

Competences in Education and Recognition Project (CoRe)

A TUNING Guide
to
Formulating Degree Programme Profiles
Including Programme Competences and Programme
Learning Outcomes

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E – Key Competences Achieved on Programme Completion

E	programme competences Please list below the key generic and specific competences up to a total of 15 (see page 28-29 for details). In the case of regulated professions, please refer to page 28-29.
1	Generic
	Please list here the generic programme competences.
2	Subject specific
	Please list here the subject specific programme competences.

Section E lists the key competences obtained by the student in the programme. Before providing instructions on how to list the competences in this section, some necessary background information on competences is provided.

What is meant by **Key Competences**? Key competences are the main competences developed in a degree programme. As explained in chapter 1, competences are understood in this guide in an encompassing way: they cover demonstrated knowledge, understanding, (subject specific and generic) skills, abilities, attitudes and (ethical) values. They cover the whole spectrum of capabilities from pure theoretical and methodological knowledge to vocational knowledge and from research abilities to practical abilities.

We distinguish competences from learning outcomes. This distinction is made to highlight the different roles of the most important players in the teaching, learning and assessment process: academic staff and students. The learning outcomes of a process of learning are formulated by academic staff, preferably involving student representatives in the process, on the basis of input of internal and external stakeholders. All learning outcomes are the measurable result of a learning experience which allows ascertaining to which extent / level / standard competences have been formed or enhanced. Competences are obtained or developed during the process of learning by the student and therefore belong to the student involved.

It is important to note competences are not always understood this way. In the context of the EQF for LLL, for example, competences are distinguished from knowledge and skills and are described in terms of responsibility and autonomy.

Here however we understand them as stated above. This is because, in an increasingly knowledge-based and technologically- driven world, it is less and less appropriate to make a sharp distinction between higher education and vocational training. As we can see around us in today's world, theoretical studies contain vocational elements (for example work placements), while vocational studies increasingly include theoretical and research components.


Each degree programme has its own mixture of theory, application and vocation. Its profile and the mix of competences covered, is decisive for its classification.

Competence statements

Of course, competences too must be described. The statements used to describe competences are normally short: they indicate an area of capability, which might be connected to a field of knowledge, a skill or related to another competence.

In practice, competences are developed in the framework of a particular subject area. Therefore, it is very useful to link a particular competence to the context in which the competence will actually be applied. This will provide an indication of the level to which the competence is developed in the framework of a degree programme.

In each degree programme a number of key competences are developed in a progressive way. This implies that competences are built in different course units. This is visualized in the image below.



LEARNING OUTCOMES AND COMPETENCES IN STUDY PROGRAMMES

Example

Course unit/ learning outcome	Competence										
	A	B	C	D	E	F	G	H	I	J	K
Unit 1		X			X					X	
Unit 2	X			X		X	X			X	
Unit 3		X				X				X	
Unit 4	X		X								X

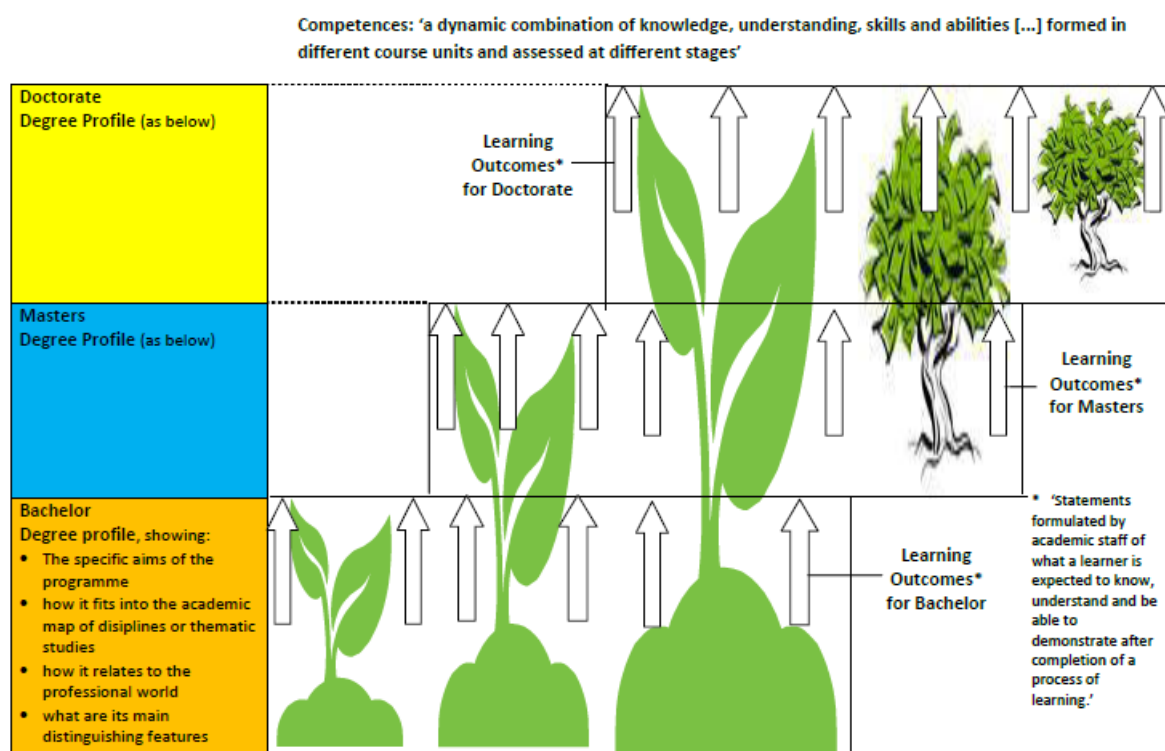
X = THIS COMPETENCE IS DEVELOPED AND ASSESSED AND IS MENTIONED IN THE LEARNING OUTCOME OF THIS UNIT

Management Committee

This type of grid or matrix is widely used in various countries to show which competences are developed in which course units and to what level.

Competence development can also take place in different cycles, as is shown below:

Growth of Competence in Degree Programmes



Author: Jeremy Cox, Polifonia Network, for TUNING

Some competences can be developed progressively and sequentially during the three successive HE cycles, while work on others may be limited to one or two cycles. This is visualised in the image by using three types of 'trees': shoots and two more mature trees. When a competence is developed in the Master or Doctoral phase only, it is rooted, nonetheless, in the learning already achieved in the previous cycles, Bachelor and/or Master.

'Generic' and 'subject specific' competences

In section E of the Degree Profile template, first the 'generic' and then the 'subject specific' competences should be listed. The difference between the two is the following:

A **generic competence** is a competence which is transferable between subject areas. For example:

- **Research Ability:** capacity to apply oneself in a dedicated way to the achievement of major goals which contribute to the advancement of knowledge through research.
- **Teamwork:** capacity for working in a team and for assuming responsibility for tasks.
- **Management ability:** capacity to plan and manage projects taking into account budgetary and personnel constraints.

- **Problem solving:** capacity to handle stress and to deal effectively with practical problems.
- **Creativity:** capacity to be creative in developing ideas and in pursuing research goals.
- **Communication skills:** ability to communicate effectively by listening and thinking carefully,
- **Communication of information:** ability to present complex information in a concise manner orally and in writing,

A subject- specific competence is a competence that is performed in a specific subject area and typical of that subject area. For example:

- Ability to demonstrate knowledge of, and ability to use, research techniques and technology.
- Ability to use mathematics to describe the subatomic world and to develop theoretical concepts and models
- .Ability to analyse particle interactions in terms of fundamental forces and particles.
- Capability to use Quantum Field Theory in theoretical physics research. .

How to list and describe competences in the degree profile

The competences to be listed in Section E of the Degree Profile template are a selection of the ‘generic’ and ‘specific’ competences that will have been acquired by the time the programme is completed. A minimum of 8 and a maximum of 15 key competences should be listed under E.

To select the key competences, please single out the main competences of the programme that, listed together, provide a good insight into the character of the programme to a relatively uninformed reader. Please keep in mind that the Degree Profile aims to characterise the degree as a whole. This will be reflected especially in the sets of competences listed here and sets of the learning outcomes listed in section F.

Please note: there are subject areas (for example regulated professions) that might not make a distinction between subject specific and generic competences. If this is your case, please include a note of explanation in the Degree Profile

Describe the competence

As stated above, the set of competences to be developed or further developed in a degree programme represents a dynamic combination of skills, demonstrated knowledge and understanding, interpersonal, intellectual and practical skills and ethical values. Each competence pertains to one or sometimes more than one of these elements. Some will be (more) transversal or generic, others will be (more) subject related.

When describing the competence, remember that:

- the competence should reflect an area of capability in relation to an identified level (first cycle/Bachelor, second cycle/Master, third cycle/Doctoral studies). The Dublin descriptors could be used as a reference point (see above and Chapter 1).

With regard to the generic competences:

- use the standard list of generic competences developed by Tuning. Do not copy it: rather, use it as a starting point to write a more detailed competence statement tailored to the programme. The most recent version is included in Annex 2.

For generic competences it is suggested to:

- begin with a short definition or the name of the competence (e.g. research, communication, interpersonal, teamwork, ethics) followed by a colon ':' (e.g. communication©; and
- add to this short definition a qualifying/informative statement. For example: communication: ability to communicate effectively with a range of people from different backgrounds.

With regard to the subject specific competences:

- note that subject area specialists have designed and validated reference frameworks. For numerous subject areas, Tuning subject area guidelines and reference points and/or the guidelines and reference points developed as part of national and/or sectoral frameworks are available.

Examples

We give some examples of generic competences to illustrate here what is meant. (For further examples, see Annex 3.)

Example 1:

Tuning lists 'planning and time management' as a generic competence. This description is very general and does not show what the student is able to demonstrate. Therefore, it is necessary to give more detail and context to the competence so that the reader can understand exactly what the competence entails. An example of a competence statement might be: *capacity to plan and manage projects, taking into account time and personnel constraints.*

Example 2:

Another example of a generic competence might be 'teamwork'. This again is a brief definition which provides no specific information about what a student is actually able to do. However, *capacity for working in a team and for assuming responsibility for certain tasks*, provides the reader with information that the student can work with others and can take responsibility for some of the tasks to be performed.

Both examples meet the requirement that the description of the competence should be as short as possible, while at the same time providing enough context and detail as to give the reader some insight into what the student is able to do.

F – List of degree programme learning outcomes

The list of Degree programme competences is followed by a list of Degree Programme Learning Outcomes (PLOs).

f	Complete list of programme learning outcomes
	<p>Please list here the learning outcomes of the programme, up to a total of 15 to 20</p> <p>For details, see page 31-36.</p>

The Degree Programme Learning outcomes are a set of statements about what a learner is expected to know, understand and be able to demonstrate by the time all examinations/assessments and required work have been passed successfully and the degree is awarded.

The set of PLOs is the same for all students who have completed the programme. If there are structured optional pathways or tracks within the programme, additional learning outcomes may be added to specify the results of those specific pathways or tracks. In cases where a regulator may require a long and exhaustive list of Programme Learning Outcomes, a reference to where this comprehensive list may be found should be included under F.

When preparing the learning outcomes for inclusion under F use brief yet precise formulations.

In order to choose the Degree Programme Learning Outcomes that should appear in the list, the following points may be useful:

- Use ECTS User Guide 2009 definition of learning outcomes. See:
- http://ec.europa.eu/education/lifelong-learning-policy/doc/ects/guide_en.pdf
- Remember that these are to be the learning outcomes that describe what a student is able to demonstrate upon successful completion of the programme (what the graduate demonstrably knows, understands and is able to do).
- Taken together, the set of PLOs should fully express the characteristic features of the particular programme. When appropriate, include both those which are important but common to many other Degree Programmes and those which distinguish the specific programme

described.

- Take into account international reference points for learning outcomes, e.g. Tuning conceptual frameworks for subject areas. See: <http://tuning.unideusto.org/tuningeu/>
- Check/ensure consistency with (inter-) national standards (e.g. accreditation, quality assurance) when formulating your subject specific competences. See: http://www.bologna-bergen2005.no/Docs/00-Main_doc/050221_ENQA_report.pdf

After completing the list (which should contain no more than 15 to 20 PLOs), it is important to check whether the list of Programme Learning Outcomes accurately reflects the nature of the programme and is complete. The PLOs should align with the programme competences, not necessarily on a one to one basis, but overall.

How to Write Good Programme Learning Outcomes

Learning Outcomes (LOs) are, as the words imply, a specification of the direct results and outcomes of a learning process. Degree Programme Learning Outcomes (PLOs) can be formulated for every cycle / formalized level. They are distinguished from module or course unit learning outcomes which refer to a smaller unit of learning.

So far, the relevance of Degree PLOs has been underestimated. The focus has been on writing learning outcomes for modules and course units. This is unfortunate because it is the Programme Learning Outcomes that:

- play a crucial role in the process of validation and recognition of a qualification;
- offer insight into what the student knows, understands and is able to demonstrate after successful completion of a period of assessed learning resulting in a qualification;
- Are related to the relevant cycle level descriptors;
- should be included in the Diploma Supplement.

PLOs are the intended learning outcomes for each student undertaking the programme. They become the student's achieved learning outcomes at the moment all examinations and required work have been passed or completed successfully to obtain the degree concerned. The learning outcomes to be included in the Profile have thus become the achieved learning outcomes.

It is sometimes argued that the achievements resulting from a degree programme might be more than the sum of the module and/or unit Los. We agree that this is the case. This does not imply, however, that PLOs should be phrased in very general or vague terms, nor that they should be as few as possible. Because PLOs indicate a standard/level of achievement that has been reached, it is

crucial that they give a precise overview of what has been learned and has been demonstrated through assessment.

PLOs are aligned with, and informed by, relevant international and national frameworks at both the general educational level and the specific subject level. General international frameworks for Europe are the Qualifications Framework for the European Higher Education Area (QF for the EHEA), and the European Qualifications Framework for Lifelong Learning (EQF for LLL), which is based on an eight level system (see chapter 1). For each cycle, or level, a set of descriptors has been designed to describe the attainments / attributes of all those holding that qualification. These descriptors are meant for programmes in general, in relation to the level/cycle involved, and by definition are not related to a particular subject, topic or area. They should be taken into account when phrasing and designing PLOs. When they are available, it is – in addition – strongly advised to consult subject specific frameworks, such as the relevant Tuning subject area reference frameworks and/or national conceptual frameworks of subject related descriptors. These frameworks contain subject specific descriptors for each of the cycles or levels and are used as a reference to decide whether the LOs of a particular programme meet minimum standards.

This subsection provides tools for designing and writing good PLOs. Phrasing PLOs is a skill in itself and it is a job that should be done by the team of academics teaching the programme. Writing PLOs requires a step by step approach and clear criteria against which they can be evaluated.

The following are characteristics of good verifiable, comprehensible and observable PLOs. They should be:

- **Specific** (giving sufficient detail, written in clear language)
- **Objective** (formulated in a neutral way, avoiding opinions and ambiguities)
- **Achievable** (feasible in the given timeframe and with the resources available)
- **Useful** (they should be perceived as relevant for higher education studies and civil society)
- **Relevant** (should contribute to the aim of the qualification involved)
- **Standard-setting** (indicate the standard to be achieved)

(These general characteristics also apply to module and unit LOs.)

The language used to describe the learning outcomes is of crucial importance. While there are a variety of different ways of outlining a learning outcome, each one normally contains five key components:

1. An **active verb form**;
2. An indication of the **type** of LO: knowledge, cognitive processes, skills, or other competences;
3. The **topic** area of the LO: this can be specific or general and refers to the subject matter, field of knowledge or a particular skill;
4. An indication of the **standard** or the **level** that is intended / achieved by the LO;

5. The **scope** and/or **context** of the LO.

Different taxonomies or classification systems have been developed to explain how people learn and what features distinguish the beginner from the expert. The taxonomies have specific verbs and expressions associated with their classification system. While these systems can be helpful in writing LO statements, each of these taxonomies has its strengths and shortcomings. Each has been developed in a particular timeframe and for a particular purpose and might not always be applicable to present day learning.¹

Nevertheless, let us first think about the choice of verb to be used. It can be argued that the grouping of verbs to a level of achievement is to a certain extent arbitrary, because a particular verb might have differences in connotation for different subject areas, cultures and languages. Verbs might not easily be translated from one language to another without a significant change in meaning.

Despite this warning, it may be useful, first, to give some examples of active verbs as a source of inspiration.

In ascending order, these might be:

- List, describe, explain, compare, argue, dispute, analyse, critique

or

- Observe, participate, lead, disseminate

or

- Listen, intervene, resolve

Second, the LO should clearly reflect the type of learning to be achieved. The language should indicate whether the LO is predominantly focused on one or more of the types of learning. This means making it explicit whether the LO is about acquiring knowledge, developing understanding and cognitive processing, learning a mechanical skill, a professional stance or the like.

All LOs should indicate clearly the topic or subject matter of the learning: a field of knowledge, a professional activity, an ability to perform, or a particular skill.

¹ One of the most prominent taxonomies is the one developed by Benjamin Bloom in 1956 and further developed by others. Bloom focuses on levels of thinking behaviours in the cognitive domain. Bloom distinguishes six levels: knowledge, comprehension, application, analyses, synthesis and evaluation (ability to judge) and has linked applicable *verbs* to these levels. The word knowledge has here a technical meaning, quite different from what is usually meant. Bloom also drew attention to the affective domain or wider competences that is interpersonal skills, attitudes, values. He has ordered these in five ascending categories that is receiving (lowest), responding, valuing, organizing and characterizing (highest level) and again has related these to active verbs. Other authors have drawn attention to the psychomotor (e.g. Fitts and Posner) and experiential domains (e.g. Steinaker and Bell). The psychomotor domain focuses on the co-ordination of brain and muscular activity and distinguish different levels from observation or imitation to the highest level of creativity (for example in music, fine arts etc.). Experiential learning relates to the extent to which the individual participates or engages with the experience and the roles or tasks associated with it.

The LO needs to set the standard or level of learning to be achieved: this needs to reflect the breadth, depth, and complexity of the learning as well as the relevant qualification descriptor.

To illustrate the above, we analyse here below a few examples from the fields of History, and Physics.

Some examples of PLOs from the subject area of History:

- a) [The student has] demonstrated knowledge of European and world chronology, especially from 1500 on, and is able to describe in synthetic terms the main approaches to the study of European empires and to world and global history
- b) [The student has] demonstrated capability to address a research problem, retrieving the appropriate sources and bibliography, and giving critical, narrative form to his/her findings in a text of around 60 pages.

Using our component table we can derive the following:

a) - to demonstrate - to describe	<i>knowledge</i>	European and world chronology, especially from 1500 on	in synthetic terms	the main approaches to the study of European empires and to world and global history
verb	type	subject	Standard	scope/context

b) to address	retrieving the appropriate sources and bibliography <i>(skill)</i>	a research problem	critical, narrative form	findings in a text of around 60 pages.
verb	type	subject	Standard	scope/context

An example of a more complex PLO in the field of physics is the following:

- Ability to make measurements of physical quantities and to pursue an investigation by the design, execution and analysis of experiments, to compare results with existing knowledge and theories, and to draw conclusions (including degree of uncertainty).

Similarly, this LO can be broken down according to the five key components:

Ability to make	measurements <i>(knowledge)</i>	physical quantities	pursue an investigation by the design, execution and	compare results with existing knowledge and theories, and to draw conclusions
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			analysis of experiments	(including degree of uncertainty).
verb	type	subject	Standard	scope/context

Progression routes can be indicated by offering PLOs for three levels, for example first and second cycle and the doctorate. This can be done in general for all types of a LO. We give here examples for a transferable skill or generic competence as well as for a subject area related competence.

The first example here illustrates how to use the generic competence *Creativity*:

Level	Programme learning outcome
First cycle/ Bachelors	Demonstrable ability to generate and convey new ideas or to generate innovative solutions to known problems or situations
Second cycle/ Masters	Demonstrable ability to generate original, quality ideas that can be made explicit and defended in both known and unfamiliar situations
Doctorate	Demonstrable ability to contribute original, practical, applicable and complex ideas and solutions that affect self and own processes as well as others.

To illustrate the subject specific competence an example has been chosen from the field of Nursing:

Level	Programme learning outcome
First cycle/ Bachelors	The nurse can work closely with individuals, groups and carers, using a range of skills to carry out comprehensive, systematic and holistic assessments. The assessments must take into account current and previous physical, social, cultural, psychological, spiritual, genetic and environmental factors that may be relevant to the individual and their families.
Second cycle/ Masters	In his/her designated speciality, the nurse must demonstrate his/her mastery of advanced nursing skills, (including diagnostic and therapeutic techniques) to assess and manage patients with complex health/illness states.

Clinical Doctorate	The nurse can demonstrate leadership in his/her chosen clinical area; able to influence and set strategic practice development and research agendas.
Doctorate/ PhD	Can demonstrate a systematic acquisition and understanding of a substantial body of knowledge which is at the forefront of the discipline of nursing, or an area of professional nursing practice.

Further reading on PLOs

Baum, David, *Writing and using good learning outcomes*. Leeds (Leeds Metropolitan University) 2009.

ECTS Users' Guide 2009, Brussels: Directorate-General for Education and Culture, Available online at: http://ec.europa.eu/education/lifelong-learning-policy/doc/ects/guide_en.pdf

Gonzalez, Julia and Robert Wagenaar, eds., *Tuning Educational Structures in Europe. Universities' contribution to the Bologna Process. An introduction*. Bilbao and Groningen, 2nd. ed. 2008.

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