Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe

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Phase 2 (CALOHE2) and Extension (CalohEx)

Tuning-CALOHEE Framework descriptors for civic, social and cultural engagement

Robert Wagenaar, editor

2024

Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe (CALOHEE)

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CALOHEE Extension Project team
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Tuning Educational Structures in the World

The name TUNING was chosen for higher education projects and initiatives to reflect the idea that universities do not look for uniformity in their degree programmes or any sort of unified, prescriptive or definitive curricula but simply for points of reference, convergence and common understanding. The protection of the rich diversity of higher education in Europe and the world has been paramount in the Tuning initiative from its start in 2001 and in no way seeks to restrict the independence of academic and subject specialists, or undermine local and national academic authority.

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Tuning CALOHEE

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Introduction

The CALOHEE Projects postulate that Higher Education Institutions (HEIs) have a responsibility towards society and should explicitly and purposefully aim at preparing the next generation to be active and responsible citizens. While few HEIs will openly disagree with this statement, preparing for Civic, Social and Cultural engagement is too often expected to somehow happen 'on itself'. The existing higher education curricula rarely cater for this explicitly. Yet, for the desired transformation to take place, explicit Civic, Social and Cultural engagement-related learning outcomes need to be formulated at programme and course levels. Such learning outcomes need to be assessed, and adequate learning and teaching activities are required to help students achieve the desired learning outcomes.

The CALOHEE Civic, Social, and Cultural Engagement reference framework proposes concrete educational goals:

- ***responsibilities*** graduates should be prepared to assume, as well as
- ***knowledge*** and ***skills*** students need to be equipped with, in order to assume such responsibilities.

The CALOHEE Civic, Social, and Cultural Engagement reference framework seeks to capture those responsibilities that graduates must be prepared to assume in order to jointly address multiple threats to cohesive, functional and just societies, where human rights are respected and differences are valued and turned into strengths.

The CALOHEE Civic, Social, and Cultural Engagement reference framework is a tool that can help HEIs to examine their programmes - how well students are currently prepared to behave as active and responsible citizens; and to reinforce these components of desired graduate profile thanks to focusing on helping students develop relevant knowledge, skills and wider competences. It is hoped that the reference framework inspires HEIs in their efforts to bring about the desired transformation - the transformation necessary to fully fulfil HE responsibilities towards society and future generations - their task of preparing active and responsible citizens. They should offer a sound foundation for developing good practices for assessment, learning and teaching activities at the level of individual degree programmes.

The framework relates directly to the aims of the ERASMUS+ Programme, which "supports active citizenship and ethics in lifelong learning, it fosters the development of social and intercultural competences, critical thinking and media literacy. (…) The focus is put on raising awareness of and understanding the European Union context, notably in regards the common EU values, the principles of unity and diversity, as well as their social, cultural and historical heritage. In general, environment and climate action are key priorities for the EU now and in the future as is the digital transformation and related challenges. In the wording of the EC: "To support the digital transformation in a human-centric manner and to address societal challenges such as AI or disinformation more effectively Europe needs education and training systems that are fit for the digital age".

The *Tuning-CALOHEE Civic, Social, and Cultural Engagement Reference Framework* makes a distinction between five dimensions, to be understood as societal challenges or topical issues. These are the following:

1. *Constructive engagement with persons from diverse backgrounds and identities*
2. *Processes of Communication and Information*

3. *Processes of governance and decision making*
4. *Ethics, norms, values and professional standards*
5. *Climate Change impact on societies*

The selection of these dimensions is also based on an analysis of developments in global society (see extended version of this paper which offers reference and background information) and discussions in the context of the Bologna Process as reflected in the Ministerial Communiques of Paris (2018) and Rome (2020).

To develop reference frameworks for each of the five dimensions or topics, working groups were established as part of the CALOHE2 and CALOHEX projects. Although, developing these frameworks was a task included in the workplan of the CALOHEX project only, it proved very helpful to use the expertise and experience of the CALOHE2 academic experts as well. In practice, the CALOHE2 working groups developed the materials presented here which were checked, partly enhanced and applied by the CALOHEX project in defining their Subject Area Qualifications Reference Frameworks. As a preparatory step, a combined initial task force of the CALOHE2 and CALOHEX projects was established which made a first design based on the dimension 'Societies and Cultures: Interculturalism' which was at a later moment rephrased in 'Constructive engagement with persons from diverse backgrounds and identities'. For this task as well as for follow-up stages two experts with high credentials regarding the topic were invited to offer guidance and assistance: Darla Deardorff and Adinda van Gaalen.[1]

[1] The other members of this 'start-up' Task Force were Julia Gonzalez Ferreras, Ann Katherine Isaacs, Maria Yarosh and Robert Wagenaar.

1. Overview of dimensions and general descriptors

Initially, for each of the first four dimensions three general descriptors were developed related to knowledge, skills and autonomy and responsibility (wider competences). To be better applicable, in this document, these general dimensions and related descriptors have been broken down in sub-dimensions and related sub-descriptors to make them more precise and measurable. As in the case of the Tuning-CALOHEE Subject Area-based Assessment Reference Frameworks they should be supplemented with best strategies and formats regarding learning, teaching but most off all assessment. These depend on their integration in subject area qualifications reference frameworks and related assessment reference frameworks. Each academic sector and field set their own conditions and priorities in this respect. Therefore, identification and implementation of most appropriate learning strategies should be left to programme designers and practitioners, teaching teams and individual staff members responsible for implementation and delivering.

Table 1: CALOHEE Reference Framework for Civic, social and cultural engagemen

No.	Dimension	Knowledge	Skills	Autonomy and Responsibility
1.	*Constructive engagement with persons from diverse backgrounds and identities*	Demonstrate theoretical and practical knowledge of key concepts, tools and techniques for analysing, enhancing and learning from intercultural interactions at person-to-person, group and societal levels	Evidence the ability to interact with persons from backgrounds different from one's own in appropriate and effective manners, accepting an intermediary role when required; and transforming such interactions into opportunities for further (intercultural) development	Manifest the ability to seek and create opportunities to engage constructively with persons from backgrounds different from one's own - with openness and respect - in order to foster transformative collaborations and continuous intercultural learning
2.	*Processes of Communication and Information*	Demonstrate critical understanding of the processes of *information and communication*	Evidence the ability to review and judge (mis-) use of sources, data, evidence, qualities, intentions and transparency and expert opinions	Manifest the ability to active contribution to societal debates using reliable data and information sources and informed judgements
3.	*Processes of governance and*	Demonstrate critical understanding of the	Evidence the ability to apply and support agreed governing principles, norms and	Manifest the ability to active contribution to and with local

	decision making	processes of *governance and decision making*	values regarding fairness, transparency, accountability, democracy and relevance in policy making processes	and (inter)national communities, community groups, (political) organisations and pressure groups respecting agreed principles, norms and values
4.	*Ethical principles, norms and values and professional standards*	Demonstrate critical understanding of general ethical principles, norms and values and professional standards	Evidence the ability to understand and apply the processes of decision-making and the consequences of actions taking into account principles, norms, values and standards both from a personal and a professional standpoint.	Manifest the ability to active contribution to upholding, promoting and defending general ethical principles, norms, values and professional standards in governance, communication and cultural interaction.
5.	*Climate Change impact on societies*	Demonstrate critical understanding of the origins and causes for climate change and its effect on living conditions of societies and individuals	Evidence the ability to critically review information concerning climate change as evidence to adjust one's own behaviour in using natural resources which affect a healthy eco-system.	Manifest the ability to actively contribute in public discourse and one's own behaviour in limiting natural resources to contribute to a sustainable eco-system.

This (adjusted) table of competences has served as the basis for making more detailed frameworks and descriptors by CALOHE2 and CALOHEX working groups of academics from all academic sectors. Although, the working groups obtained guidelines, they acted largely autonomously and took as their lead in the discussions the dimension / topic to cover. This explains that there are slight differences in the ways the working groups operated. Each working group hold scholarly experts from a wide variety of academic field in practice covering the full range of academic sectors, ranging from creative and performing arts and design, humanities and social sciences to health care, natural sciences and engineering. This wide perspective has proven very helpful to identify sub-dimensions and to define actual descriptors which allow for application in all academic fields.

2. Dimension 1: Constructive engagement with persons from diverse backgrounds and identities[2]

The first dimension of the CALOHEE Civic, Social and Cultural Engagement reference framework focuses on graduates' readiness to engage with others across multiple cultural/societal divides. Referred to as 'Societies and Cultures: Interculturalism' in the first, provisional, version of the framework[3], it is now called ***'Constructive engagement with persons from diverse backgrounds and identities'***. This key dimension highlights that all HE graduates must be prepared to join efforts with others in order to promote constructive interactions between social and cultural groups and transform conflicts, where such conflicts exist. The emphasis is put on ***interpersonal*** engagement - engagement with other individuals, with persons who are perceived as different from oneself. Therefore, this first key dimension now explicitly focuses on the need to prepare graduates to act as persons who are part of diverse groups and societies. Graduates need to be ready to interact, work and live with others who are different from them, to continue developing and learning as members of diverse societies and to be (eventually) ready to facilitate transformative collaborations within and across (culturally) diverse groups and contexts.

In other words, all graduates - regardless of their area of studies - need to develop Intercultural Competence (IC).

There are at least three arguments to substantiate this claim.

Firstly, in every corner of the world, societies are becoming more diverse and increasingly in demand of tools and instruments to reach inclusion. In order to contribute to the task of building such societies, every graduate must be equipped with knowledge, skills and attitudes that permit them to manage diversity in effective and appropriate manners, i.e. IC.

Secondly, in a growing number of societies, work is increasingly important for every human being, so as not to be excluded or marginalised, on the one hand; and in order to achieve self-fulfillment, on the other. However, this work takes place in ever growing VUCA (volatility, uncertainty, complexity, ambiguity) contexts. The number of changes and the speed at which they take place, accounts for an important dimension of volatility, while the incapacity to predict situations or events which take place in very short periods, leave people with high levels of uncertainty. If the difficulty to understand complex contexts and the relationships between the different elements that constitute the environments is added, the contribution of IC becomes really strong and clear. Openness, flexibility and adaptability IC builds on are key for life and work in increasingly uncertain contexts, while the capacity to deal with ambiguity is an equally integral part of IC.

The recent COVID-19 pandemic experience has only exacerbated the vertiginous changes and levels of uncertainty, difficulties for understanding key factors of processes of important decision making as well as the lack of clarity in the events of the present and the impact they can have for the future.

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[2] CALOHE2 working group members: Maria Yarosh, Dik Maandag, Jacek Romaniuk, Yesim Capa (Teacher Education), David Buschüter, Inkeri Kontro , Katrin Strubbe (Physics), Roberta Sammut (Nursing), Loreta Skurvydaitė (History), Emilien Azema (Civil Engineering)
CALOHEX working group members: Dan Frost (Business), Marijn Abbink (CPAD), Georgios Papapodoulos (CPAD), Veerle Ongenae (ICT), Rafael Pastor Vargas (ICT), Daniella Irrera (IR), Vaira Hendrixson (Medicine), Lucia Vilceková (Business)
Topical external experts: Darla Deardorff and Adinda van Gaalen

[3] *Robert Wagenaar, ed.,Tuning-CALOHEE Assessment Reference Frameworks for Civil Engineering Teacher Education History Nursing Physics.* Groningen: International Tuning Academy, University of Groningen, 2018: https://www.calohee.eu/wp-content/uploads/2018/11/4.1-Assessment-Reference-Frameworks-for-Civil-Engineering-Teacher-Education-History-Nursing-and-Physics-FINAL-READER-v2.pdf

Thirdly, IC can be an important asset in relation to the new paradigm of life and work introduced by the technological revolution. It is no longer possible to deny that a revolution without precedents is taking place in terms of speed and impact in the way of living, working and relating to each other. Emerging technologies give us access to the data necessary to understand our world and solve multiple challenges that have seemed insurmountable. In this context of supremacy of the technologies, what is the human contribution? It has become clear that in the coming years, the main tasks for humans will be those where the human being can add value such as creativity and innovation, empathy, collaboration, passion, capacity to cope with new situations, to improvise in unforeseen circumstances, and above all, to develop interpersonal relations in a very pluralistic and international world.[4] Thus, the need for IC is of a growing significance.

Table 2 (below) presents the full framework for the *Constructive engagement with persons from diverse backgrounds and identities* dimension. This table is based on the following dimension and three subdimensions of a graduate profile.

Table 2 Constructive engagement with persons from diverse backgrounds and identities

Dimension	**Constructive engagement with persons of diverse backgrounds and identities**
Sub-Dimension 1	**Valuing engaging with persons of diverse backgrounds and identities with openness and respect**
Sub-Dimension 2	**Engaging in and fostering constructive interaction and transformative collaboration among persons of diverse backgrounds and identities**
Sub-Dimension 3	**Engaging in lifelong processes of developing intercultural competence**

The three sub-dimensions of the *'Constructive engagement with persons from backgrounds different from one's own'* key dimension **are fully in line with the Intercultural Competence research findings**, in which intercultural competence is broadly defined as effective and appropriate interactions with persons different from oneself (Deardorff, 2020; OECD, 2018). This broad definition is drawn from the first research-based framework and definition of intercultural competence (Deardorff, 2006; 2009; 2020) which includes specific components related to requisite knowledge, skills, and attitudes of intercultural competence. From this framework, three sub-dimensions emerge which are addressed here through this rubric:

(1) *Valuing engaging with persons of diverse backgrounds and identities with openness and respect*: Open-mindedness is noted in the research as a requisite attitude for further developing intercultural competence. As a key component of intercultural competence, open-mindedness describes the willingness to seek and consider new information, ideas, practices, and ways of believing and being. Open-mindedness allows individuals to expand one's worldview and sets the foundation for creative problem-solving and intercultural collaboration. Respect is another key attitude for developing IC.

(2) *Engaging in and fostering constructive interaction and transformative collaboration among persons of diverse backgrounds and identities*: This sub-dimension refers to the degree to which

[4] Jamie Merisotis, Human Work in the age of smart machines. New York: RosettaBooks, 2020

individuals can communicate effectively and appropriately across differences as well as the degree to which collaborations can be sustained over time in pursuit of collective outcomes.

(3) *Engaging in lifelong processes of developing intercultural competence*: This sub-dimension refers to the lifelong nature of developing intercultural competence, including specific processes such as critical thinking and metacognition skills, as well as the development of socio-emotional learning.

The last column descriptors (autonomy and responsibility/wider competences, Table 2 below) seek to express in simple language ten responsibilities for which HEIs can strive to prepare their graduates in terms of this key dimension. These responsibilities are not specific for any particular area of studies or professional occupation, but rather will benefit any HE graduate and - if HE graduates assume at least some of these responsibilities - can certainly permit us to make our societies more just and interculturally-cohesive.

Research on IC also underpins all the choices made in relation to the proposed descriptors in the 'Skills' and 'Knowledge' columns (AACU, 2009; Deardorff, 2020; OECD, 2018; Byram, 2021, Council of Europe, 2018). Once responsibilities for each sub-dimension were agreed upon, relevant research findings allowed the identification of Skills and Knowledge an individual must develop in order to assume the responsibilities in question.

An intentional effort was made to keep the language as simple as possible. The framework proposed is not meant for Intercultural Competence scholars, but rather for academics/HE teachers, students and decision makers, regardless of their area of specialisation. What is important to note here is that the term 'culture' does not refer to national cultures alone, but is used as referring to disciplinary, professional, socio-economic, ethnic, religious or generational groups, besides groups identified as such by geo-political factors (countries, regions). (OECD, 2018).

Table 3: Tuning-CALOHEE Framework Constructive engagement with persons of diverse backgrounds and identities

Dimension	Knowledge	Skills	Autonomy and Responsibility (Wider Competences)
Overarching descriptors	Theoretical and practical knowledge of key concepts, tools and techniques for analysing, enhancing and learning from intercultural interactions at person-to-person, group and societal levels	Interact with persons from backgrounds different from one's own in appropriate and effective manners, accepting an intermediary role when required; and transforming such interactions into opportunities for further (intercultural) development	Seek and create opportunities to engage constructively with persons from backgrounds different from one's own - with openness and respect - in order to foster transformative collaborations and continuous intercultural learning
Sub- Dimensions			
1.Valuing engaging with persons of diverse backgrounds and identities with openness and respect	K1.1. Show understanding of the fact that different cultures are bound to produce different worldviews and ways of dealing with particular situations [for assessment: give examples relevant to own context.	S1.1 See a situation from more than one perspective, with empathy & understanding of other worldviews.	C1.1 Appreciate inclusiveness as the way of dealing with (cultural) diversity [for assessment: Respect the fact that persons of diverse backgrounds and

	K1.2. Knowledge of how and when one's own cultural background influences one's behaviours, attitudes, preferences, etc.	S1.2 Identify situations when one's own prejudices, assumptions, and/or emotions come to the fore and can/might cause misunderstandings among persons of different backgrounds; and prevent these from influencing own behaviour.	identities might have views, attitudes and ideas about what is 'appropriate/best' different from one's own]
2.Engaging in and fostering constructive interaction and transformative collaboration among persons of diverse backgrounds and identities	K2.1 Knowing how cultural differences might affect communication processes, incl. knowledge of different communication styles (verbal, non-verbal, graphic, etc.) [*we will define 'culture' to make sure it is understood as broadly as we intend - not only as national cultures/not only from sociological/anthropological point of view;*]	S2.1a Present ideas in ways that make it clear to a person/ group, given their particular **background and identity/ies** S2.1b Use culturally appropriate techniques to ensure one understands what others want to communicate.	C2.1 Engage in and/or facilitate **dialogue among persons of diverse backgrounds and identities** in an effective and appropriate way.
	K2.2a Knowing that different cultures have different social norms (for example for how to demonstrate respect, friendliness, politeness (incl. greetings), appreciation, disagreement). K2.2b Awareness of the necessity to adjust one's own behaviour when interacting with persons of diverse backgrounds.	S2.2. Interact with persons from cultural backgrounds different from one's own in ways that make everyone involved feel respected and comfortable including one's self.	C2.2. Actively contribute to effective and appropriate **collaboration** in culturally-diverse groups one forms part of.
	K2.3a Know how intercultural conflicts can be analysed and transformed - using conflict management & transformation strategies - in order to build a more interculturally-cohesive society. K2.3b Know how different actions/ practices/ strategies	S2.3a Identify cultural differences that might hinder social cohesion in a given context [incl. identify/detect & analyse cases when persons' reactions are conditioned by their cultural backgrounds & detect misunderstandings] S2.3b Identify how cultural diversity	

	/policies can foster or hinder the collaboration of culturally-different groups (incl. concrete examples of actions/ practices/ strategies /policies that have proved particularly successful or particularly damaging). 2.3c Know what can motivate representatives of different cultural groups to engage in a common endeavour and how to acknowledge and manage different forms of engagement	present in any given group/situation can allow to create innovative and inclusive solutions. S2.3c Motivate an intercultural group to work together on preventing and/or mediating and transforming intercultural conflicts	
3.Engaging in lifelong processes of developing intercultural competence	K3.1 Nowledge of key concepts necessary to analyse intercultural encounters and experiences K3.2 Awareness of various tools and techniques that can help you reflect - in non-judgemental ways - on reactions and emotions you experience in intercultural encounters; and can help you make your own thinking visible [ask Darla!]	S3.1a Analyze intercultural encounters (with persons, documents & places) in order to learn more about different cultures (including one's own) S3.1b Identify sources you can use to learn about different cultures 3.2a Engage in structured critical reflection (e.g. through mindfulness techniques, comparative and other types of thinking) on own intercultural experiences in order to identify own strengths in terms of IC and set further developmental priorities 3.2b Identify strategies to further develop relevant aspects of IC	C3.1 Value and create opportunities to continue learning from persons of different cultural backgrounds, as well as from situations where cultural differences are present C3.2 Engage in ongoing development of own IC and/or support others in further developing their IC

This section of the CALOHEE Civic, Social and Cultural Engagement reference framework is meant to help start an interdisciplinary peer-learning process. This exchange among academics will permit to validate the initial proposal. To facilitate implementation, examples of how student learning towards the different descriptors can be supported through combinations of assessment, learning and teaching activities will be provided. Such examples will come from different programmes and subject areas, as well as from different national and institutional contexts

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3. Dimension 2: Processes of Communication and Information[5]

Communication and information have experienced revolutionary changes as an effect of information technology in a very short period. One can think of globalisation and mass media but also more personalised formats in social media and apps. Opinions are largely steered by communication and information channels, but also influencers. On social media platforms information is pre-selected by using algorithms. These have also given way for conspiracy theories and fake news. Since 2022 the situation has become more challenging as a result of the introduction of generative Artificial Intelligence; regarding generating text, creating footage and pictures.

Making the distinction between reliable information and non-reliable information requires training. This training involves being knowledgeable in terms of general development, skilled to be able to judge the reliability of information and to learn to take an active role. This can be summarised as developing a critical mindset, implying skills such as critical and analytical thinking, weighting and comparing 'evidence', etc.

The working groups have broken down the general CALOHEE dimension in five subdimensions, being: (1) Obtaining information and critical evaluation; (2) Managing information; (3) Making decisions based on information; (4) Presenting and communicating information; (5) Interpersonal communications. The academic experts defined descriptors at EQF level 6, but are also of relevance for the higher levels of learning.

Table 4: Tuning-CALOHEE Framework Processes of Communication and Information

Dimension	Knowledge	Skills	Autonomy and Responsibility (Wider competencies)
Overarching descriptors	Demonstrate critical understanding of the processes of information and communication	Review and judge (mis)use of sources, data, evidence, qualities, intentions and transparency and expert opinion	Active contribution to societal debates using reliable data and information sources and informed judgements
Sub dimensions			
1. Obtaining information and critical evaluation	Knowledge about diversity of sources of information (formal/informal, direct observational/indirect external sources, verbal/non-verbal) and about criteria for assessing the quality, reliability and credibility of sources. Knowledge about current tools/methods for searching for and finding	Ability to identify the context in which specific information was created and disseminated and to critically evaluate the quality, credibility, reliability and relevance of information sources and information. Ability to develop one's own approach to and to use	Commitment to critically evaluate the quality, credibility, reliability and relevance of information sources and information. Capacity and commitment to responsible and critically use

[5] CALOHE2 working group members: Ewald Hiebl (History), Kate Meier (Nursing), Gyöngyvér Molnár, Aleksandra Huic (Teacher Education), Nikolaos Theodosiou (Civil Engineering), Ornella Pantano (Physics) CALOHEX working group members: Kerry Rhoden (Medicine), Tomás Karesék (IR), Iacoppo Gavallini (Business), Anders Winkel (IR), Sevgli Ozkan Yildrim (ICT), Manuel Jose Damacio (CPAD), Jane Keeble (CPAD), Ramuné Baleviciute (CPAD), Inger Mørch Hauge (Business), Gottfried Csanyi (ICT), Caroline Fischl (Occupational Therapy)

	different sources of information.	current tools/methods for systematically collecting and analysing information.	of information coming from diverse sources when making decisions.
2. Managing information	Knowledge of tools and methods for managing (organising, storing, retrieving, protecting) information, data and content (e.g. GDPR rules, local protection laws). Knowledge of open science principles and tools.	Ability to organise, store, retrieve and protect data, information and content in a structured environment (e.g. following GDPR rules and restrictions and local protection laws). Ability to share information in line with open science principles, and to reflect on the impact of sharing data to people and society.	Capacity and commitment to keep up with tools and methods to manage information, data and content (organise, store, retrieve and protect) in their profession. Commitment to share data to people and society in an ethical and responsible manner.
3. Making decisions based on information	Demonstrate current knowledge and understanding of relevant evidence-based theoretical frameworks, concepts and methodologies and/or practices (including own and others experience) needed for decision making, knowing that information needed for decision making can be incomplete, limited, uncertain or ambiguous.	Ability to critically evaluate, rank and prioritise information needed for decision making, to identify gaps in information needed to make a decision, and fill them, and to use an evidence-based approach to evaluate decisions made.	Commitment to continuously reflect on and evaluate decisions while using an evidence-based approach.
4. Presenting and communicating information	Demonstrate knowledge on how information can be presented and communicated and on the variety of tools and means of communication Demonstrate knowledge on how to adapt the communication message to different situations and audiences, e.g. using the appropriate language, type of information, media, …	Ability to define the goal of communication effectively (sharing, influencing, engaging), share oral and written information and communicate it with different tools Ability to adapt communication to different audiences, to actively listen and understand and to gain feedback from others.	Reflect on one's own role in the communication process and the used means and tools and learn out of experiences in communication situations in order to responsibly share information Integrate feedback in the communication process and to respond to critical feedback or disagreement with reflection on the communication situation.
5 Interpersonal communication	Demonstrate knowledge about constructive feedback, team-work skills, active listening,	Ability to listen for understanding, share opinions, participate in constructive discussion, give and accept feedback and to	Take responsibility for an effective and appropriate communication process. Continuously improve own

	conflict-resolution management etc.	address and resolve tensions and conflicts	interpersonal communication skills.

For examples of learning/teaching and assessment practices it is suggested to consult the JRC Science for Policy Report, *European Framework for the Digital Competence of Educators* (DigCompEdu), published in 2017: https://www.google.com/url?q=https://publications.jrc.ec.europa.eu/repository/bitstream/JRC107466/pdf_digcomedu_a4_final.pdf&sa=D&source=docs&ust=1663954069895782&usg=AOvVaw0wV8-q70dK16_5mOrotTEw

4. Dimension 3: Processes of governance and decision making[6]

A democratic society requires that its citizens are well informed about democratic institutions and procedures. It also asks for active involvement in policy making and leaderships as well as decision making. This implies a democratic mind-set which development is part of a learning process running from primary to higher education.

For this dimension three sub-dimensions are identified: (1) Responsible decision-making, (2) Leadership, ability to lead a team and (3) Accountability and transparency. Although no explicit distinction is made regarding EQF levels of learning, these are appropriate for the level 6 and therefore taken for granted at the level 7 and 8.

Table 5: Processes of governance and decision making

Dimension	Knowledge	Skills	Autonomy and responsibility
Overarching descriptors	Demonstrate critical understanding of the processes of *governance and decision making*	Evidence the ability to apply and support agreed governing principles, norms and values regarding fairness, transparency, accountability, democracy and relevance in policy making processes	Manifest the ability to active contribution to and with local and (inter)national communities, community groups, (political) organisations and pressure groups respecting agreed principles, norms and values
Subdimensions			
1.Responsible decision making	Demonstrate understanding of the system and field you are working in	Ability to critically apply subject and sectoral knowledge related practical and procedural skills in an established setting	Ability to critically and responsibly apply subject and sectoral knowledge and related skills in a new setting
	Demonstrate understanding of statutory requirements/ laws/protocols, etc.	Ability to identify and apply relevant legal and statutory standards for decisions made	Ability to work collaboratively on reviewing and revising legal standards and norms
	Demonstrate understanding of the role of evidence and alternatives in decision-making	Ability to gather, select and use evidence to inform a decision. Ability to evaluate alternative decision paths	Ability to use previous decision-making to develop new activities/projects/ Initiatives
	Demonstrate awareness of the impact of my decisions on others, e.g. immediate work and social environment and society at large	Ability to evaluate potential advantages and disadvantages to others e.g. immediate work and social environment and society at large, of decisions made	Active contribution to a culture of impact assessment in work and professional settings

[6] CALOHE2 working group members: Janny de Jong, Gudmundur Halfdanarson (History), Reet Urban (Nursing), Aidan Seery (Teacher Education), Hay Geurts (Physics), Ivica Zavrski (Civil Engineering)
CALOHEX working group members: Maria Dulce das Neves Gomez (Occupational Therapy), Dominka Dziwisz, Sirke Mäkinen (international Relations), Thomas Rotthoff (Medicine), Daiva Vikuté-Adzgauskiene, Konstantinos Tsolakidis (ICT), Giuseppina Iacoviello, Patricia Helen Ferreira Lopes Mourna Sá (Business), Blanka Chladkova, Paula Tuovinen (CPAD).

	Demonstrate understanding of profession, professional ethics, and self-knowledge in the setting	Ability to identify ones own biases, preferences, values, norms, and interests	Ability to reflect on and distance oneself from possible biases, taking into account that good decision making demands for involving numerous stakeholders and including and respecting their perspectives.
2. *Leadership, ability to lead a team*	Demonstrate an acceptable knowledge of the field and/or the project to command respect and acceptance of the team	Ability to apply the knowledge of the field and/or the project to the aims of the team	Ability to define future investigations and enquiries which generate new or enhanced knowledge in the field and/or the project, in close conjunction with the team involved
	Demonstrate understanding of the principles of time management, the scope and goals of the tasks of the team	Ability to break down tasks to achievable and manageable steps and to distribute the work among team members so it is completed in time	Successfully sets directions of the teamwork and motivates the team members to participate constructively in a team.
	Knowledge to interact productively with others to build good relationships, promote creativity, and to identify conflicts in time	Ability to create productive and creative atmosphere in the team, express recognition for things well done, and to solve conflicts that may arise	Ability to pre-empt and avoid unnecessary conflict situations before they arise
	Knowledge of the different discourses needed to communicate within the team and with others outside the team	Ability to communicate effectively both within the team and to others outside the team	Actively constructs communication strategies to overcome barriers to communication
	Recognition of the importance of emotional intelligence for team leadership	Ability to deal with different types of emotions, Own / others' emotions	Ability to perform under pressure
	Knowledge of the leader's responsibility regarding ethical issues and demands attached to the task	Ability to set ethical standards for the team	Act consistently with integrity, that is fairness, trustworthiness and incorruptibility towards the team and the tasks defined.
3. *Accountability and Transparency*	Knowledge of ethics and codes of conduct of the profession and/or the field(s) involved and possible consequences of misconduct	Ability to apply knowledge of ethics and codes of conduct in appropriate ways in concrete situations	Assume professional responsibility for the adherence to the established ethics and conduct and report breaches by others
	Knowledge of the principles and practices of academic and/or professional integrity	To conduct academic inquiry acknowledging the work of others. Ability to evaluate/assess/ interpret evidence. Ability to act professionally in	Conduct one's own work to the highest level of integrity and promote this among colleagues

		work situations	
	Awareness of the notion of integrity - being honest and having strong moral principles -and the need to make possible invested interests and biases transparent	Ability to recognize the need to be transparent and how to act through proper channels	Show responsibility in reporting possible interests and biases to relevant person(s)
	Knowledge of roles and responsibilities in a team or group	Ability to accept the role assigned to you and to execute your duties in a responsible manner and report openly to other team members	Act responsibly in the roles you are assigned in a team, taking an active role in having the team functioning effectively

5. Dimension 4: Ethics, norms, values and professional standards[7]

Dimension 4 is a hot topic in these troubled times. The European Commission and the Council of Europa have highlighted its importance for a sustainable and democratic society.

The role of the Council of Europe - as an international, intergovernmental and multicultural organisation - is to strive to protect and promote human rights, democracy and the rule of law. It defined three core values to guide its work: professionalism, integrity and respect. This, of course, are values to be applied by any organisation, in the work place and in society at large.

Also, as part of the Bologna Process serious attention has been given to the topic in the Ministerial Rome Communique: "We reaffirm our commitment to promoting and protecting our shared fundamental values in the entire EHEA through intensified political dialogue and cooperation as the necessary basis for quality learning, teaching and research as well as for democratic societies. We commit to upholding institutional autonomy, academic freedom and integrity ….". This statement also relates to the Tuning-CALOHEE Dimension 3: Processes of governance and decision making. As a follow-up, the importance of the topic is expressed again in the Ministerial Tirana Communique (May 2024). In the context of higher education, the importance of academic freedom and integrity are emphasized.

New means of communication and the development of generative Artificial Intelligence have stressed the importance again of personal and group responsibility for acting ethical, respectful, respecting agreed norms and values as well as professional standards.

In the Tuning-CALOHEE framework covering this dimension, defined in the context of a democratic society, a distinction is being made between (1) universal ethical principles, values and professional standards and those (2) specifically related to a particular field of study / profession. It is expected that these competences are learnt and assessed through the subject areas.

The working group has distinguished the level 6 and 7. This makes much sense because the group stresses that this dimension and its sub-dimensions is trained and developed in the context of individual disciplinary fields. For a number of academic fields, the generic competences involved are in fact subject specific one, such as ethics and professional standards for the health care profession.

Table 6: Ethics, norms, values and professional standards

Dimension	General Competence	Knowledge	Skills	Autonomy and responsibility (wider competence)
Overarching descriptors		Demonstrate critical understanding of general ethical principles, norms and values and professional standards	Evidence the ability to understand and apply the processes of decision-making and the consequences of actions taking into account principles, norms, values and standards both from a personal and a	Manifest the ability to active contribution to upholding, promoting and defending general ethical principles, norms, values and professional standards in governance, communication and cultural interaction.

[7] CALOHE2 working group members: Mary Gobbi (Nursing), Kenneth Thomas (Civil Engineering), Michelle Tonna Attard (Teacher Education), Ian Bearden (Physics), Darina Martykánová (History).
CALOHEX working group members: Antonio Teixera (ICT), Josanne Vasallo (Medicine), Leander Guzmann (CPAD), Alexandru Luca (ICT), Sarah Bennett (CPAD), Senka Neuman-Stanivukovic (IR), Richard Puyt (Business), Huseyon Ocal (Business), Daniela Nascimento (IR).

			professional standpoint.	
Sub-dimensions				
	Competence 1 relates to being a member of society irrespective of the subject area/profession			
Level 6: **1.**	Can apply the general international, ethical principles, norms, values and standards regarding the behaviour of individuals, groups and states to their daily life.	Can name and outline the key international declarations on rights, responsibilities, ethics, and research Knows the personal attributes expected by civic society Understands the rights and responsibilities of individuals within the context of a democratic society.	Can respond appropriately when faced with challenges to ethical or legal dilemmas and issues in daily life Can demonstrate personal attributes expected of a student/ new graduate Can seek support/advice	Can make decisions regarding their role in society. Take account of the needs of local communities, organisations Be able to use democratic processes to resolve challenges.
Level 7: **1.**	Can apply the general international, ethical principles, norms, values and standards regarding the behaviour of individuals, groups and states to unpredictable and complex situations in their daily life.	Can analyse the relevance of key international declarations on rights, responsibilities, ethics, and research with respect to: The personal attributes expected by civic society the rights and responsibilities of individuals within the context of a democratic society.	Can anticipate and respond appropriately when faced with complex or unpredictable challenges to ethical or legal dilemmas and issues in daily life Can demonstrate personal attributes expected of a postgraduate Can advocate in the workplace for others	Can evaluate their changing role in society in the light of emergent and new issues. Anticipate the needs of local communities, organisations, and states Can critically evaluate contemporary standards in public life Can advocate for change to improve ethical standards in society
	Competences 2 and 3 are specifically related to the subject area/profession and should be studied and applied in this context.			
Level 6:	Can practise safely according to relevant ethical, regulatory, legal, and advisory codes.	Identifies common moral, ethical and/or legal dilemmas and issues in the subject area/profession Knows the relevant codes, standards, and requirements Can outline the common risks, challenges and dilemmas associated with their practise Can identify likely consequences and impact of these dilemmas/challenges	Can apply these ethical principles to their daily practice and respond appropriately to any challenges, dilemmas or issues that may arise. Can seek help/guidance Can report incidents appropriately Has technical/social competence to respond safely and effectively to the challenge/dilemma Demonstrates relevant personal attributes (truthfulness, etc)	In the context of their personal competence, is aware of their responsibilities to society and their limitations when making decisions Can situate the role of the subject area within broader society Can collaborate with other subject areas to promote the common good. Promotes and defends ethical decision making and processes

		Knows strategies to guide their decision making		according to best practises.
Level 7:	Can critically reflect upon the application of international, ethical principles, norms, values, and standards to specific subject-based situations	Can identify any limitations to existing regulations, codes, and standards Has relevant evidence to illustrate the limitations of current codes and regulations Can justify and recommend changes to professional standards Can debate the issues taking account of different ethical perspectives and notions of the common good	Can presented reasoned arguments to support ethically informed decisions, taking account of different perspectives e.g., from clients and other stakeholders. Can articulate and defend their perspective within an interdisciplinary perspective. Can demonstrate personal attributes in critical debate and advocacy e.g. Impartiality, fairness, openness, justice in their work context. Can advocate and take appropriate actions for others, especially for the vulnerable (e.g. safeguarding, children, those with disabilities).	Can advocate for change in civic society as well as the subject area/profession Can analyse complex situations and identify potential solutions relevant to civic society
Level 6:	Is ethically prepared for immediate and future practice in the subject area/profession.	Is aware of likely trends, advances, and innovations that may have associated moral, ethical or practical /technical challenges. Can outline the potential of the advance and impact upon both society and the subject area/profession. Is aware of any associated resource implications Can identify where inter disciplinary collaboration may be advised or necessary	Can apply their current life long learning skills to these predicted developments.	Can contribute to awareness raising in the subject area and wider society with respect to these predicted developments.
Level 7:	Can evaluate and recommend strategies to address the implications of likely or emergent ethical	Justifies the strategies that may be necessary to ensure that subject area/professional standards are equipped to deal ethically and responsibly with any	Can provide complex analyses of unpredictable and uncertain situations in their daily practice and articulate resolutions to the dilemmas.	Within the context of their personal competence, can take an active role in the subject area with respect to advocating for change or

	problems, dilemmas and legal issues that may emerge from advances in the subject area/profession and wider society.	emergent challenges in the field.		development in the professional standards or codes. Actively contributes to debate in civic society.

Strategies for learning, teaching, and assessment

The three regulated professional groups (civil engineering, education, and nursing) have outlined their learning, teaching, and assessment strategies within their subject area documents. Within the subject areas of history and physics, ethical competences were often implicit rather than explicit in the curriculum. For example, the respective roles of the historian and physicist is already covered in current curricula together with the norms of good practice and relevant legislation for personal, group, societal safety and well-being. However, both subject areas noted that currently it could be challenging to demonstrate such curricula content due to its tacit presence.

The CALOHEE projects considered that making the ethical components more explicit and visible within the existing competences and assessment criteria could draw attention to their presence, offering greater transparency to both students, academics, and other stakeholders.

Their is unanimousy that there is **not** a role for a generic ethical component across all subject areas, rather ethical norms and codes of practice should be made visible within the subject area curricula.

6. Dimension 5: Climate Change impact on societies[8]

This dimension was not taken into account in the CALOHEE phase 1 project, implemented in the period 2016-2018. Since, it has obtained a lot of attention from policy makers and society at large. These are a direct result of the definition and debate on the UN Sustainability Goals. As a means to turn these goals into a set of competences to develop in education the European Commission took the initiative to develop the GreenComp reference framework for sustainability competences.

The framework applies the following definition for *Learning for environmental sustainability*: "In the context of GreenComp, learning for environmental sustainability aims to nurture a sustainability mindset from childhood to adulthood with the understanding that humans are part of and depend on nature. Learners are equipped with knowledge, skills and attitudes that help them become agents of change and contribute individually and collectively to shaping futures within planetary boundaries".

Table 7: GreenComp table: areas, competences and descriptors

Area	Competence	Descriptor
1. Embodying sustainability values	1.1 Valuing sustainability	To reflect on personal values; identify and explain how values vary among people and over time, while critically evaluating how they align with sustainability values.
	1.2 Supporting fairness	To support equity and justice for current and future generations and learn from previous generations for sustainability.
	1.3 Promoting nature	To acknowledge that humans are part of nature; and to respect the needs and rights of other species and of nature itself in order to restore and regenerate healthy and resilient ecosystems.
2. Embracing complexity in sustainability	2.1 Systems thinking	To approach a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems.
	2.2 Critical thinking	To assess information and arguments, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions.
	2.3 Problem framing	To formulate current or potential challenges as a sustainability problem in terms of difficulty, people involved, time and geographical scope, in order to identify suitable approaches to anticipating and preventing problems, and to mitigating and adapting to already existing problems.
3. Envisioning sustainable futures	3.1 Futures literacy	To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future.
	3.2 Adaptability	To manage transitions and challenges in complex sustainability situations and make decisions related to the future in the face of uncertainty, ambiguity and risk.

[8] CALOHE2 working group members: Carla Salvaterra (History), Paolo Villani and Alfredo Soeiro (Civil Engineering), Marja Kaunonen (Nursing), Inkeri Kontro, Katrien Strubbe (Physics) and Emilia Restigliani (Teacher Education)
CALOHEX working group members: Anke van Trigt (Medicine), Kristin Heggen (Medicine), Erla Hallgrimsdottir (Medicine), Frank Andreas Schittenhelm (Business), Thomas O'Toole (Business), Karlos Pérez de Armino (IR), Kieran Corcoran (CPAD), John Buttler (CPAD), Aija Freimane (CPAD), Christian-Andreas Schumann (ICT), Enzo Mingozzi (ICT), Inés Viana Modes (Occupational Therapy)

	3.3 Exploratory thinking	To adopt a relational way of thinking by exploring and linking different disciplines, using creativity and experimentation with novel ideas or methods.
4. Acting for sustainability	4.1 Political agency	To navigate the political system, identify political responsibility and accountability for unsustainable behaviour, and demand effective policies for sustainability.
	4.2 Collective action	To act for change in collaboration with others
	4.3 Individual initiative	To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet.

According to the GreenComp document all 12 competences are equally important and therefore the 'competence sustainability' is made of as many building blocks. Both the four areas and the twelve sustainability competences are interrelated and interconnected, and should be treated as parts of a whole. The paper stresses that learners are encouraged to acquire the full set of competences, they do not need to acquire the highest level of proficiency in all 12, nor have the same proficiency across all.

This last statement about levels to meet, creates a dilemma, because the framework does not define actual sublevels, only aspirational levels or intended levels. In Tuning-CALOHEE terms the highest level of learning according to its frameworks: autonomy and responsibility. The framework does not take the overarching European Qualifications Frameworks into account.

The GreenComp model deviates in its construction from the Tuning-CALOHEE and EQF for LLL models which break a descriptor down in 'knowledge', 'skills' and 'autonomy and responsibility' components. As in the case of the dimension 4 it departs from identifying competences first. Like the Tuning-CALOHEE model it also distinguishes sub-dimensions which are named in the CreenComp 'areas'.

To respect the work of the GreenComp authors and working group it was decided not to turn it into the Tuning-CALOHEE model but instead to check whether the competence labels used and the descriptors defined can be applied in higher education degree programmes.

GREENCOMP Applied to five CALOHEE Subject Areas

A. Proposal for Inclusion of GreenComp in Learning Outcomes Frameworks

As a result of the working group activities during the three meetings of 2022 three - non-exclusive - options to proceed for each project Subject Area of the Learning Outcomes Frameworks have been identified:

a) Incorporate GreenComp requirements in each Subject Area Framework adapting its descriptors

b) Create specific new competence(s) to add to the existing Subject Area framework (possibly adding new dimensions)

c) Join GreenComp with the existing Subject Area Frameworks by emphasizing where to incorporate learning outcomes when designing specific programmes.

For the third option Table 7 shows examples/possibilities for five Subject Areas (History, Civil Engineering, Physics, Nursing and Teacher Education) at bachelor level / level 6 of the European Qualifications Framework for LLL. Examples were taken from the CALOHEE Subject Area Assessment Reference Frameworks, published in 2018.

For each Subject Area - in the white column - the relevant dimensions (e.g. 1, 2, 3 etc.) and/or sub-dimensions (e.g. 1.1, 2.1 etc.) of its framework are named. In the green column these are connected

to the respective GreenComp framework areas and competences by using different colours: Green: Embodying sustainability; Violet: Embracing complexity; Blue: envisioning sustainable futures; Red: Action for sustainable futures.

For the precise descriptors of the subject area dimensions and sub-dimensions, consult the following document: https://www.calohee.eu/wp-content/uploads/2018/11/4.1-Assessment-Reference-Frameworks-for-Civil-Engineering-Teacher-Education-History-Nursing-and-Physics-FINAL-READER-v2.pdf

Table 8: Inclusion of GreenComp in Existing Frameworks

Level 6 EQF/Bachelor; QF for EHEA dimensions	History		Physics		Nursing		Civil Engineering		Teacher Education	
KNOWLEDGE AND UNDERSTANDING	1. Human Beings 1.1 1.2 1.3	1.1 1.2 1.3 3.1 4.1			1. Professional values 1.2 1.4 1.6	1.2 2.2 2.2				
KNOWLEDGE AND UNDERSTANDING APPLICATION			4. Problem solving	2.1 2.2 2.3	2.Nursing practice and clinical decision making 2.1 2.5 2.6 2.7	1.1 2.2 2.3 3.3	2. Problem solving	2.1		
CRITICAL REFLECTION, JUDGEMENTS, SYNTHESIZING AND DESIGN	2. Text and context 3. Theory and Concepts 3.3 4. Inter-disciplinarity 4.1 4.3 5. Initiative and Creativity	2.1 2.2 2.3	5.Scientific Culture 6. Work Ethic	3.1 1.2 4.1 4.2 4.3	1. Professional values and the role of the nurse	1.4 1.6	6. Decision Making	2.3	5. Values 5.3 5.4	4.1 4.2 4.3
COMMUNICATION			7. Communication 8. Project Management and Team Working	3.1 4.2 4.2 2.1	5. Leadership and Team Working 5.1 5.5	4.2 3.3	7.Team Working	4.3	4. Communication	4.2
LIFELONG LEARNING	7. Professional Development 7.3	4.2 4.3	9. Professional development	1.1 3.2					6. Professional Development 6.3	4.2

B. How to Apply the Relationships between GreenComp and Learning Outcomes Frameworks

The matching of the GreenComp areas and competences and the (sub)dimension of the CALOHEE reference frameworks found that there are already implicit connections (sometimes even explicit), that is transversal common issues which connect to the broader understanding of sustainability beyond purely environmental issues. For example, when considering the following statement from GreenComp, 2. Embracing complexity in sustainability, 2.2 Critical thinking:

"To assess information and arguments, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions."

It is observed that in the different subject area frameworks there can be three main (not exclusive) approaches to connect to this statement:

1) Civil Engineering, Nursing and maybe Education has a main focus on the way in which the discipline and its practice is adapting to changing social needs, new knowledge /awareness and theoretical underpinnings of value frameworks

2) Physics has a main focus on the way information is organized, analysed and fits with existing frameworks and models, and on the way the results are evaluated to look for improvements in the model.

3) History has a main focus on how approaches to sustainability are changing over time and are connected to the conceptual and value frameworks in which they have developed.

Given the results of the analysis it is clear that connecting the Learning Outcomes Competence Frameworks of the five subject areas with the GreenComp is a very useful exercise. The results of the exercise can help enhancing a wider approach even going beyond environmental sustainability and the addressed subject areas. Establishing the relationship between GreenComp and the Learning Outcomes frameworks can promote the integration of the concepts of sustainability with all education and training frameworks to aim at achieving sustainable development goals.

References

Measuring and Comparing Achievements of Learning Outcomes in Higher Education in Europe (CALOHEE) Project, co-financed by the European Union. Retrieved from: www.calohee.eu.

GreenComp, "GreenComp: the European sustainability competence framework", Joint Research Centre. Retrieved from https://joint-research-centre.ec.europa.eu/greencomp-european-sustainability-competence-framework_en.

Examples of connections of the Subject Areas Reference Frameworks to the GreenComp Framework

Civil Engineering
Dimension 3: Design Subset 2 L6_3.2 Safe, **sustainable** and of low impact designs
K6-3.2 Define and describe key aspects of safety, **sustainability** and impact on society and environment related to civil engineering phenomena and to the ethical obligation and social responsibility of professional engineers. (it means that the designer should reconsider his priorities: valuing sustainability and critical thinking, see the example @GreenComp, page 39)

Nursing

From the updated Nursing Qualifications Reference Framework and Assessmetn Reference Framework: Critical reflection, judgements, synthesizing and design

Knowledge

Demonstrate current knowledge and understanding of relevant theoretical frameworks, concepts, methodologies and/or practices to gather, evaluate and interpret field related and societal information. This includes ethical awareness, intercultural issues, political and governance awareness, decision making, and other sustainable developments.

Skill

Apply appropriate theories, concepts, methodologies and/or practices and field related and generic skills and competences, including digital ones, to analyze, synthesize, and make informed judgments while taking into account relevant social, cultural, scientific and ethical issues and challenges.

Wider competence

Demonstrates the ability to evaluate and reflect on new knowledge and contribute to discourse to identify and implement individual and collaborative ways to either move forward and/or solve field and societal challenges and problems. Dimension 1: The professional values and the role of the nurse

Subset of Competence 1 **The professional values and the role of the nurse,** 1.4 Within the scope of his/her professional practice and accountability, is aware of the different roles, responsibilities and functions of a nurse, and is able to adjust their role to respond effectively to population/patient needs.

1.6 Is able to justify and articulate the relevant theoretical and research underpinnings to their professional practice
Framework:
S6_1.1
Demonstrates the ability to respond appropriately and effectively to professional, moral, ethical and/or legal dilemmas and issues in day-to-day practice.
C6_1.1
Within the scope of their professional practice and accountability, demonstrates the ability to adjust their role to respond effectively to, and where necessary and appropriate can challenge current systems to meet population/patient needs.

Physics
From the subset 5: L6_4.5 **Creative and innovative thinking**

K6_4.5: Organize knowledge of physics in a way that facilitates links between different concepts and ideas.

- GC 2.2 K1 Knows that our understanding of sustainability is always evolving
- GC 2.2 S2 Can analyze and assess arguments, ideas, actions and scenarios to determine whether they are in line with evidence and values in terms of sustainability.

S6_4.5: Reflect on own solution to a problem and compare it with others' solutions; acknowledge alternative ways to look at a same problem

- GC2.2 S2; Can analyze and assess arguments, ideas, actions and scenarios to determine whether they are in line with evidence and values in terms of sustainability.
- GC 2.2 S4 Can reflect on the roots and motives of decisions, action and lifestyles to compare individual benefits and costs with societal benefits and costs.
- GC 2.2 A3 Takes an evidence-based perspective and is ready to revise it when new data emerge
- GC 2.2 A4 Is willing to accept and discuss sustainability questions, issues and opportunities

S6_4.5: Devise creative ways to address a problem, issue or task, and to exit critical issues or stuck situations.

- GC 3.3 K2 Knows that there is no single solution to complex socio ecological problems, but rather different alternatives depending on time and context.
- GC 3.3 S1: Can adapt to different approaches when working on sustainability
- GC 3.3 A4: Is flexible, resourceful and adaptable in coping with unexpected environmental changes.

Education

S6_6.1
Ability to critically examine educational research and developments (publications, events, resources, etc.) in search of solutions for challenges experienced in own
classroom
Dimension 2: Design and management of processes of learning, teaching and assessment
S6_2.4
Ability to design and apply assessment tasks and transparent criteria (rubrics) for measurement and evaluation
C6_2.1
Capacity and commitment to critically reflect on the impact of teaching decisions on the learner's future in order to make responsible syllabus design and enhancement choices
K6_4.3
Critical understanding of social media and communication technologies, as well as their impact on learners and society
C6_5.1
Capacity and commitment to critically reflect and work on consistency of own personal and professional identity

History

DIMENSION 3. Theories and concepts
Subset 3 Periodization and other national and historiographical frameworks

Level 6_3_3 Competence
Connect explanations of historical and societal issues =>(including approaches to sustainability) and processes to the conceptual and value frameworks in which they have developed