team being able to discuss							AR
CV2	contribute to the comfort and		astificial lighting	strategies for artificial lighting to	1	2	3	4	5	В	BEC
	well-being of building		a tricial lighting	guarantee optimum visual comfort							CE
	occupants			conditions							
	Learn accepted criteria and	Concept design	Knows lighting quality cirteria recognized by LEED that can	Can take part to the discussion with							SC
	values to assess the interior	Detailed design	contribute to improve occupants' comfort and productivity	design team and Lighting specialist to							AR
PL1	lighting quality inside a		(e.g. tradeoffs (color, efficiency): surface reflectance: types of	guide strategies and documentation	-	-	3	4	5	В	BEC
	building		(	submission in compliance with LEED							CE
		In Use		requirements							
	Understand the importance of	Concept design	-	Can take part to the discussion in a							SC
	acoustic comfort to contribute - to the comfort and well-being -	Detailed design	Has a general knowledge of the basis of acoustic comfort	project team being able to discuss basic			_		-		AR
CA1			inside a building	principles and strategies for acoustic	1	2	3	4	5	в	CE
	of building occupants		-	comfort inside a building							
		Concent design		Can take part to the discussion with							SC
	Learn accepted criteria and	Detailed design	Knows acoustic comfort cirteria and reference standards	design team and Acoustic specialist to							AR
PL1	values to assess acoustic		recognized by LEED that guarantee effective acoustic design	guide strategies and documentation	-	-	3	4	5	в	CE
	comfort conditions inside a		(e.g. exterior and interior noise; background noise; dead vs.	submission in compliance with LEED							
	building		live spaces)	requirements							
	1	Concept design		Can take part to the discussion with							SC
	Learn accepted criteria and	Detailed design	Knows basic principles, design strategies and assessment	design team and MEP specialist to guide							AR
CT1	values to assess thermal		indeer space (e.g. strategies to promote accupied	strategies and documentation submission	-	-	3	4	5	В	CE
	building		anductivity and comfort: values of occupant satisfaction)	in compliance with LEED/GBC							BEC
	banang		productivity and connort, values or occupant satisfaction)	requirements							
		Concept design	-								SC
	Learn how to earn and	Detailed design	Knows how to earn and document Innovation credits. Regional	Is able to manage the LEED assessment							AR
PL1	document Innovation and		Priority credits and Pilot credits	for the Innovation and Regional Priority	-	-	3	4	5	B/N	CE
	Regional Priority credits			categories							
		In Use									50
	Learn how to earn and	Detailed design	4								AR
PG1	document Regional Priority	Detailed design	Knows how to earn and document Regional Priority credits	Is able to find Regional Priority for	-	- I	з	4	5	в	CE
101	credits		and the carry and document negronal monty creats	different project locations			5	-		D	
			1								
		Concept design									SC
		Detailed design	1								AR
PG1	Learn how to earn and		Knows how to earn and document Innovation credits	Is able to document Innovation credits	-	-	3	4	5	В	CE
	aocument Innovation credits		1								
1	1		1			1					1



## 12.12 WELL AP

Area of Expertise	Learning outcome (LO)	Stage of the	Knowledge	Skill	Requested for the leve competence			Requested for the levels of competence				Requested for the levels of competence			Requested for the levels of competence			Professions
	()	p			1	2	3	4	5									
	Understand the basis of WELL	Conceptual design	Knows the basis of the WELL certification process, including:	Can basically manage the WELL certification							UP							
	certification process and	Detailed design	rating system versions, struture of the standard (Concepts,	process							AR							
PW1	fundamentals of DELOS and	Construction	Preconditions, Features), certification levels, WELL tools and		1	2	3	4	5	B/N	CE							
	INVELOI BAIIIZATION		verification on site, registration of the project on WEIL Online								SC							
		In Use	and role of documentation submission.								FaM							
	Understand the principles	Conceptual design	Knows the assessment methodology, including rating system	Can explain the principles behind the WELL							UP							
	behind the WELL rating	Detailed design	structure, WELL development process (consensus-based	assessment methodology and the WELL							AR							
PW1	system	Construction	process; stakeholder and volunteer involvment; rating system	development process	1	2	3	4	5	B/N	CE							
			updates and evolution process) and regional alternative								SC							
	1 4h - 1-44ll	In Use	compliance path.	1							FaM							
	Learn the international Standards that are recognized	Conceptual design	knows, for each Concept, the main reference Standards that	is able to list the reference international standards that support WELL cortification														
PW1	by WELL	Construction	should be applied	standards that support WELL certification	1	2	3	л	5	B/N	CE							
	by well	construction	-		-	2	۲ I	-		0/14	SC							
		In Use	1								FaM							
	Understand the relationship	Conceptual design	ceptual design Knows the possible synergies and relationship between WELL Is able to explain synergies and relationsh								UP							
	between WELL and other	d other Detailed design and other rating systems, such as LEED, BREEAM, Living betwee		between WELL and other standards							AR							
PW1	green building rating systems	Construction	Building Challenge,		1	2	3	4	5	B/N	CE							
	(e.g. LEED)		4								SC							
	Loorn how to manage the	In Use Concontual design	Knows the practical rules, implications and stops to manage	Is able to define a WELL work plan to							FaM							
	WELL certification and re-	Detailed design	the WELL certification and re-certification during the design	manage the certification and re-							ΔR							
PW2	certification process	Construction	construction and operation phases	certification process during the design.	-	-	3	4	5	в	CE							
		As built	1 ' '	construction and operation of a building.														
		In Use																
	Learn how to manage a WELL	Conceptual design	Knows how to hold a stakeholder charrette to identify	Is able to support the design, construction							SC							
	certification process	Detailed design	strategic project goals, discussing needs of the occupants,	and operation team in developing							AR							
PW2		Construction	developing a plan to implement targeted WELL concepts and	strategies, actions and policies compliant	-	-	3	4	5	В	CE							
		In Lico	preparing operations and maintenance plans related to	WITH WELL														
	Inderstand the applicability	Concentual design	Knows the general rules that should be considered to select	Is able to manage project variations and							sc							
	of the WELL Building Standard	Detailed design	the right version for different project types	control the WELL assessment project to							AR							
PW2	to building sectors and project	Construction		guarantee consistency across features	-	-	3	4	5	В	CE							
	typologies																	
		In Use																
	Learn how to support the	Conceptual design	Knows how to identify resources needed to complete the	Is able to guide and draft the							SC							
	project team in pursuing the	Detailed design	submittal process (e.g., WELL assessors, architects, interior	documentation of WELL features							ΔR							
D14/2		Construction	officers wellness coordinators MEP engineers acoustical				2	4	5	D	CE							
P WZ		construction	consultants, indoor air quality testing labs, water testing labs)		-	-	2	4	5	D	LE							
			and which type of documentation is required for submission.															
		In Use																
	Understand the value of the	Conceptual design	Has a general knowledge of the basic principles of an	Can explain the basis of an integrative							SC							
	implementation of an	Detailed design	integrative design process compared to a standard linear	design approach and can explain pros and							۸R							
DI1	integrative design process	Construction	approach (system thinking, early analysis of interrelations	cons			2		-	P	An							
	and the basic principles	basic principles among systems), the benefits (cost-effective project As built outcomes,), the methods (charrette, workshop, recurrent	-	5	4	5	D	EE										
	behind		outcomes,), the methods (charrette, workshop, recurrent								CE							
		In Use	analysis,) and available instruments								BEC							
	Understand the basic	Conceptual design	Has a general knowledge of the main synergies between all	Can identify the impact of different design,							SC							
Duta	interrelation among WELL	Detailed Design	concepts addressed in the WELL Building Standard (e.g.,	construction and operational strategies on			-		-		AR							
PWI	concepts and reatures	Construction	and mindful eating)	WELL assessment	-	-	2	4	5	D	FdIVI							
		In Use																
		Conceptual design	Line a general knowledge of the value of healthy built								UP							
		Detailed Design	environments (e.g., project quality, consistency, building	Discusses about the values of healthy							ΔR							
	Understand the values of		performance, staff retention, improved user outcomes,	building to support the general														
QV2	healthy buildings	A = 1 - 11	enhanced health and wellness of occupants,	understanding of social and economic	1	2	3	4	5	B/N	CE							
		As built	marketing/branding opportunities) and the strategies	benefits							EE							
		In Use	involved to communicate them to stakeholders								SC							
		Conceptual design	Has a general knowledge about basic categories of incentive-								SC							
	Understand which are the	Detailed design	types for clients to implement healthy building practices and	Is able to discuss with developers and							ΔR							
0.14	most effective and more	Detalled design	knows how to use financial analyses to support WELL and	stakeholders the most effective strategies	1				-		70							
QVI	popular strategies to	•	green buildings (e.g., return on investment, triple bottom line,	to incentivize the spread of green and	1	2	3	4	5	в								
	building		increased productivity, value proposition for implementing	healthy certified buildings														
		In Use	strategies)															
		Conceptual design	Has a general knowledge of risk levels associated with								SC							
	Understand the impacts of air	Detailed design	airborne contaminants, risk and protective factors around								AR							
CQ2	quality on human health and	Construction	acute and chronic conditions related to airborne contaminants	Is able to discuss the impact of indoor air	1	2	3	4	5	B/N	FaM							
	wellness		and knows which are the main positive outcomes in terms of	quality on people							С							
		In Use	effect on performance and productivity of building occupants								CE							
<u> </u>		In Use Conceptual design							sc									
	Understand the problem of air	derstand the problem of air Detailed design Has a general know	Has a general knowledge of sources, vectors and routes of								AR							
CQ1	contamination inside a	Construction	human exposure to airborne contaminants throughout the	Is able to list the main sources of air	1	2	3	4	5	В	FaM							
· ·	building	As built	lifecycle of the buildings and products	contamination							С							
		In Use									CE							
		Conceptual design	Knows principles, design and construction criteria to manage	Con take part to the discussion is and							SC							
	management and	Detailed design	and improve the indoor air quality during construction and	team to guide the design, construction and							CE							
CQ2	improvements to indoor air	Construction	operation of buildings (e.g., source control; filtration and	operation of effective strategies to manage	and	3	4	5	В	AR								
	quality strategies		dilution; construction indoor air quality; air testing; outdoor	and improve indoor air quality in buildings							BEC							
1	-	in Use	an ievel ongoing monitoring,)	1	1	1				1	FaM							



Area of Expertise	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Requested col		d for th mpeter	e level nce 4	s of	Scale	Professions
PW1	Learn which are the major indoor air pollutans addressed by WELL	Conceptual design Detailed design Construction In Use	Knows which are the major indoor air pollutans addressed by WELL and related maximum threshold levels required to be met in WELL certified buidings	ls able to list major indoor air pollutans addressed by WELL and related maximum allowed concentration levels	-	-	3	4	5	в	SC CE AR BEC FaM
CQ4	Understand the importance of reducing and controlling radon exposure of building occupants	Conceptual design Detailed design	Knows how to tackle the radon exposure risk	Can take part to the discussion in a project team being able to suggest mitigation and control strategies compliant with WELL requirements	1	2	3	4	5	В	SC AR CE
PW1	Learn how to assess the effectiveness of natural ventilation strategies to guarantee good indoor air quality	Conceptual design Detailed design In Use	Knows natural ventilation principles, design criteria and monitoring requirements recognized by WELL	Can take part to the discussion in project team to guide the design and operation of effective naturally-ventilated buildings	-	-	3	4	5	В	SC CE EE BEC FaM
PW1	Learn accepted standards and basic principles for the design of mechanically-ventilated building	Conceptual design Detailed design In Use	Knows principles, design criteria and monitoring requirements for mechanically-ventilated buildings recognized by WELL	Can take part to the discussion in project team to guide the design and operation of effective mechanically-ventilated buildings	-	-	3	4	5	В	SC CE EE BEC FaM
CQ3	Understand strategies for air filtration	Conceptual design Detailed design In Use	Have a general knowledge of the main filtration strategies of outdoor air and recirculated air to reduce the concentration of particulate matters and volatile organic compounds.	Can list solutions to to reduce the concentration of particulate matters and volatile organic compounds inside a building	- ng 1		3	4	5	В	SC CE EE BEC FaM
MS2	Understand the meaning of different environmental labels available for the construction sector	Conceptual design Detailed design Construction In Use	Has a genenral knowledge of different types of environmental labels, their significance and utility in the green building sector	Is able to list some environmental labels available for building products and components in relation to different sustainability features and requirements	1	2	3	4	5	В	SC AR FaM
PW1	Understand the main sustainability criteria for building materials and components recognized by WELL	Detailed design Construction In Use	Has a general knowledge of sustainability criteria for halthy building materials, such as lead restriction criteria, disclosure of chemical content,	Is able to list the main sustainability criteria recognized by WELL for building materials and components.	-	-	3	4	5	В	SC AR FaM C
PW1	Learn accepted environmental labels for building materials and components	Detailed design Construction	Knows which environmental labels are recognized by WELL to demonstrate the use of materials for which the chemical ingredients in the product are inventoried using an accepted methodology and disclosed to the market and for which the use and generation of harmful substances is minimized	Can select healthy materials compliant with WELL criteria and document WELL compliance	-	-	3	4	5	В	SC AR C
PW1	Learn accepted labels and requirements for low-emitting materials	Conceptual design Detailed design Construction In Use	Knows which products categories should be considered in the design and construction to reduce concentrations of chemical contaminants that can damage air quality, human health, productivity, and the environment (e.g. paints and coatings, adhesives and sealants, flooring, thermal and acoustic insulation,) and related acceptable volatile organic compound (VOC) emissions and content.	Can select low-emitting materials compliant to WELL requirements, being able to evaluate environmental claims and MSDS (Material Safety Data Sheet) of products and components	-	-	3	4	5	В	SC AR C FaM
UI3	Learn the importance of maintenance activities of buildings to guarantee good indoor air inside a building during operation	Conceptual design Detailed design Construction In Use	Have a general knowledge of how to manage key classes of pollutants, how they arise from building features (e.g., microbiologicals, gases, particulates), causes and effects of building envelope leaks, floods and condensation issues and strategie to control and mitigate the negative effects on indoor air	Is able to list issue, maintenance and monitoring strategies to manage indoor air during operation	-	-	3	4	5	В	SC AR FaM
NP1	Understand the value of implementing the commissioning process during design, construction and operation of a building	Detailed design Construction In Use	Has a general knowledge of the basis of the commisisoning process, pros and cons.	Is able to explain the meaning and the value of implementing a commissioning process, benefits and costs.	1	2	3	4	5	В	SC AR CE FaM BEC
NP1	Understand the value of implementing the commissioning process during design, construction and operation of a building	Detailed design Construction In Use	Knows the details of a Commissioning process compliant with WELL requirements, including: reference standards, type of commissioning, main required activities.	Is able to explain the main steps and WELL requirements in perfroming Commissioning activities	-	-	3	4	5	В	SC BEC CE FaM
CQ1	Learn strategies to proper manage cleaning of indoor environments during the operation phase	In Use	Knows principles and strategies to reduce the risk of chemicals and improper cleaning techniques that can undermine indoor air quality: use of low-emitting cleaning products, equipments requirements, clenability of high-touch surfaces, storage requirements of chemicals	Is able to list the best management strategies for cleaning	-	-	3	4	5	В	SC FaM O
PW1	Learn the requirements of preconditions and optimizations of Air Concept	Conceptual design Detailed design Construction In Use	Knows the Parts and requirements of each preconditions and optimizations of the concept Air and knows which evidence are required for certification	Can take part to the discussion in project team addressing strategies compliant to WELL requirements	-	-	3	4	5	В	SC AR
CW1	Understand the impacts of water quality on human health and wellness	Conceptual design Detailed design Construction In Use	Has a general knowledge of global burden of disease related to water quality and accessibility and risk factors associated with health outcomes caused by source water contaminants	Is able to discuss the impact of water quality on people	1	2	3	4	5	B/N	SC FaM BO CE EE
CW1	Understand the problem of water contamination	Conceptual design Detailed design Construction As built In Use	Has a general knowledge of sources, vectors and routes of water contaminants	Is able to list the main sources of water contamination	1	2	3	4	5	B/N	SC FaM BO CE EE
CW1	Understand strategies effective for water filtration	Conceptual design Detailed design In Use	Have a general knowledge of the main filtration strategies of water to reduce the concentration of organic chemicals, sediments and microbs	Can list solutions to to reduce the concentration of organic chemicals, sediments and microbs in water	-	-	3	4	5	В	SC CE EE BEC FaM



Area of Expertise	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Reque		Requesto		d for th mpeter	ie level nce	s of	Scale	Professions
		Conceptual design			1	2	3	4	5		50		
PW1	Learn which are the major water contaminants addressed by WELL	Conceptual design Detailed design Construction	Knows which are the major water pollutans addressed by WELL and related quality criteria required to be met in WELL certified buidings for water delivered to the project area for human use	Is able to list major water pollutans addressed by WELL and related water quality cirteria	-	-	3	4	5	в	AR		
PW1	Understand the importance of encouraging daily water consumption and effective strategies recognized by WELL	In Use Conceptual design Detailed design Construction	Knows how to promote drinking water with design strategies	Can take part to the discussion in project team addressing strategies compliant to WELL requirements for drinking water promotion	-	-	3	4	5	В	SC AR		
PW1	Learn the requirements of preconditions and optimizations of Water Concept	Conceptual design Detailed design Construction In Use	Knows the Parts and requirements of each preconditions and optimizations of the concept Water and knows which evidence are required for certification	Can take part to the discussion in project team addressing strategies compliant to WELL requirements	-	-	3	4	5	в	SC AR		
PW1	Learn how to implement WELL compliant strategies	Conceptual design Detailed design Construction In Use	Knows accepted WELL strategies for encouraging healthy eating behaviors (e.g., culture, education, break room spaces, dinnerware sizes, transparency about food ingredients) and healthy foods consumption (e.g., circulation, ease of access, location of fruits and vegetables,)	Can support project teams in developing WELL compliant design and management strategies	-	-	3	4	5	В	SC		
PW1	Learn how to implement WELL compliant strategies	Conceptual design Detailed design Construction	Knows accepted WELL strategies for encouraging food production close to the building	Can support project teams in developing WELL compliant design and management strategies for local food production	÷	-	3	4	5	в	SC		
PW1	Learn how to implement WELL compliant strategies	Conceptual design Detailed design Construction In Use	Knows accepted WELL strategies related to food safety basics (e.g., sources of food contamination, preparation, responsible handling, storage)	Can support project teams in developing WELL compliant design and management strategies for food safety storage amd management	-	-	3	4	5	в	SC		
PW1	Learn how to manage special project situation	Conceptual design Detailed design Construction In Use	Knows strategies for applying Features based on the project situation (e.g., cafeteria vs. no cafeteria, kitchen facilities, creating lease language in food court/concessions, individual restaurants, creating mindful eating spaces)	Can support project teams in assessing the compliance to Nourishment features for any project situation	-	-	3	4	5	В	SC		
PW1	Learn the requirements of preconditions and optimizations of Nourishment Concept	Conceptual design Detailed design Construction In Use	Knows the Parts and requirements of each preconditions and optimizations of the concept Nourishment and knows which evidence are required for certification	Can take part to the discussion in project team addressing strategies compliant to WELL requirements	-	-	3	4	5	в	SC		
CV4	Understand the impacts of light on human health	Conceptual design Detailed design As built In Use	Has a general knowledge of health implications of light (difference between light for circadian functioning, psychological well-being and vision, positive and negative impacts of light exposure, mechanisms associated with disruption to the circadian system,)	Can take part to the discussion in a project team being able to discuss health implication of light	1	2	3	4	5	B/N	SC		
CV1	Understand the importance of daylight to contribute to the comfort and well-being of building occupants	Conceptual design Detailed design As built In Use	Has a general knowledge of the benefits of daylight and the main design strategies applicable at the building level	Can take part to the discussion in a project team being able to discuss basic principles and design strategies for daylit spaces	-	-	3	4	5	В	SC AR BEC CE FaM		
CV4	Understand the importance of circadian lighting design to contribute to the comfort and well-being of building occupants	Conceptual design Detailed design As built In Use	Has a general knowledge of circadian lighting principles and design strategies at the building level (link between melanopic lux and circadian functioning, daylight as an energy effective way of delivering circadian and other well-being benefits)	Can take part to the discussion in a project team being able to discuss basic principles and design strategies for circadian lighting design	1	-	3	4	5	В	SC AR BEC CE FaM		
PW1	Learn recognized criteria, metrics and standard for visual lighting design and circadian lighting design	Conceptual design Detailed design In Use	Knows recognized criteria, metrics and standard recognized by WELL to advise the visual lighting design and circadian lighting design	Can take part to the discussion with design team and Lighting specialist to guide strategies and documentation submission in compliance with WELL requirements	-	-	3	4	5	В	SC AR CE		
CV1	Learn recognized metrics to assess the daylight availability inside a building	Conceptual design Detailed design In Use	Has a basic knowledge of recognized standards, criteria and methods to assess and verify the daylight availability and glare probability inside a building	Can take part to the discussion with design team and Daylight specialist to guide strategies and documentation submission in compliance with WELL requirements	-	-	3	4	5	в	SC AR CE		
PW1	Learn advanced strategies to guarantee connection to the natural outdoor environment	Conceptual design Detailed design In Use	Has a basic knowledge of strategies and assessment criteria to guarantee connection to outdoor environments by providing quality views	Can take part to the discussion with design team and space planning specialist about strategies to guarantee quality views for occupants as recognized by WELL	-	-	3	4	5	в	SC AR		
CV2	Understand the importance of interior lighting quality to contribute to the comfort and well-being of building occupants	Concept design Detailed design	Has a general knowledge of the definition of quality of artificial lighting	Can take part to the discussion in a project team being able to discuss strategies for artificial lighting to guarantee optimum visual comfort conditions	1	2	3	4	5	В	SC AR BEC CE		
PW1	Learn accepted criteria and values to assess the interior lighting quality inside a building	Concept design Detailed design In Use	Knows lighting quality cirteria recognized by WELL that can contribute to improve occupants' comfort and productivity (e.g.illumination, luminance balance, glare control, color quality, flicker, light adaptation, non-visual intensity)	Can take part to the discussion with design team and Lighting specialist to guide strategies and documentation submission in compliance with WELL requirements	-	-	3	4	5	в	SC AR BEC CE		
PW1	Learn the requirements of preconditions and optimizations of Light Concept	Conceptual design Detailed design Construction In Use	Knows the Parts and requirements of each preconditions and optimizations of the concept Light and knows which evidence are required for certification	Can take part to the discussion in project team addressing strategies compliant to WELL requirements	-	-	3	4	5	В	SC		



Area of Expertise	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Requested for the le competence       1     2     3     4			Requested for the levels of competence				ested for the levels of competence			Professions
					1	2	3	4	5						
PW1	Learn which are the major water contaminants addressed by WELL	Conceptual design Detailed design Construction In Use	Knows which are the major water pollutans addressed by WELL and related quality criteria required to be met in WELL certified buidings for water delivered to the project area for human use	Is able to list major water pollutans addressed by WELL and related water quality cirteria	÷	-	3	4	5	в	SC AR				
PW1	Understand the importance of encouraging daily water consumption and effective strategies recognized by WELL	Conceptual design Detailed design Construction	Knows how to promote drinking water with design strategies	Can take part to the discussion in project team addressing strategies compliant to WELL requirements for drinking water promotion	-	-	3	4	5	В	SC AR				
PW1	Learn the requirements of preconditions and optimizations of Water Concept	Conceptual design Detailed design Construction	Knows the Parts and requirements of each preconditions and optimizations of the concept Water and knows which evidence are required for certification	Can take part to the discussion in project team addressing strategies compliant to WELL requirements	-	-	3	4	5	В	SC AR				
PW1	Learn how to implement WELL compliant strategies	Conceptual design Detailed design Construction	Knows accepted WELL strategies for encouraging healthy eating behaviors (e.g., culture, education, break room spaces, dinnerware sizes, transparency about food ingredients) and healthy foods consumption (e.g., circulation, ease of access, location of fruits and veeetables)	Can support project teams in developing WELL compliant design and management strategies	-	-	3	4	5	В	SC				
PW1	Learn how to implement WELL compliant strategies	Conceptual design Detailed design Construction In Use	Knows accepted WELL strategies for encouraging food production close to the building	Can support project teams in developing WELL compliant design and management strategies for local food production	-	-	3	4	5	В	SC				
PW1	Learn how to implement WELL compliant strategies	Conceptual design Detailed design Construction In Use	Knows accepted WELL strategies related to food safety basics (e.g., sources of food contamination, preparation, responsible handling, storage)	Can support project teams in developing WELL compliant design and management strategies for food safety storage amd management	-	-	3	4	5	В	SC				
PW1	Learn how to manage special project situation	Conceptual design Detailed design Construction In Use	Knows strategies for applying Features based on the project situation (e.g., cafeteria vs. no cafeteria, kitchen facilities, creating lease language in food court/concessions, individual restaurants, creating mindful eating spaces)	Can support project teams in assessing the compliance to Nourishment features for any project situation	-	-	3	4	5	В	SC				
PW1	Learn the requirements of preconditions and optimizations of Nourishment Concept	Conceptual design Detailed design Construction In Use	Knows the Parts and requirements of each preconditions and optimizations of the concept Nourishment and knows which evidence are required for certification	Can take part to the discussion in project team addressing strategies compliant to WELL requirements	-	-	3	4	5	В	SC				
CV4	Understand the impacts of light on human health	Conceptual design Detailed design As built In Use	Has a general knowledge of health implications of light (difference between light for circadian functioning, psychological well-being and vision, positive and negative impacts of light exposure, mechanisms associated with disruption to the circadian system,)	Can take part to the discussion in a project team being able to discuss health implication of light	1	2	3	4	5	B/N	SC				
CV1	Understand the importance of daylight to contribute to the comfort and well-being of building occupants	Conceptual design Detailed design As built In Use	Has a general knowledge of the benefits of daylight and the main design strategies applicable at the building level	Can take part to the discussion in a project team being able to discuss basic principles and design strategies for daylit spaces	-	-	3	4	5	В	SC AR BEC CE FaM				
CV4	Understand the importance of circadian lighting design to contribute to the comfort and well-being of building occupants	Conceptual design Detailed design As built In Use	Has a general knowledge of circadian lighting principles and design strategies at the building level (link between melanopic lux and circadian functioning, daylight as an energy effective way of delivering circadian and other well-being benefits)	Can take part to the discussion in a project team being able to discuss basic principles and design strategies for circadian lighting design	-	-	3	4	5	В	SC AR BEC CE FaM				
PW1	Learn recognized criteria, metrics and standard for visual lighting design and circadian lighting design	Conceptual design Detailed design In Use	Knows recognized criteria, metrics and standard recognized by WELL to advise the visual lighting design and circadian lighting design	Can take part to the discussion with design team and Lighting specialist to guide strategies and documentation submission in compliance with WELL requirements	-	-	3	4	5	В	SC AR CE				
CV1	Learn recognized metrics to assess the daylight availability inside a building	Conceptual design Detailed design	Has a basic knowledge of recognized standards, criteria and methods to assess and verify the daylight availability and glare probability inside a building	Can take part to the discussion with design team and Daylight specialist to guide strategies and documentation submission in compliance with WELL requirements	-	-	3	4	5	В	SC AR CE				
PW1	Learn advanced strategies to guarantee connection to the natural outdoor environment	Conceptual design Detailed design In Use	Has a basic knowledge of strategies and assessment criteria to guarantee connection to outdoor environments by providing quality views	Can take part to the discussion with design team and space planning specialist about strategies to guarantee quality views for occupants as recognized by WELL	-	-	3	4	5	В	SC AR				
CV2	Understand the importance of interior lighting quality to contribute to the comfort and well-being of building occupants	Concept design Detailed design	Has a general knowledge of the definition of quality of artificial lighting	Can take part to the discussion in a project team being able to discuss strategies for artificial lighting to guarantee optimum visual comfort conditions	1	2	3	4	5	В	SC AR BEC CE				
PW1	Learn accepted criteria and values to assess the interior lighting quality inside a building	Concept design Detailed design In Use	Knows lighting quality cirteria recognized by WELL that can contribute to improve occupants' comfort and productivity (e.g.illumination, luminance balance, glare control, color quality, flicker, light adaptation, non-visual intensity)	Can take part to the discussion with design team and Lighting specialist to guide strategies and documentation submission in compliance with WELL requirements	-	-	3	4	5	В	SC AR BEC CE				
PW1	Learn the requirements of preconditions and optimizations of Light Concept	Conceptual design Detailed design Construction In Use	Knows the Parts and requirements of each preconditions and optimizations of the concept Light and knows which evidence are required for certification	Can take part to the discussion in project team addressing strategies compliant to WELL requirements	-	-	3	4	5	В	SC				
PW1	Learn accepted WELL strategies to encourage an active lifestyle	Conceptual design Detailed design Construction In Use	Knows WELL recognized strategies for engaging behavioral change with design features (e.g., adjustable desk, adjustable chair, office circulation/movement) and encouraging occupants to be active in and out of the workplace	Can take part to the discussion in project team addressing strategies compliant to WELL requirements	-	-	3	4	5	В	SC AR				



Area of	Learning outcome	Stage of the			Rec	queste	d for th	ie level	s of		
Expertise	(LO)	project	Knowledge	Skill		со	mpete	nce		Scale	Professions
		Concontual design			1	2	3	4	5		sc
	Learn the requirements of preconditions and	Detailed design	Knows the Parts and requirements of each preconditions and	Can take part to the discussion in project							AR
PW1	optimizations of Fitness	Construction	optimizations of the concept Fitness and knows which	team addressing strategies compliant to	-	-	3	4	5	В	
	Concept	In Use	evidence are required for certification	WELLTEQUITEMENTS							
	Understand the importance of	Concept design		Can take part to the discussion in a project							SC
CA1	acoustic comfort to contribute	Detailed design	Has a general knowledge of the relationships between physical/environmental stress (including interruptions) and	team being able to discuss the relationships	1	2	3	4	5	в	AR CE
	to the comfort and well-being of building occupants	As built	impact on acoustic comfort	between physical environmental stress and impact on acoustic comfort							
		In Use Concept design									SC
	Understand the main	Detailed design	Has a geenral knowledge about design strategies appropriate	Can take part to the discussion in a project							AR
CA1	acoustic comfort conditions	As built	to diverse spaces and activities to maximize acoustic comfort	and strategies for acoustic comfort inside a	1	2	3	4	5	В	CE
	inside a building	In Use	and minimize hoise complaints	building							
	Learn accepted criteria and	Concept design		Can take part to the discussion with design							SC
PW1	values to assess acoustic	Detailed design	Knows acoustic comfort cirteria and reference standards recognized by WELL that guarantee effective acoustic design	team and Acoustic specialist to guide		-	3	4	5	в	CE
	comfort conditions inside a	As built	(e.g. NRC, NC, STC, reverberation time)	strategies and documentation submission in compliance with WELL requirements			_			_	
		In Use Concept design	sign Can take part to the discussion in a project								sc
	Understand the importance of thermal comfort to contribute	Detailed design	Has a general knowledge of positive and pogative impacts of	Can take part to the discussion in a project							AR
CT1	to the comfort and well-being		the built environment on thermal comfort	between thermal comfort and health and	1	2	3	4	5	В	CE
	of building occupants	As built In Use		wellbeing of occupants							BEC
		Concept design	Knows basic principles and design strategies to enhance								SC
	Understand the most	Detailed design	thermal comfort in occupied indoor spaces (e.g. strategies to	Can take part to the discussion with design							AR
CT1	errective strategies to enhance thermal comfort		promote occupants: productivity and comfort; values of occupant satisfaction, occupant control at workspace.	team and MEP specialist to guide strategies	-	-	3	4	5	В	CE
	inside a building		behavioral/move where occupant desires, apply adaptive	in compliance with WELL requirements							BEC
		thermal comfort model)									
	Learn accepted criteria,	Concept design	Knows methods and criteria to assess thermal comfort in	Can take part to the discussion with design							SC
PW1	metods and values to assess	Detailed design	occupied indoor spaces (measurement of thermal	team and MEP specialist to guide strategies and documentation submission in		-	3	4	5	в	CE
	thermal comfort conditions	As built	parameters, thermal comfort and interpretation of psychrometric chart	compliance with WELL requirements and			_			_	BEC
		In Use		assessment methods							
		Concept design Detailed design	Has a general knowledge of global burden of disease of	Can take part to the discussion in a project							AR
CR1	Understand the importance of ergonimics		musculoskeletal diseases related to poor ergonomics (e.g.,	team being able to discuss negative effects	1	2	3	4	5	В	
	cigoninics	As built	seating, desk, standing)	of poor ergonomics							
		Concept design		Con tales and the time discussion with desire							SC
	Learn accepted criteria and	Detailed design	Knows differences among ergonomics interventions to	team to guide strategies and			_		_	_	AR
PW1	requirements for ergonomics	ergonomics As built requirements documentation submission in compliance with WELL documentation submission in compliance with WELL requirements	-	-	3	4	5	В			
		In Use		with WELL requirements							
	Learn the requirements of	Conceptual design	Knows the Parts and requirements of each preconditions and	Can take part to the discussion in project							SC
PW1	preconditions and	Construction	optimizations of the concept Comfort and knows which	team addressing strategies compliant to	-	-	3	4	5	в	
	Concept		evidence are required for certification	WELL requirements							
		In Use Conceptual design									SC
	Understand the importance of	Detailed design	Has a general knowledge of the importance of psychological and social well-being to human health and global burden of	Can take part to the discussion in a project team being able to discuss the importance							AR
CR1	cognitive and emotional bealth for global wellbeing	As built	disease related to mental health (e.g., stress, depression,	of psychological and social well-being to	1	2	3	4	5	В	
	incular for Biobar wendering	In Use	anxiety, decreased productivity)	human health							
		Conceptual design	Has a general knowledge of design and management								SC
		Detailed design	strategies for stress reduction (e.g. self-monitoring, family support, sleep policy, job support), well-being promotion (e.g.	Can take part to the discussion in a project							
CR1	Understand strategies for stress reduction		health benefits programs, family care policies) and	team being able to list strategies at	-	2	3	4	5	В	
		As built	management of environmental stress and psychosocial stress	organizional level for stress reduction							
		In Use	materials and organizational transparency)								
		Conceptual design		Can take part to the discussion in a project							SC
CR1	Understand strategies to optimize productivity and well.	Detailed design	Has a general knowledge of design principles to reduce	team being able to list strategies at		2	з	4	5	в	
0.11	being	As built	zones, spacing, lighting, noise criteria)	organizional level for stress reduction		-				5	
		In Use		compliant with welle requirements							60
		Detailed design	Has a general knowledge of design and management strategies to provide workplace rest support (e.g. space and								SL
CP1	Understand strategies to		furniture options for rest, healthy sleep policy that limits	Can take part to the discussion in a project		2		4	-	P	
CKI	being	As built	business obligations during reasonable sleep hours,	rest	-	2	3	4		Ď	
	_	As built subsidizes devices/software to monitor sleep-related In Use behaviors)									
		Conceptual design									SC
	Understand strategies for Conceptual design Has a general knowledge of design strategies Detailed design delight, celebration of culture, celebration of	Has a general knowledge of design strategies for human delight, celebration of culture, celebration of spirit.	Can take part to the discussion in a project							AR	
CR1	incorporating beauty within the project	As built	celebration of place and meaningful integration of public art.	team being able toto optimize productivity compliant with WELL requirements	-	2	3	4	5	В	
		In Use		,							
		Conceptual design	Has a general knowledge of the concept of biophilia to	Can take part to the discussion in a project							SC
CP1	Understand strategies for	Detailed design	incorporate nature through environmental elements, lighting	team being able to list strategies compliant		2					AK
CRI	the project	As built	and space layout, incorporating nature's patterns throughout As huilt the design and opportunities for human-nature interarctions	-	2	3	4		в		
		In Use	within the building and external spaces	proprinte reatures							



Area of Expertise	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Re	queste co	d for th mpeter	e level nce 4	s of	Scale	Professions
CR1	Understand the importance pf education and awareness of occupants	Conceptual design Detailed design Construction As built In Use	Has a general knowledge of criteria and ways to promote health literacy, defined by the National Academy of Medicine as "the degree to which individuals can obtain, process, and understand the basic health information and services they need to make appropriate health decisions".	Can take part to the discussion in a project team being able to guide strategies to promote occupants' education and awareness	1	2	3	4	5	в	SC AR
PW1	Understand the value and criteria to assess organizational transparency	Conceptual design Detailed design As built In Use	Has a general knowledge of organization's transparency frameworks (social equity practices) to comply with ILFI's JUST program and/or GRI's Sustainability Reporting Framework	Can take part to the discussion in a project team being able to list accepted organization's transparency standards	-	2	3	4	5	в	SC
PW1	Learn the requirements of preconditions and optimizations of Mind Concept	Conceptual design Detailed design Construction In Use	Knows the Parts and requirements of each preconditions and optimizations of the concept Mindt and knows which evidence are required for certification	Can take part to the discussion in project team addressing strategies compliant to WELL requirements	-	-	3	4	5	в	SC
PW1 (	Learn how to earn and document Innovation features	Concept design Detailed design In Use	Knows how to earn and document Innovation features	Is able to manage the WELL assessment for the Innovation Concept	-	-	3	4	5	B/N	SC



## 12.13 DGNB Registered Professional

Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels o competence		s of	Scale	Professions		
Expertis	(LO)	project 🗾			1	2	3	4	5		
		Conceptual design	Basic knowledge of		_	_					AR
PD1	Understand basics of	Detailed design	sustainability, what is	Is able to define sustainability and	1	2	2	4	c	P/N	CE
FUI	and construction		ways are present to measure	sustainable strategies.	T	2	5	4	5	D/ N	C
			sustainability								UP
	Interaction of different	Conceptual design		is able to recognize and reflect							AR
PD2	aspects on sustainability and	Detailed design	Knows about the difference of	impacts on sustainability and to	1	2	3	4	5	B/N	EE
	importance of sustainability		impacts on sustainability	determine holistic planning							С
	······································		Basic konwledge of construction								UP
	Ontinuina de sina in estation	Conceptual design	sector and influence on	Is able to optimize design and							AR
FS2	to the social and functional	Detailed design	sustainability. Impacts of social	social and functional mixture and	1	2	3	4	5	B/N	CE FF
	mixture of services		and functional mixture on sustainability in buildings &	usage of synergetic interaction of							С
			neighborhoods.	different sustainability aspects							UP
		Conceptual design									AR
	Understand the importance	Detailed design	Basic knowledge on the impacts	Is able to understand approaches							CE
CV1	of visual comfort		on user of visual comfort	to avoid visual discomfort	1	2	3	4	5	В	EE
			-								C
		Concentual design									
		Detailed design									AR CF
CT1	Understand the importance		Basic knowledge on the impacts	Is able to understand approaches	1	2	3	4	5	В	EE
	of thermal comfort		on user of thermal comfort	to avoid thermal discomfort							с
											UP
		Conceptual design									AR
CA2 U	Understand the importance	Detailed design	Basic knowledge on the impacts	Is able to understand approaches							CE
	of acoustic comfort		on user of acoustic comfort	to avoid acoustic discomfort	1	2	3	4	5	В	EE
	or acoustic comfort										
		Conceptual design									ΔR
		Detailed design	Basic knowledge on toxic	Is able to identify different							CE
CQ1	Understand the importance		materials and their influence on	able to understand approaches to	1	2	3	4	5	В	EE
	or material emission	As Built	humans	avoid the usage and contact to							с
		In Use		pollutants							UP
		Conceptual design	Basic knowledge on LCA of	Is able to define a balance and							AR
	Understand the importance	Detailed design	of materials, increms of recycling	area of consideration on LCA calculation, knows how to use							CE
MS1	of LCA analysis in building	Ac Ruilt	new usages of buildings but also	databanks and literature to define	-	-	3	4	5	B/N	EE
	and neighborhoods	As built	on recycability and degradability	the impact of products and is able							ι
		in ose	Pasic knowledge on LCC of	to compare these							UP
	Understand at 1 .	Detailed design	buildings, in terms of recycling	area of consideration on LCC							AK
QC2	onderstand the importance of LCC analysis in buildings	Detanea desigli	of materials, impacts benefiting	calculation, knows how to use	-	-	3	4	5	B/N	FF
	and neighborhoods	As Built	new usages of buildings but also on recycability and degradability	databanks and literature to define the impact of products and is able						_/	c
		In Use	of buildings and neighborhoods	to compare these							UP
		Conceptual design	Knowledge of impacts of								AR
	Understanding of impacts in	Detailed design	resource saving construction,	Is able to define, understand,							CE
MS1	different fields on LCA		efficient use of land, energy and	fields. Can take actively part in	-	2	3	4	5	B/N	EE
			buildings and neighborhoods	project discussions.							с
		Concentual deal									UP
		Conceptual design	Knowledge of impacts of	Is able to define, understand.							AR
002	Understanding of impacts in	Detailed design	resource saving construction, efficient use of land, energy and	optimize effects LCC in various	-	2	3	4	5	B/N	FF
	different fields on LCC		water, biodiversity on LCC of	fields. Can take actively part in		-				_/	c
			buildings and neighborhoods	project discussions.							UP
		Conceptual design	Knowledge of the differrent								AR
		Detailed design	aspects connected to integral	Is able to take part in meetings on integral planning optimize							CE
KQ1	Understand of the	lerstand of the Construction planning, such as participation	planning, such as participation of	s participation of planning in terms of	1	2	3	4	5	B/N	EE
	integrateu uesign approach	As Built	background and what the	problem/solution focus, planning							с
		In Use	benefits of integral planning are	processes and operation							UP



### 12.14 DGNB Consultant

Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels of competence		s of	Scale	Professions		
Expertis	(10)	project		_	1	2	3	4	5		
PD1	Understand basics of sustainability in planning and construction	Conceptual design Detailed design	Basic knowledge of sustainability, what is considered sustainable and what ways are present to measure sustainability	Is able to define sustainability and to assess and implement sustainable strategies.	1	2	3	4	5	B/N	AR CE EE C
PD2	Interaction of different aspects on sustainability and understanding of importance of sustainability	Conceptual design Detailed design	Knows about the difference of impacts on sustainability	Is able to recognize and reflect impacts on sustainability and to determine holistic planning	1	2	3	4	5	B/N	AR CE EE C UP
FS2	Optimise design in relation to the social and functional mixture of services	Conceptual design Detailed design	Basic konwledge of construction sector and influence on sustainability. Impacts of social and functional mixture on sustainability in buildings & neighborhoods.	Is able to optimize design and planning activities in aspect of social and functional mixture and usage of synergetic interaction of different sustainability aspects	1	2	3	4	5	B/N	AR CE EE C UP
CV1	Understand the importance of visual comfort	Conceptual design Detailed design	Basic knowledge on the impacts on user of visual comfort	Is able to understand approaches to avoid visual discomfort	1	2	3	4	5	В	AR CE EE C UP
СТ1	Understand the importance of thermal comfort	Conceptual design Detailed design	Basic knowledge on the impacts on user of thermal comfort	Is able to understand approaches to avoid thermal discomfort	1	2	3	4	5	В	AR CE EE C
CA2	Understand the importance of acoustic comfort	Conceptual design Detailed design	Basic knowledge on the impacts on user of acoustic comfort	Is able to understand approaches to avoid acoustic discomfort	1	2	3	4	5	В	AR CE EE C
CQ1	Understand the importance of indoor material emission	Conceptual design Detailed design As Built	Basic knowledge on toxic materials and their influence on humans	Is able to identify different pollutant and emission classes. Is able to understand approaches to avoid the usage and contact to pollutants	1	2	3	4	5	В	AR CE EE C
MS1	Understand the importance of LCA analysis in building and neighborhoods	Conceptual design Detailed design As Built In Use	Basic knowledge on LCA of buildings, in terms of recycling of materials, impacts benefiting new usages of buildings but also on recycability and degradability of buildings and neighborhoods	Is able to define a balance and area of consideration on LCA calculation, knows how to use databanks and literature to define the impact of products and is able to compare these	-	-	3	4	5	B/N	AR CE EE C
QC2	Understand the importance of LCC analysis in buildings and neighborhoods	Conceptual design Detailed design As Built In Use	Basic knowledge on LCC of buildings, in terms of recycling of materials, impacts benefiting new usages of buildings but also on recycability and degradability of buildings and neighborhoods	Is able to define a balance and area of consideration on LCC calculation, knows how to use databanks and literature to define the impact of products and is able to compare these	-	-	3	4	5	B/N	AR CE EE C UP
MS1	Understanding of impacts in different fields on LCA	Conceptual design Detailed design	Knowledge of impacts of resource saving construction, efficient use of land, energy and water, biodiversity on LCA of buildings and neighborhoods	Is able to define, understand, optimize effects LCA in various fields. Can take actively part in project discussions.	-	2	3	4	5	B/N	AR CE EE C UP
QC2	Understanding of impacts in different fields on LCC	Conceptual design Detailed design	Knowledge of impacts of resource saving construction, efficient use of land, energy and water, biodiversity on LCC of buildings and neighborhoods	Is able to define, understand, optimize effects LCC in various fields. Can take actively part in project discussions.	-	2	3	4	5	B/N	AR CE EE C UP
KQ1	Understand of the integrated design approach	Conceptual design Detailed design Construction As Built In Use	Knowledge of the differrent aspects connected to integral planning, such as participation of experts with different background and what the benefits of integral planning are	Is able to take part in meetings on integral planning, optimize planning in terms of problem/solution focus, planning processes and operation	1	2	3	4	5	B/N	AR CE EE C UP



Area of	Learning outcome	Stage of the	Knowledge	Skill	Requested for the levels competence		ested for the levels of competence		Requested for the levels of competence		Scale 🖕	Professions
Expertis	(10)		-	-	1	2	3	4	5			
PD1	Deeper understanding of sustainablity and the relevance of sustainable action in buildings	Conceptual design Detailed design	Knows about the challenges of Climate crisis, climate goals, CO2 footprint, etc. and about the influence of construciton sector, resource and energy consumption	Is able to integrate sustainable activites specific aspects into design and planning	-	2	3	4	5	B/N	AR CE EE C	
PD1	Understanding of DGNB certification structure and system	Conceptual design Detailed design As Built	Knowledge of structure and composition of DGNB cert. system and other certification structures. Knows about the temporal sequence of certifaciton and costs.	Is able to describe the DGNB concept to s clients. Is able to perform DGNB System as a planning tool, able to consult clients in terms of beneftis and demands of sust. buildigns	-	-	3	4	5	B/N	AR CE EE C UP	
PD1	Understanding of DGNB certification system on neighborhoods	Conceptual design Detailed design Construction	Knowledge of balancing area to be integrated into certificaiton process. Knowledge on relevant criteria on DGNB neighborhood cert., challenges in practical implementation& minimum standards	Is able to describe the DGNB concept on neigborhoods to clients and to performs Pre-Ceck using support material. Assess the inter-action and mutual influence of sustain. aspects in neighbourhood planning	-	-	3	4	5	Ν	AR CE EE C	
PD1	Application of life cycle assessment for buildings and neighborhoods	Conceptual design Detailed design Construction	Content of the ecol. criteria in the DGNB system and weighting, Relevance, logic and application of an LCA. System boundaries of the LCA acc. to DGNB. LCA parameters and their environ. Impacts	Assess the impact of buildings on global and local environment as well as on resource use and waste generation. Use of life-cycle oriented planning to optimise buildings. Application of life cycle planning tools	-	-	-	4	5	B/N	AR CE EE C	
PD1	Application of life cycle cost for buildings and neighborhoods	Conceptual design Detailed design Construction	Contents of the economic criteria in the DGNB system. System boundaries and structure of the life cycle cost analysis. Parameters for increasing the flexibility and convertibility of a building	Assessment of the long-term economic viability (LCC) and possible value development of a building. Able to increase flexibility and convert-ibility through constructive and design measures. Coordination of ext. service providers and evaluation of services for the overall project	-	-	-	4	5	B/N	AR CE EE C	
PD1	Understanding economical criteria in DGNB certification system	Conceptual design Detailed design Construction	Knowledge of the importance and implementation of the sustainability aspects of marketability, biodiversity, etc.	Reading and understanding the criteria requirements in detail. Advising projects and clients on the relevant points of the indicators. Preparation of required verifications. Involving specialist planners at relevant points in the planning. Coordination of the overall project	-	-	-	4	5	B/N	AR CE EE C	
PD1	Understanding ecological criteria in DGNB certification system	Conceptual design Detailed design Construction	Knowledge of the importance and implementation of the sustainability aspects of marketability, biodiversity, etc.	Reading and understanding the criteria requirements in detail. Advising projects and clients on the relevant points of the indicators. Preparation of required verifications. Involving specialist planners at relevant points in the planning. Coordination of the overall project	-	-	-	4	5	B/N	AR CE EE C	
PD1	DGNB criteria on user comfort and socio-cultural apects	Conceptual design Detailed design As Built	Contents of the socio-cultural and functional criteria in the DGNB system. Relevance of the comfort topics for the sustainability of buildings. Influencing factors and verification of thermal, acoustic and visual comfort. Influencing factors and verification for the assessment of indoor air quality.	Assessment of buildings with regard to health, comfort and user satisfaction as well as essential aspects of functionality. Application of the DGNB system as a planning tool for buildings. Assessing the interaction and mutual influence of the different comfort issues.	-	-	3	4	5	B/N	AR CE EE C	



Area of Expertise	Learning outcome (LO)	Stage of the	Knowledge	Skill	Requested for the levels of competence			Scale 🖕	Professions		
					1	2	3	4	5		
PD1	Application of DGNB criteria focussing on technology of buildings and neighborhoods	Conceptual design	n Contents of the criteria of the topic area of technical quality in the DGNB system. Technical	Assessment of the quality of the						B/N	AR
		Detailed design									CE
			sustainability in operation: use	technical execution of a building with regard to relevant	-	-	3	4	5		EE
		As Built	of building technology, ease of	sustainability aspects							с
											UP
		Conceptual design	gn Process of integral planning. Integration of sustainability according to architectural performance phases. Demand planning. Ensuring sustainability aspects in tendering, awarding and operation.		-	-					AR
KII	Understand the importance of early actions on sustainability in design and planning	Detailed design		Increase the quality of planning and the quality of construction work			3				CE
								4	5	B/N	EE
											с
											UP
		Conceptual design	Understand pollutants and their effects on humans (e.g. bitumen, sealants, flame retardants). Understand the structure and functioning of the DGNB criterion ENV 1.2	Know regulating regulations (REACH) and labels that declare pollutant-free/low-pollutant products		1					AR
	Understand the importance	Detailed design									CE
CQ1	of evaluating pollutant materials	Construction			-	-	3	4	5	В	EE
											с
		In Use									UP
	Application of the DGNB criterion related to pollutant materials	Conceptual design	In Understand poliutants and their effects on humans (e.g. bitumen, sealants, flame retardants). Understand the structure and functioning of the DGNB criterion ENV 1.2	, Apply the criterion to projects. Carry out product evaluation	-	-				В	AR
PD1		Construction					3	4	5		EE
											с
		In Use									UP
	Selection and application of materials. Influence of materials on environment and sustainability	Conceptual design	holistic life cycle approach and	resource extraction.							AR
MS5		Detailed design	how to ensure material ecology in the context of the performance phases. Know sources of information & labels as well as labels recognised by the DGNB.Reading and evaluating of EPDs		-	-	3			B/N	CE
								4	5		FF
		Construction									с.
		In Use									
	Selection and application of materials. Influence of materials on environment and sustainability		gn holistic life cycle approach and how to ensure material ecology in the context of the performance phases. Know sources of information & labels	Evaluate and test materials.	-	-	3				UP
		Conceptual design									AR
		Detailed design						4			CE
MS5									5	B/N	EE
		Construction	as well as labels recognised by								с
		In Use	evaluating of EPDs								LIP
		Concentual design	Understand principles of a	Select appropriate materials.							-
MS5	Selection and application of materials. Influence of materials on environment and sustainability	proor ocongit	<ul> <li><sup>41</sup> holistic life cycle approach and how to ensure material ecology in the context of the performance phases. Know sources of information &amp; labels as well as labels recognised by the DGNB.Reading and evaluating of EPDs</li> </ul>		-	-					AR
		Detailed design					2		_		CE
							3	4	5	B/N	EE
		Construction									с
		In Use									UP
MS5 MS5	Selection and application of materials. Influence of materials on environment and sustainability Selection and application of materials. Influence of materials on environment and sustainability	Conceptual design	Understand principles of a holistic life cycle approach and how to ensure material ecology in the context of the performance phases. Know sources of information & labels as well as labels recognised by the DGNB.Reading and	Apply tools for assessing building materials and environmental impact.	_						AR
		Detailed design				-					CE
							3	4	5	B/N	FF
		Construction									с.
		In Lise									-
			evaluating of EPDs Understand principles of a	Evaluate and apply life cycle							UP
		Conceptual design	holistic life cycle approach and holistic life cycle approach and how to ensure material ecology in the context of the performance phases. Know sources of information & labels as well as labels recognised by the DGNB.Reading and evaluating of EPDs	evaluate and apply fire cycle assessment indicators Environmental product declarations.	-	-	3				AR
		Detailed design									CE
								4	5	B/N	FF
		Construction									-
		In Line									С
		in use									UP



# 12.15 Organization and projects of photovoltaic solar installations

Area of Expertise	Learning outcome (LO)	Stage of the project	Knowledge	Skill	Requested		d for th mpete	ie level nce	s of	Scale	Professions	
					1	2	3	4	5		REC	
	Determine the most appropriate type of energy supply according to the user profile	Detailed design	1								SC	
EP0		8.	Has general knowledge related to the most appropriate	Is able to classify according to applications, receiver	1	2	3	4	5	В	FM	
			type of energy supply according to the user profile	specifications and energy demand characteristics							BO	
											RESI	
	Determine the feasibility of solar installation projects		Knows: - how to evaluate the viability of the project by analysing the cash flows and the most relevant indicators. regulations, possible subsidies, amortisation and financing methods to formalise the technical characteristics, guidelines required - how to justify the use of solar energy on the basis of	Is able to obtain the parameters of global solar radiation, average daytime ambient temperature and cold water temperature of the network from official statistical data; to correlate the data; to measure and record solar data by means of pyranometer,						в	UP	
		Detailed design Determine the feasibility of solar installation projects							5		AR	
EP6					-	-	3	4			EE	
				e evaluation of solar potential the technical information in order to study the mponents of the solar installation making the necessary fulations and adapting to the needs of the user	pyrheliometer, datalogger, and automatic stations. Is able to determine the location, number and size of solar collectors or panels. Determine the visual impact of the installation.							EI
			- about the PV solar and electric power market regulation								RESI	
EP6	Determine the characteristics of the photovoltaic solar installation			Is able to:						в	UP	
		Detailed design	Knows: 1) Main solar radiation and weather parameters 2) thermodynamics principles	<ol> <li>Jonderstand of nails Jackback and (inclusion), information provided by manufactures (technical data).</li> <li>Use year differnt software of PV Solar installation calculation and solar radiation needs.</li> <li>to determine compatibility and interelation of PV elements with others:</li> </ol>	-	-					AR	
		Construction					3	4	5		EE	
			<ol> <li>electric power principles</li> <li>updates of homologation norms</li> </ol>								EI	
				5) Choose the components taking into account the interchangeability, supply and cost guarantees.							RESI	
	Justify photovoltaic solar installation projects			Is able to size the parts and components of the installation							UP	
		Detailed design	Knows how to prepare a functional analysis of the installation								AR	
EP6		lation projects			-	-	3	4	5	В	EE	
											EI	
											RESI	
	Design photovoltaic solar installation projects		Knows how to prepare general and detailed layout plans Is able to dimension the parts and components of th							UP		
-		n photovoltaic solar ation projects Detailed design Knows how to prepare general and detailed layout plans Is able to dimension the parts and components of the installation		Is able to dimension the parts and components of the	-		_		_		AR	
EP6			of photovoltaic solar installations	installation		-	3	4	5	В	EE	
									RESI			
<u> </u>		Detailed design									UP	
QC1	Prepare budgets to include them in the projects of solar photovoltaic installations	Construction	Has general knowledge on budget definition methods;							AR		
			Knows costs and quality/cost rate for photovoltaic	is able to apply the assessment method for evaluate	-	-	3	4	5	В	EE	
		ionovoirtaic components availables on the market.	economicy		i i					EI		
											RESI	
KS1	Proparo the bealth and	Detailed design								AR		
	safety plan for the	Construction	Knows hoe to identify and control the safety and health	Is able to determine and apply the risk prevention,	-	-					CE	
	installation of the photovoltaic system		of workers in the installation of the photovoltaic system	safety, health and environmental standards and measures			3	4	5	В	C	
											RESI	
										40		
EP6	Planning and execution of a photovoltaic solar installation according to the project	Datailad dasi-r	1								AR	
		Tottaic solar Declared design Construction t Construction t Construction Construction t	Is able to determine the instructions to the installation operators	-	-	з	4	5	в	FF		
										EI		
			1								RESI	
		Detailed design									AR	
EP6	Develop and implement maintenance plans for solar photovoltaic installations	As Built	Has general knowledge related to the develop and	Is able to diagnose the failure and/or breakdown of							EE	
		In Use         implement maintenance plans for solar photovoltaic           voltaic installations         installations	implement maintenance plans for solar photovoltaic	the equipment, element or system of the photovoltaic	1	2	3	4	5	В	BEC	
			solar installation							RESI		



## 12.16 Window manufacturer expert

Area of	Learning outcome	Stage of the	Knowledge Skill		Requested for the le competence			ne level nce	s of	Scale	Professions	
Expertise	(LO)	project			1	2	3	4	5			
ER6	Design windows systems guaranteeing building energy performance	Detailed design Construction	Has knowledge of visual technologies, symbols and terminology of the sector. Has basic knowledge of metrology and geometry. Has knowledge of the different building materials. Has knowledge of normatives and criteria of energy sustainability	Is able to read and interpret executive drawings, take the measurements of the wall space on site and to propose aesthetic and functional changes. Is able to develop particular non standard technical solutions. Is able to create a technical drawing, also with the aid of comouter programs and to create e amples.			3	4	5	В	WI	
	Design and manufacturing of windows and doors fixtures, complements		Has knowledges of the procedures for manufacturing of frames and windows fixtures. Has knowledge of metals, wood processing techniques. Has knowledge on the different tools and instruments to be used. Has knowledge the intended use of the different types of adhesives and the procedures bonding (parameters to be observed: temperature, time, pressure). He identifies potential thermal bridges, areas of air infiltration, acoustic bridges (direct and by flanking) and water tightness problems by reading the project drawings also with particular reference to the	and to computer programs and to cleate samples. Is able to manage company resources to optimize them in relation to work planning. Is able to choose the species, quality, assortment and humidity of the wood raw material destination. Is able to use the machinery of the sector respecting work procedures and work schedules, as well as safety regulations. Is able to perform maintenance and set- up of machinery. Is able to apply working techniques for veneer, lamination, edging. He is able to identify potential thermal bridges, acoustic bridges, air infiltrations and water tightness problems with particular reference to the choractoricities of anonen ouvierpropotal questionbility of						в	WI	
		Detailed design				2			5			
ER6		Construction					3	4				
			characteristics of energy-environmental sustainability of the building elements and their influence on the conditions of comfort and quality of the internal environment	the building elements and their influence on the conditions of comfort and quality of the internal environment.								
	Finishing tratments of products and components assembly		Has knowledges of abrasives, putties, preservatives (biocides), impregnants, dyes, paints, waxes, oil	edges of abrasives, putties, preservatives impregnants, dyes, paints, waxes, oil and of related criteria for storage, on and disposal. Has knowledges of different ents and techniques / systems of surface routing, sanding, brushing, masking, and of related methods and support and for the execution of the treatments of preservation and painting in compliance with safety regulations. Is able to choose the type of glass suitable for the required thermal and acoustic insulation needs. Is able						в	WI	
			conservation and disposal. Has knowledges of different stages of grouting, sanding, brushing, masking, and of				3					
ER6		Construction	the treatments and techniques / systems of surface finishing.					4	5			
		,	Has knowledges of the physical-mechanical characteristics of the different seals and glass sheets.	to assembly and perimeter sealing.								
			Has knowledges of the applicable safety and environmental regulations.									
MS5	Check materials and products conformity		He has knowledge of the performance of the materials and components intended for the composition of the artifacts. Make the choice of materials, produced on the basis of technical data sheets and certifications.	Is able to evaluate the performance of the materials and components intended for the composition of the artifacts based on the technical data sheets and certifications. He is able to recognize the criteria for the correct conservation of materials, components and artefacts. He knows how to recognize the product standards applicable to the materials by correctly associating them in accordance with the energy performance defined in the project. He is able to identify							WI	
		Detailed design	Knows how to verify compliance with the purchase specifications of the material being accepted. He knows the criteria for the correct conservation of materials, components and artifacts. Has basic									
		Check materials and products conformity Construction	Construction	knowledge of product regulations applicable to materials, associating them correctly in accordance with the energy performance defined in the project. It adequately identifies the characteristics attributable to	the characteristics of the materials attributable to their environmental energy sustainability.				4	5	в	
			adequately identifies the characteristics attributable to their environmental energy sustainability. Has knowledge of the management criteria of anomalies and defects found and of the principles for the declaration of conformity of materials.									
			'	Is able to property the product for periodicating and earns out								
ER6	Carry out packaging, transport and preparation for the installation		preparing the packaging and of the documents and the packaging. Is able to packaging is able to packaging is able regulations for handling loads. Has knowledges of the	the packaging. Is able to train the staff and prepare an instruction sheet for installation. Is able to plan the							WI	
		Carry out packaging, transport and preparatior	ackaging, materials, equipment and installation phases equipment required for assembl materials. Construction (instruction sheet, if available). Has knowledges of the materials for protection of the p	equipment required for assembly and prepare the materials for protection of the place of installation. Is able				4	5	в		
		r the installation	types of adjustments, checks and controls to be carried out on the installation product.	to perform the installation correctly, manage waste and their disposal. Is able to carry out the adjustments and								
		In Use		functional checks of the product after installation.								
ER6	Prepare maintenance instructions		Has knowledges of the instructions for use and maintenance of the product to be given to the	is able to prepare a use and maintenance sheet for the product.					5	в	WI	
		Construction	customer.					4				
		In Lise										
ER6	Install windows or facades	11.056	Knowledge of special windows in new buildings or	Is able to correctly install special windows (such as							WI	
			energy redevelopment of existing buildings such as ventilated curtain walls. Knowledge of the problems related to waterproofing, summer and winter ventilation and the reduction of thermal bridges.	ventilated curtain walls) in new buildings or in the redevelopment of existing buildings, respecting the energy consumption targets established by the project and by current legislation.					5			
		Construction As Built						4		В		
					$\perp$							
ER6			Knowledge of shading systems and passive solar systems in relation to the optimization of natural	He is able to correctly install the shading systems and passive solar systems in order to optimize the natural							WI	
	Shading systems	s Construction of the indoor environment and energy efficiency.	indoor lighting to ensure the conditions of comfort, quality of the indoor environment and to improve energy				4	5	в			
		As Built		efficiency.								