ECTS USERS' GUIDE 2027

Draft 4.1

(September 2026 – revised based on the
BFUG written consultation during June/July 2026)

The ECTS Users' Guide is the officially approved description of the European Credit Accumulation and Transfer System. Its key features and basic rules are defined in sections 1 & 2. The following sections 3, 4, 5, 6 & 7 offer guidelines for implementing ECTS. They also include links to useful supporting documents and references.

The Guide uses the following wording to denote different levels of requirement:

- **must / required**: mean that the statement is an absolute requirement of ECTS;
- **should / recommended**: mean that there may exist valid reasons in particular circumstances to choose a different course, but the full implications must be understood and carefully weighed before doing so;
- **may / can / optional**: mean that a statement is truly optional.

The whole Guide is submitted for approval by ministers, but the following modalities for future changes are proposed:

- **Principles and Objectives**, and **Key Features** can only be changed by Ministers;
- Changes to **explanatory chapters** and the annexes can be commissioned and approved by the BFUG;
- Changes to **"further reading" boxes** can be made by the European Commission and EHEA Secretariat, while informing the BFUG.

Note: the final format of publication might be different from a classical PDF document, or there might be several formats. For example as a website.

Table of Contents

0. Introduction 4

1. Principles and Objectives 6

2. Key Features 8

3. Planning, Design and Delivery of Learning Opportunities 13

3.1 Learner-Centred Design 14
3.2 Learning Outcomes 16
3.3 Learning, Teaching and Assessment 18
3.4 Workload 19
3.5 Allocation of ECTS Credits 19
3.6 Monitoring 20
3.7 Level 21
3.8 Grading 24
3.9 Course Catalogue 25

4. Credit Accumulation 27

4.1 Awarding Credits for Formal Learning 27
4.2 Awarding Credits Based on Validation of Non-formal or Informal Learning 27
4.3 Documentation of Credits Awarded 30
4.4 Accumulation and Stacking of Credits 30

5. Mobility and Recognition 32

5.1 Transparency and Information 32
5.2 Planning a Mobility Experience 32
5.3 Credit Transfer 36
5.4 Recognition of credits 37
5.5 Individual Records and the Diploma Supplement 44

6. Quality Assurance of ECTS Implementation 46

6.1 Principles 46
6.2 Indicators 47

7. Standard Formats 50

7.1 Course Catalogue 50
7.2 Learning Agreement 53
7.3 Transcript of Records 55
7.4 Grade Transparency Information 56
7.5 Traineeship Certificate 60

8. Acknowledgements 60

9. Annexes 62

9.1 Annex 1 : Glossary 62
9.2 Annex 2: Grade conversion – to be revised 72
9.3 Annex 3 : Recommended Reading List 74
9.4 Annex 4: Examples for Programme Profiles and formulations of programme learning outcomes 78

0. Introduction

The European Credit Accumulation and Transfer System (ECTS) is a key tool for defining, organising and delivering learning opportunities, as well as recording, certifying, accumulating and recognising learning experiences. It makes learning opportunities more transparent, learner-centred and enhances their quality.

ECTS was first introduced in 1989, within the Erasmus programme, for higher education, so that the credits students earned during their studies abroad could be recognised and counted towards their degree after their return to their home institution. Since 2004, ECTS has been used not only for transferring credits but also for accumulating them in institutions' degree programmes. It is the basis on which higher education degree programmes are built in the European Higher Education Area (EHEA).

The education landscape has been changing with the development of more diversified and flexible learning opportunities, including short stand-alone learning opportunities that lead to micro-credentials or similar formats, in a lifelong learning perspective. A growing number of learners follow such learning opportunities without necessarily pursuing a full qualification. Following the request by the EHEA Ministers in Tirana (Tirana Communiqué, 2024), the ECTS Users' Guide of 2015 has been revised to clarify the key features of ECTS and to show how they can support current developments in the education landscape, including the growing importance of micro-credentials and flexible learning paths.

Current changes in society, its demographic structure, the economy and the world of work mean that a varied educational offer is needed. To remain active and engaged, citizens need to develop new competences. Citizens thus search for educational options that can open viable new opportunities and support rewarding life plans. The rapid expansion of digital technologies and artifical intelligence (AI), and its impact on the labour market and the professions, requires quick but careful reflection and wise action on the part of education institutions, to provide flexible upskilling and reskilling possibilities, in addition to more traditional degree programmes.

Additionally, individual learning paths, built over decades alongside traditional degree programmes, may make the latter parts of those paths rather than signalling the full completion of one's education. A plurality of learning opportunities, at different levels and of different kinds, will support the acquisition of the personal patrimony of knowledge, skills and competences that each individual will need.

This guide provides a common European framework for the use and implementation of ECTS. It should be interpreted and applied in accordance with the relevant national legal and regulatory frameworks governing education, qualifications, degrees, and professional certifications. The awarding of ECTS credits, including in relation to micro-certifications, does not in itself confer the status of a nationally recognised qualification or professional certification.

Several European and national policies seek to increase permeability between traditionally separate education sectors, for example by creating pathways from vocational education and training (VET) to higher education or vice-versa. A universal approach to describing learning opportunities and documenting learning achievements can support these policy goals. In VET, ECTS has been increasingly

used since the European Credit System for Vocational Education and Training (ECVET) was repealed in 2020.

This Guide shows how ECTS can be used as the common foundation for accumulation, transfer, and recognition for all levels and kinds of education. In previous editions of the Guide, this potential of ECTS was illustrated, but in practice remained under-exploited. Here its usefulness for all learning is further underlined and clarified.

ECTS was developed for the European region, but it has also inspired the development of credit systems in several other parts of the world. While ECTS credits can only be awarded by formal education institutions quality-assured according to the provisions in this Guide, the principles and features of ECTS may be used to develop national or regional credit systems outside Europe.

Some parts of this Guide refer specifically to *higher* education where particular provisions or guidance apply. This reflects that ECTS is a key commitment of the EHEA and thus obligatory in higher education, unlike other sectors, where the use of ECTS is optional. The Guide provides explanations or reasons where specific requirements apply.

The revision has been informed by a study on the current use and implementation of ECTS. An Advisory Group, chaired by the European Commission and including experts from EHEA countries as well as stakeholder organisations, was consulted on the draft versions of the Guide. The Guide was submitted to the Bologna Follow-up Group (BFUG) and has been adopted by Ministers for Higher Education of the EHEA in 2027 at the Iași-Chișinău Ministerial Conference.

1. Principles and Objectives

The European Credit Accumulation and Transfer System (ECTS) is based on the principles of learner-centred and active learning, rooted in the Student-Centred Learning (SCL) concept that underpins the EHEA. While ECTS was originally developed for higher education, it can be used across all education levels and sectors.

ECTS offers an effective and transparent approach for organising and documenting learning in a life-long learning context. Learning is described in terms of learning outcomes and associated learner workload.

ECTS is used in higher education in line with the EHEA key commitments. Furthermore, ECTS can be used for all types of learning, regardless of the level, the mode of delivery, or the status of the learner. The use of ECTS in other education sectors can strengthen permeability between sectors and support the development of a flexible lifelong learning system.

ECTS supports the planning, design, implementation, and delivery of all types of learning opportunities, e.g. degree programmes, the courses or modules they consist of, as well as small standalone offers such as micro-credentials.

ECTS is an instrument for certifying, transferring and recognising learning outcomes. Credits can be used for documenting learning regardless of context: education institutions can award credits also for non-formal and informal prior learning after appropriate validation.

ECTS credits are awarded by higher education institutions or other formally recognised education institutions that are subject to quality assurance standards in line with the relevant European frameworks. Within the EHEA, common quality assurance standards exist and are applied. Within other educational sectors, corresponding systems must be developed and applied consistently in order to underpin the use of ECTS with the necessary trust.

ECTS supports the organisation of national and international learner mobility, and the automatic recognition of learning between education institutions.

By designing and delivering curricula based on learning outcomes and workload, ECTS places the learner at the centre of the educational process. Moreover, using ECTS credits facilitates the creation and documentation of flexible learning pathways, thus allowing learners greater autonomy and giving them greater responsibility.

Due to its outcomes-based approach, the use of ECTS:

- makes learning pathways more flexible, allowing for learners' choices and meeting different learners' needs;
- enhances interaction with all stakeholders;
- establishes a closer link between learning opportunities and societal requirements, including those of the labour market;
- facilitates mobility within an institution or country, from institution to institution, from country to country, and recognition between different educational sectors, modes of learning (e.g. on site, online, hybrid) and contexts of learning (i.e. formal, non-formal, and informal);

- supports the design and delivery of joint educational offers by different institutions;
- facilitates the recognition of prior learning and experience. It encourages wider participation in lifelong learning and a higher level of completion.

Developments in information technology have a profound impact on education. A range of technological tools, including artificial intelligence (AI)-based ones, can support the use of ECTS in the design of learning opportunities, the formulation of learning outcomes, and to improve transparency, consistency, and efficiency in the allocation and recognition of credits. Said tools, however, must not be used as a substitute for academic judgment or peer review and must remain guided by principles of responsible use, human oversight to maintain trust, fairness, and respect for academic freedom. Any use of technology must be transparent, clearly explained, and non-discriminatory, and learners should be informed of its role in decisions that affect them.

2. Key Features

The European Credit Accumulation and Transfer System (ECTS) is characterised by the following key features:

Planning, Design and Delivery of Learning Opportunities

Learner-centred: ECTS is a learner-centred system for educational credit accumulation and transfer, and is grounded in an outcome-based educational paradigm, where transparency of learning outcomes, workload and learning experiences can be guaranteed.

ECTS credits express both the achievement of learning indicated by defined learning outcomes and the associated workload (see below) needed to achieve them. ECTS credits should be expressed in whole numbers or half credits at minimum (e.g. 2.5 or 7.5 ECTS).

Learning outcomes are statements of what the learner knows, understands and can do on completion of a learning process. Learning outcomes must be defined for all learning opportunities, that is individual educational components such as course units, modules or micro-credentials as well as programmes leading to a qualification.

Learning outcomes must be easily understandable, measurable, and achievable within the estimated workload. The achievement of learning outcomes must be assessed using reliable methods suitable to the described learning outcomes and based on clear and transparent criteria.

Learning, teaching and assessment methodologies and approaches must be suitable and fully aligned to facilitate the achievement of the defined learning outcomes.

Workload is an estimation of the time the learner will need to complete all learning activities (e.g. lectures, seminars, projects, practical work, traineeships[1] and individual or self-directed study, including exam and thesis preparation) to achieve the learning outcomes. One credit represents a learner workload of 25 to 30 hours.

60 ECTS credits correspond to a year of full-time learning in formal education. That is, the workload for a year of full-time learning ranges from 1 500 to 1 800 hours.

Monitoring of Workload: In formal education the actual workload must be regularly monitored using appropriate instruments, such as learner surveys. Discrepancies between the allocated credits and the actual workload must be addressed by reviewing either the allocation of credits or the design of the educational component(s).

Allocation of credits is the process of assigning credits to learning opportunities. Higher education institutions must allocate ECTS credits to all formal learning opportunities they offer regularly, e.g. courses, modules or standalone learning opportunities such as micro-credentials. Other education institutions may allocate ECTS credits to all learning opportunities. The number of credits allocated to

[1] This Guide uses “traineeship” to emphasise that work periods contribute to achieving learning outcomes. The terms « work placement », « placement », « training period » and « internship » are often synonyms.

a single educational component must respect the workload necessary to achieve its defined learning outcomes.

For full programmes, credits must be allocated to all components, such as course units, dissertations, work-based learning and traineeships. As a result, learning outcomes need to be formulated for all these components. The allocation must be based on 60 credits per full-time year.

For higher education degrees, the total number of credits must be within the ranges established by the Framework for Qualifications of the European Higher Education Area (QF-EHEA).

Indication of Level: ECTS credits awarded should be accompanied by an indication of the education level with reference to the Framework for Qualifications of the European Higher Education Area (QF-EHEA) or the European Qualifications Framework for Lifelong Learning (EQF). This should regard not only full qualifications such as degrees, but also standalone learning opportunities, such as micro-credentials. The level should be indicated on the Transcript of Records, the qualification certificate, or the Diploma Supplement where applicable.

Grade transparency: Grades are often an essential part of the learning process. They provide an indication of the learner's level of proficiency in the achieved learning outcomes. Given the different grading systems and cultures in Europe, transparent information is needed for the understanding and interpretation of grades by those not familiar with each grading system. If education institutions award grades, these must be accompanied by the standardised ECTS grade transparency information in the Transcript of Records showing how these grades are referenced to the ECTS reference grades.

Course Catalogue: To ensure transparency and clarity for learners, in particular mobile learners, as well as other stakeholders, such as recognition bodies or employers, ECTS includes a standard format to describe learning opportunities. Education institutions must publish in an easily identifiable place on their website, and in a timely manner, a Course Catalogue that includes accessible information on all learning opportunities offered.

Credit Accumulation

Awarding credits is the act of formally granting learners the credits assigned to the learning opportunity they have completed, e.g. an educational component of a programme or a standalone learning opportunity such as a micro-credential. Credits must be awarded to learners after they have achieved the defined learning outcomes, evidenced by appropriate assessment.

If learners have achieved learning outcomes in non-formal or informal learning contexts, education institutions should award credits based on validation of such learning.

ECTS credits at higher education levels (i.e. QF-EHEA short, first, second and third cycle level, EQF level 5 if considered higher education, and EQF levels 6, 7 and 8; including small standalone learning opportunities at those levels that do not lead to a degree) must be awarded by **institutions that are**

subject to external quality assurance in line with the Standards and Guidelines for Quality Assurance in the EHEA (ESG), at institutional or programme level[2].

For ECTS credits at other levels (i.e. EQF levels 1 – 4, EQF level 5 if not considered higher education, and any other levels not linked to the QF-EHEA), national authorities — in consultation with all relevant stakeholders, including social partners — can designate which education institutions are allowed to award ECTS credits and at which levels. National authorities must only designate education institutions that are formally recognised as such and have transparent and reliable quality assurance arrangements in place, in line with the principles set out in Annex IV to the EQF. For credits in VET, the European Quality Assurance Reference Framework for Vocational Education and Training (EQA-VET) should be applied.

The award of ECTS credits should be certified in a verifiable digital format[3]. The education institution awarding the credits must be clearly identifiable. The digital format should include information on the learning outcomes and other relevant metadata, e.g. the context (formal learning or non-formal learning) and type of learning for which the credits were awarded.

Accumulation of credits means collecting credits awarded in formal education contexts, or awarded based on the validation of learning outcomes achieved in non-formal or informal contexts. A learner can accumulate credits in order to:

- stack them to obtain a qualification or larger credential based on the requirements of the awarding body;
- gain admission to a further learning opportunity based on the prerequisites and admission requirements;
- document achievements in a lifelong learning context.

Mobility and Recognition

Transfer of credits is the process by which credits awarded by one education institution are included (i.e. accumulated) in the learner's record at another provider, in a learner's personal wallet, or in a learner's account/profile in a national database or repository. Any ECTS credits awarded in line with the provisions above must be accepted as validly achieved (at the indicated level) and thus eligible for transfer by any other European education institution or other organisation concerned.

Recognition of credits is the process of having transferred credits accepted to be stacked, i.e. counted towards a qualification. For example, credits transferred after a mobility period are counted towards the credits required for obtaining a qualification, replacing credits usually acquired through

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[2] External quality assurance carried out by quality assurance agencies listed on the European Quality Assurance Register for Higher Education (EQAR) is aligned with the ESG, https://www.eqar.eu/register/ - quality assured institutions and programmes can be found in the Database of External Quality Assurance Results (DEQAR) at https://www.deqar.eu/

[3] For example, using the European Digital Credentials for Learning (EDC) standards. EDC is underpinned by an accreditation database that reflects the rules for awarding credit. Hence any ECTS credits awarded in an accredited EDC-credential are validly awarded.

a course or module that is part of the programme. Between higher education institutions, the provisions of the Lisbon Recognition Convention (LRC) must be observed. Credit recognition should be primarily based on a comparison of learning outcomes, while taking into account level and workload (number of ECTS credits). Credit recognition is necessary for successful mobility.

Automatic recognition of credits is the recognition of credits without undue delay, additional work for the learner or assessment. Automatic recognition can be based on the ECTS standard process and formats for individual learner mobility (i.e. Learning Agreement and Transcript of Records), on respective provisions in the curriculum, or on general agreements between education institutions or consortia (e.g. in the case of embedded mobility pathways). Automatic recognition must be ensured for all credits acquired[4] at another education institution in line with a previously agreed Learning Agreement or other agreement.

Grade conversion (optional) refers to translating a grade from a different grading scale to the institution's grading scale. Conversion should only be performed for credits transferred within the same sector (e.g. between higher education institutions). The decision whether and how to convert grades rests with the education institution. If grades are converted, that conversion should be based on one of the methodologies provided in the annex 2. The grade conversion methodology used must be transparent and the information should be readily available for the learners and other interested parties.

Standard formats necessary for the use of ECTS: ECTS supports the transparency of learning opportunities and facilitates agreed individual inter-institutional learner mobility and automatic recognition by defining the necessary procedures and standard formats. Next to the Course Catalogue (see above), the standard formats include Learning Agreement, Transcript of Records, and Traineeship Certificate. Education institutions must use these formats in digital records or documents when organising and documenting mobility experiences.

[4] A European Digital Credentials for Learning (EDC) credential contains the same information as and thus serves in lieu of an ECTS Transcript of Records document.

3. Planning, Design and Delivery of Learning Opportunities

ECTS can be used for all learning opportunities, applying the same principles for credit allocation, award, accumulation, transfer, and recognition. Learning opportunities can be a single, stand-alone unit or broken down into smaller learning opportunities, i.e. educational components such as modules, courses, traineeships, etc. In some cases, these components – especially where they are larger modules – might be sub-divided further in course units, research projects, laboratory work and other relevant learning activities.

Education institutions must use ECTS with the same transparent mechanisms as described in this Guide for all their education provision, regardless of the mode, setting or target group of learners. This will greatly facilitate transition between different modes of learning, recognition and transfer, while increasing learner and stakeholder confidence in the outcomes of learning, and ultimately supporting lifelong learning.

While the principles of this guide apply to all types of learning opportunities, it should be noted that regulatory frameworks (e.g. rules on accreditation, licensing, or recognition) often differ depending on the qualification the learning opportunity leads to, e.g. to a full qualification, a partial or intermediate qualification, or a micro-credential.

Further information

Micro-credentials

'Micro-credential' means the record of the learning outcomes that a learner has acquired following a small volume of learning.

The European approach to micro-credentials for lifelong learning and employability (Council Recommendation 2022/C 243/02) built on the MICROBOL Common Framework for Micro-credentials in the EHEA (2022) offers a common framework for the design and issuance of micro-credentials. .

Micro-credentials are typically designed to provide the learner with specific knowledge, skills and competences. These learning outcomes respond to current societal, personal, cultural, or labour market needs. Learners may use micro-credentials to top-up existing degree skills, advance their personal goals, or respond to labour market needs.

Micro-credentials can be designed independently as standalone learning opportunities or can be derived from components of existing programmes.

The volume of a micro-credentials is expressed in ECTS credits. The same principles that apply to traditional educational programmes and their components also apply to micro-credentials.

Some micro-credentials can be combined with other micro-credentials to a larger credential, be recognised as part of a qualification or stacked towards a qualification, under the conditions established by the education institution offering the qualification.

Both frameworks underline the importance of micro-credentials being underpinned by robust quality assurance – in line with the European Standards and Guidelines for Quality Assurance in the EHEA (ESG) in higher education or with the European Quality Assurance Reference Framework for

Vocational Education and Training (EQAVET) in VET.

The learning achieved is certified in a digital credentials that should be owned by the learner, sharable and portable. The credential should incorporate the information according to the Course Catalogue and Transcript of Records formats, which covers the information listed in Annex 1 to the Council Recommendation 2022/C 243/02.

The correct use of ECTS requires understanding of the system by each member of the teaching and training staff as well as the administrative staff concerned.

Education institutions should foster this understanding by ensuring regular training on ECTS for staff members and by providing appropriate information for learners. Education institutions using ECTS should designate a unit/office as responsible for coordinating trainings and assembling information material for learners and staff. This can be an internal unit or organised jointly together with other education institutions.

3.1 Learner-Centred Design

***Learner-centred**: ECTS is a learner-centred system for educational credit accumulation and transfer, and is grounded in an outcome-based educational paradigm, where transparency of learning outcomes, workload and learning experiences can be guaranteed.*

In a learner-centred system the learning opportunity should be **relevant** for the learner and society, meeting academic or professional standards. This aim is served best by outcome-based learning, a pedagogical approach based on the intended outcomes serving as the key reference point in the design of the learning process.

This approach requires open dialogue and reflective feedback between learners, teachers, trainers and other relevant staff, through which their needs and aspirations can be expressed and discussed. All stakeholders should be involved in constructive discussion of programme profile, design and delivery.

Learner representatives must participate in such discussions and the quality assurance process with full voting powers. Institutions should consult relevant external stakeholders (such as employers, trade unions or graduates) when designing the programme profile.

Further information

Student-Centred Learning

Student-centred learning is an educational approach that positions the learner at the centre of the learning experience, focusing on their needs and interests, and fostering competences such as critical and reflective thinking, communication, and collaboration. It considers the learners as active and responsible partners in their own learning, thus involving the learners in decision-making processes about what and how to learn.

It thus shifts the role of the teacher from a lecturer to a facilitator who supports each learner and aims to find the best-suited approach for learners to reach the learning outcomes, taking into account the needs of a diverse learner population.

A learner-centred approach can be used in whichever education sector. The importance for higher education was underlined in the Tirana Communiqué (2024):

"Students need access to high-quality, learner-centred and innovative learning and teaching, in line with their needs and interests, to develop competences needed to tackle global challenges. This requires that they develop transversal and future-proof skills, capacity for creative and critical thinking, as well as civic competencies, to support their active participation in a democratic society and a rapidly changing labour market. Amidst these developments, we need to ensure student-centred learning is a reality for all students, empowering individual learners through research-based learning, effective support and guidance and cross-disciplinary teaching approaches."

Resources:

- Mapping and analysis of student-centred learning and teaching practices – Usable knowledge to support more inclusive, high-quality higher education – Analytical report (2020), https://data.europa.eu/doi/10.2766/67668
- ESU Statement on the Future of Student-Centred Learning (2022), https://esu-online.org/executive-summary-statement-on-the-future-of-student-centred-learning/
- Standards and Guidelines for Quality Assurance in the European Higher Education Area (EHEA), Standard 1.3 "Student-centred learning, teaching and assessment", URL to add – double-check when ESG are final

1) Profile

The design of any learning opportunity – whether a programme, a component of a programme or a standalone one – starts with defining its profile. The profile should be based on a needs analysis resulting in the presentation of its distinctive features (Lockhoff et al., 2010). The profile will make it clear to learners and stakeholders what knowledge, skills and competences will be developed.

Where an existing programme component is subsequently offered as a standalone micro-credential, it must be ensured that it remains coherent and meaningful when taken independently.

The field(s) of study should be expressed in ISCED-F codes. In the case of inter-, trans- or multidisciplinary learning opportunities, more than one ISCED-F code can be identified.

If the learning opportunity leads to a professional qualification, the relevant regulations and requirements (based on Directive 2005/36/EC on the recognition of professional qualifications) need to be reflected in the profile, learning outcomes and programme structure.

2) Curriculum, components and progression

Designing a learning opportunity involves defining learning outcomes and associated workload, learning activities and teaching methods, and assessment procedures and criteria. The design processes should meet the needs of a variety of learners and support inter-, trans- and multidisciplinary approaches.

In the case of full programmes, the design involves planning a curriculum and its components with credits allocated to them.

It is important that all parts of a learning opportunity/experience be allocated credits, including obligatory and elective modules, traineeships, work on a dissertation, and social and community activities (for example, tutoring and mentoring). (see 4.3).

Learning outcomes should be defined for each educational component (see 3.2). Learning and teaching activities, as well as assessment, are designed on that basis (see 3.3).

The flexible organisation of learning, teaching and assessment activities is essential for accommodating different learning styles and opening up opportunities for learners with different profiles or needs.

The learning outcomes of a learning opportunity and of its educational components must be systematically mapped – e.g. as a matrix – to demonstrate how these contribute to the programme learning outcomes.

In programmes, progression requirements must be explicit and transparent so that learners can navigate the programme successfully. Progression requirements should clearly indicate what learning outcomes or other educational components need to be achieved before enrolling in an educational component, to ensure that learners can reasonably succeed in their learning. They should be adequate to ensure learner success, but not so numerous as to eliminate flexibility.

Further information

The Joint European Degree Label

The Joint European Degree Label, introduced by the European Commission to recognise high-quality, genuinely joint study programmes, relies heavily on consistent ECTS application as set out in this Guide.

To qualify for the label, a joint programme must describe learning outcomes, credits, content, and teaching and assessment methods in line with the ECTS Users' Guide, applied uniformly across all consortium partners — including non-EU institutions.

A joint Diploma Supplement, integrating credits, institutions and mobility periods, must be issued to every graduate to support transparency and cross-border recognition. Programmes must also embed at least 30 ECTS of physical student mobility, which may be split across one or more partner institutions.

3.2 Learning Outcomes

Learning outcomes *are statements of what the learner knows, understands and can do on completion of a learning process. Learning outcomes must be defined for all learning opportunities, that is individual educational components such as course units, modules or micro-credentials as well as programmes leading to a qualification.*

Learning outcomes must be easily understandable, measurable, and achievable within the estimated workload. The achievement of learning outcomes must be assessed using reliable methods suitable to the described learning outcomes and based on clear and transparent criteria.

The learning outcomes are based on the profile and should adequately reflect the learning opportunity's context, level and scope.

A distinction is made between programme learning outcomes and learning outcomes of each educational component, the principles for formulating learning being the same. The learning outcome of each educational component must contribute to the achievement of the programme learning outcomes.

Learning outcomes formulated for a full programme will be more general and often more numerous than learning outcomes for a single component of a programme or a smaller stand-alone learning opportunity, which will be fewer and more specific.

1) Formulating learning outcomes

Considerable care needs to be taken in formulating programme and unit learning outcomes. The following non-exhaustive list provides a set of guidelines which has proved to be helpful.

- Statements of learning outcomes must be succinct and not too detailed or too specific.
- The learning outcomes must be measurable.
- The learning outcomes must be mutually consistent.
- The learning outcomes should be easily understandable and verifiable in terms of what the learner will have achieved at the end of the learning process.
- The learning outcomes should indicate clearly the scope and the expected level of complexity and responsibility, so that the learning opportunity can be referenced to a qualifications framework level (national QF, QF-EHEA or EQF).
- A widely accepted way of formulating learning outcomes is based on three essential elements:
    - Use a precise action verb to express what learners are able to do (e.g. on completion of a unit or programme, the learner can 'describe', 'implement', 'draw conclusions', 'assess', 'plan').
    - Specify what this outcome refers to (object or skill e.g. can explain the 'function of hardware components', or can present the 'design of a living room by hand').
    - Specify the context in which learners are able to perform the actions indicated in the learning outcome (e.g. 'to give an overview of the materials most often used in electro-engineering'; 'to develop a research design applying up-to-date scientific methods', etc.)
- There are no rules on the ideal number of learning outcomes. Experience suggests that 10 to 12 learning outcomes are appropriate for programmes leading to a full qualification, and 6 to 8 in other cases, such as short learning opportunities (e.g. micro-credentials) as well as for courses and modules that are part of full programmes.
- The learning outcomes must be achievable within the specified workload.
- The learning outcomes must be linked with appropriate learning activities, assessment methods and assessment criteria.

- It is recommended to link learning outcomes to standardised ESCO[5] skills where applicable.

Institutions should take into account relevant additional guidance on writing learning outcomes for programmes and educational components, see box below.

Generative AI tools have the potential to support the formulation of learning outcomes and to improve their transparency and consistency. AI tools, however, must not be used as a substitute for academic or professional expertise and must remain guided by principles of human oversight.

The programme and unit learning outcomes should be part of the descriptions included in the Course Catalogue and in the Diploma Supplement.

Further reading

Guidance on writing learning outcomes

For additional guidance on writing learning outcomes for programmes, it is suggested to consult the following publications:

- A Tuning Guide to Formulating Degree Programme Profiles. Including Programme Competences and Programme Learning Outcomes
- The "European guidelines for the development and writing of short, learning-outcomes-based descriptions of qualifications" (Cedefop 2024, http://data.europa.eu/doi/10.2801/838553). While the guidelines focus on qualifications, many principles can be applied also to their components.

For defining unit learning outcomes, it is suggested to consult for example the following publications:

- University College Cork (UCC), Centre for the Integration of Research, Teaching and Learning (CIRTL), Learning Outcomes: https://www.ucc.ie/en/cirtl/resources/learningoutcomes/

3.3 Learning, Teaching and Assessment

Learning, teaching and assessment *methodologies and approaches must be suitable and fully aligned to facilitate the achievement of the defined learning outcomes.*

A flexible organisation of learning, teaching and assessment activities is essential for accommodating different learning strategies and opening opportunities for learners with different profiles or needs.

Regardless of the mode of study, the actual learning, teaching, and assessment activities must be aligned with the learning outcomes. The staff responsible for delivering the learning opportunity and its components should ensure consistency between the stated learning outcomes, the related learning and teaching activities and assessment procedures. This constructive alignment (Biggs, 2023) between learning outcomes, learning activities and assessment is an essential requirement for educational programmes and stand-alone units.

[5] European Skills, Competences, Qualifications and Occupations, see https://esco.ec.europa.eu/en

The learning activities must further be aligned with the estimated workload.

Assessment methods include the whole range of written, oral and practical tests/examinations, projects and portfolios that are used to evaluate the learner's progress and ascertain the achievement of the learning outcomes of a course unit or module. Assessment criteria describe what is expected from learners in assessments and assignments to demonstrate that they have achieved the learning outcomes.

If generative AI tools are used in the assessment process they must not be used as a substitute for academic or professional judgment or peer review. The assessment must remain guided by principles of human oversight and control to maintain trust, fairness, and respect for academic freedom. Any use of AI tools must be transparent, clearly explained, and non-discriminatory, and learners must be informed of AI tools used in assessment.

3.4 Workload

Workload *is an estimation of the time the learner will need to complete all learning activities (e.g. lectures, seminars, projects, practical work, traineeships and individual or self-directed study, including exam and thesis preparation) to achieve the learning outcomes. One credit represents a learner workload of 25 to 30 hours.*

60 ECTS credits correspond to a year of full-time learning in formal education. That is, the workload for a year of full-time learning ranges from 1 500 to 1 800 hours.

The use of ECTS credits facilitates the design of learning opportunities /experiences by providing a tool which enhances transparency, promotes flexibility in curriculum design and ensures that curricula are realistic and learner-centred.

Education programmes must be designed so that 60 ECTS credits correspond to a year of full-time learning. The calculation of individual units of learning including standalone units (e.g. micro-credentials) is based on this normative number of credits and hours.

The workload needs to be estimated initially based on the planned learning activities, considering time in classroom as well as individual and self-directed learning. In the case of fixed-size modules, activities need to be planned in such a way that the typical workload corresponds to the standard size.

3.5 Allocation of ECTS Credits

Allocation of credits *is the process of assigning credits to learning opportunities. Higher education institutions must allocate ECTS credits to all formal learning opportunities they offer regularly, e.g. courses, modules or standalone learning opportunities such as micro-credentials. Other education institutions may allocate ECTS credits to all learning opportunities. The number of credits allocated to a single educational component must respect the workload necessary to achieve its defined learning outcomes.*

For full programmes, credits must be allocated to all components, such as course units, dissertations, work-based learning and traineeships. As a result, learning outcomes need to be formulated for all these components. The allocation must be based on 60 credits per full-time year.

For higher education degrees, the total number of credits must be within the ranges established by the Framework for Qualifications of the European Higher Education Area (QF-EHEA).

ECTS credits are allocated to learning opportunities regardless of the mode of delivery (e.g. classroom-based, work-based, distance learning, hybrid) or the status of the learner (e.g. full-time, part-time).

It is important that credits be allocated to all parts of a learning opportunity, including obligatory and elective modules, traineeships, work on a dissertation, and social and community activities (for example, tutoring and mentoring).

In the case of programmes, after the educational components of the programme have been identified, credits should be allocated to each component, based on its learning outcomes and associated workload, considering that 60 credits correspond to a year of full-time learning.

There are two main approaches to structuring a programme's components or units:

1. All educational components are of standard size, e.g. 5, 6, 10, 15 ECTS credits. These are often called "modules" and the standard size is usually set in institutional or department/faculty-level regulations. In this case, the learning outcomes assigned to modules need to be commensurate with workload associated with the standard module size.
2. All educational components have an individually determined size, possibly within a certain range set by national or institutional regulations. In this case, learning outcomes can be assigned based on other considerations and the number of credits adjusted accordingly, as long as the total for each year is 60 ECTS credits.

3.6 Monitoring

***Monitoring of Workload**: In formal education the actual workload must be regularly monitored using appropriate instruments, such as learner surveys. Discrepancies between the allocated credits and the actual workload must be addressed by reviewing either the allocation of credits or the design of the educational component(s).*

Once a learning opportunity is offered, the estimations and assumptions made when calculating workload and allocating credits must be regularly reviewed against practice. This monitoring establishes whether the estimated workload is realistic and the credit allocation thus adequate.

Monitoring can be managed in different ways through questionnaires, focus groups, interviews, or by monitoring the results achieved. Data, such as completion times or learning analytics generated by learning management systems (LMS), should be used in compliance with applicable data protection regulations.

Whichever methods are used, feedback from learners should constitute an essential element for checking and revising credit allocation. Learner feedback should be combined with feedback from staff and, where appropriate, other stakeholders.

If the information gathered reveals a discrepancy between the workload foreseen and the average time taken by learners to achieve the defined learning outcomes, it will be necessary to revise either

the workload (by adjusting the learning outcomes or learning and teaching activities and methods) or the credit allocation. This could also involve redesigning the learning opportunity and its educational components.

Monitoring as described above should be organised regularly after each offering of a learning opportunity, e.g. every year or semester. Revisions should be communicated to those who had participated in the monitoring exercise, to foster an ongoing, cooperative feedback culture in the institution.

3.7 Level

***Indication of Level**: ECTS credits awarded should be accompanied by an indication of the education level with reference to the Framework for Qualifications of the European Higher Education Area (QF-EHEA) or the European Qualifications Framework for Lifelong Learning (EQF). This should regard not only full qualifications such as degrees, but also standalone learning opportunities, such as micro-credentials. The level should be indicated on the Transcript of Records, the qualification certificate, or the Diploma Supplement where applicable.*

The level of the learning opportunity is defined with reference to the applicable national, sectoral and European qualifications framework(s). The level and the intended learning outcomes need to be aligned.

Some components (modules, courses) of a programme may be of different levels than the programme as a whole, provided that their learning outcomes clearly contribute to the programme learning outcomes. For second cycle higher education programmes the QF-EHEA provision applies that at least 60 ECTS credits constituting the programme need to be (at least) at second cycle level.

There are two overarching European qualifications frameworks: the Framework for Qualifications of the European Higher Education Area (QF-EHEA) and the European Qualifications Framework for Lifelong Learning of the EU (EQF).

Both frameworks include learning outcome-based descriptors for levels/cycles. The EQF describes each level using three dimensions: (1) knowledge, (2) skills, and (3) responsibility and autonomy. The QF-EHEA describes each cycle using five dimensions: (1) knowledge and understanding, (2) applying knowledge and understanding, (3) making judgements, (4) communication skills, and (5) learning skills.

The QF-EHEA covers higher education only, while the EQF covers all levels and sectors. For higher education levels, the two frameworks are compatible.

The QF-EHEA includes credit ranges for higher education degrees.

Further reading

In the context of the Erasmus+ Project Measuring and Comparing Achievements of Learning in Higher Education (CALOHEE) the more detailed Tuning-CALOHEE General Qualifications Frameworks (2024) have been developed for the EQF Levels 5-8 based on a merger of the two European Qualifications Frameworks. (https://www.calohee.eu/wp-content/uploads/2024/07/Tuning-CALOHEE-Qualifications-Reference-Frameworks-Final-Light-ISBN.pdf)

The European and national qualifications frameworks can be supplemented by subject-specific qualifications frameworks. Good examples in this context are the Tuning-CALOHEE Subject Area Specific Qualifications Frameworks (https://www.calohee.eu) and the QAA Subject Benchmark Statements (https://www.qaa.ac.uk/the-quality-code/subject-benchmark-statements).

Qualifications frameworks describe the cycles/levels in terms of a set of indicators associated with a full qualification, but also offer a sound basis for indicating the level of stand-alone units such as micro-credentials:

- **Programmes leading to a full qualification** (e.g. a higher education degree): in this case the programme learning outcomes need to correspond to the appropriate cycle/level descriptor. The total number of credits needs to comply with relevant national, sectoral and European regulations, and in the case of higher education the QF-EHEA ranges.
- **Short learning opportunities** that do not lead to a full qualification, but a partial or intermediate one (e.g. a micro-credential or similar): the learning outcomes should be used to identify the level based on the scope and complexity of learning, compared to the descriptors in the qualifications frameworks.

  It needs to be considered that a micro-credential or partial qualification may contribute to a full qualification at the given level, but will not signal completion of the level. They must therefore be clearly distinguished from full qualifications that do.

  A single micro-credentials may be stackable towards different qualifications at different levels, e.g. in different fields of study. The level indicated for the micro-credential itself should be the level that represents the “centre of gravity” of its learning outcomes, with reference to the micro-credentials own field of study.

  Next to the formal level, the focus of learning may also be indicated — i.e. whether the learning opportunity primarily targets knowledge acquisition, skills application, or autonomy and responsibility. Larger learning opportunities may focus on wider areas.

  The designation of levels should ensure accordance with the applicable national legal framework(s). In particular, the indication of an EQF level does not imply automatic registration in a national register of qualifications or similar tools.

  Finally, where relevant, subject-specific qualifications reference frameworks may be consulted in addition to the generic/overarching ones.

EQF and QF-EHEA levels

The following table illustrates the correspondence of levels and cycles:

EQF level	QF-EHEA cycle	QF-EHEA credit range
1		
2		
3		
4		
5	short cycle	approximately 120 ECTS credits
6	first cycle	180-240 ECTS credits
7	second cycle	90-120 ECTS credits (minimum 60 at second cycle level)
8	third cycle	no range

Further information

Doctoral qualifications are characterised by a variety of routes to a doctorate and the recognition of the principle that high level training is helpful to develop third cycle generic (transferable) and subject specific competences. In some countries and institutions, ECTS is also used in the third cycle.

ECTS credits should be considered for all components, both educational ones (e.g. taught course units) as well as research or innovation project work. This ensures that the full breadth of learning and competences developed is documented transparently and comprehensively.

The guidelines of this ECTS Users' Guide apply, considering the specific nature of doctoral degrees. The related information should be included in the Course Catalogue.

Formulating learning outcomes can be valuable in demonstrating to future employers the achievement of high-level generic and subject specific competences, such as those mentioned in: http://eurodoc.net/skills-report-2018.pdf

Defining learning outcomes for specific milestones within long-term components (e.g. research or innovation work spanning several years) could allow candidates who interrupt their studies to have a clearer certification of what they have achieved up to that point.

3.8 Grading

Grade transparency: *Grades are often an essential part of the learning process. They provide an indication of the learner's level of proficiency in the achieved learning outcomes. Given the different grading systems and cultures in Europe, transparent information is needed for the understanding and interpretation of grades by those not familiar with each grading system. If education institutions award grades, these must be accompanied by the standardised ECTS grade transparency information in the Transcript of Records showing how these grades are referenced to the ECTS reference grades.*

Grading represents the overall judgement, by a teacher or teachers, on the learner's level of proficiency in the achieved learning outcomes of a piece of learning, whether small or large, whether a course unit, a module, a micro-credential or a full programme.

Grades can be an important source of information for academics, employers, and above all for learners themselves.

In a lifelong learning context, in which mobility becomes more common both during and after learning experiences, international and cross-sector readability and understandability of a learner's grades is ever more necessary. All education institutions must therefore supply clear information (in their Transcripts of Records or Diploma Supplements) about the grades they award and how they correspond to ECTS reference grades.

Grade conversion *(optional) refers to translating a grade from a different grading scale to the institution's grading scale. Conversion should only be performed for credits transferred within the same sector (e.g. between higher education institutions). The decision whether and how to convert grades*

rests with the education institution. If grades are converted, that conversion should be based on one of the methodologies provided in the annex 2. The grade conversion methodology used must be transparent and the information should be readily available for the learners and other interested parties.

When conversion is done it should be carried out using one of the methodologies presented in Annex 2. The standardised ECTS grade transparency information (included or annexed to transcript of records or Diploma supplement) serves as the basis for applying the most suitable conversion method.

In order to make any grade conversion understandable for the learner concerned, education institutions must publish the conversion methodology and principles they apply. In all cases of doubt, the principle of fairness to the learner must prevail.

3.9 Course Catalogue

***Course Catalogue**: To ensure transparency and clarity for learners, in particular mobile learners, as well as other stakeholders, such as recognition bodies or employers, ECTS includes a standard format to describe learning opportunities. Education institutions must publish in an easily identifiable place on their website, and in a timely manner, a Course Catalogue that includes accessible information on all learning opportunities offered.*

The Course Catalogue includes detailed, user-friendly and up-to-date information on the institution's learning environment that should be available to learners in sufficient time before entering and throughout their studies to enable them to make the right choices and use their time most efficiently.

In the context of mobility, it is essential to bear in mind that the Course Catalogue also supports the creation and approval of Learning Agreements (often through digital systems). To fulfil this role, the Catalogue must include clear, up-to-date information that enables learners and institutions to make informed choices, and ensures that learning agreements are based on reliable information. Information on courses offered in the coming term/semester/year should be published sufficiently in advance for prospective learners to make their choices.

The Course Catalogue must provide information on all learning opportunities offered by the institution. This includes programmes leading to full qualifications as well as short learning opportunities, e.g. blended intensive programmes (BIPs) or those leading to micro-credentials. As part of or closely related to the Course Catalogue, the institution's website should include general information on the institution, its resources and services.

The Course Catalogue should be published on the institution's website, preferably in the local language(s) and in English, so that all interested parties can easily access it. It is recommended to publish the Course Catalogue in an institution-wide standard format dynamically and based on the institution's own information systems, rather than as a static page or document. Institutions increasingly exchange data digitally and it is therefore recommended that institutions make available their Course

Catalogue as linked open data, using the European Learning Model (ELM)[6] or another standard that allows conversion to ELM[7].

The Course Catalogue might be linked to a national register/database of qualifications or learning opportunities.

The standard format can be found in section 7.1.

[6] ELM includes an application profile for Learning Opportunities and Qualifications (LOQ), which should be used for publishing Course Catalogue data.

[7] For example, Edu-API, OOAPI or OCCAPI; see also use case 1 (Discover) of the Higher Education Interoperability Framework (HEIF).

4. Credit Accumulation

4.1 Awarding Credits for Formal Learning

Awarding credits *is the act of formally granting learners the credits assigned to the learning opportunity they have completed, e.g. an educational component of a programme or a standalone learning opportunity such as a micro-credential. Credits must be awarded to learners after they have achieved the defined learning outcomes, evidenced by appropriate assessment.*

ECTS credits at higher education levels (i.e. QF-EHEA short, first, second and third cycle level, EQF level 5 if considered higher education, and EQF levels 6, 7 and 8; including small standalone learning opportunities at those levels that do not lead to a degree) must be awarded by ***institutions that are subject to external quality assurance in line with the Standards and Guidelines for Quality Assurance in the EHEA (ESG),*** *at institutional or programme level.*

For ECTS credits at other levels (i.e. EQF levels 1 – 4, EQF level 5 if not considered higher education, and any other levels not linked to the QF-EHEA), national authorities — in consultation with all relevant stakeholders, including social partners — can designate which education institutions are allowed to award ECTS credits and at which levels. National authorities must only designate education institutions that are formally recognised as such and have transparent and reliable quality assurance arrangements in place, in line with the principles set out in Annex IV to the EQF. For credits in VET, the European Quality Assurance Reference Framework for Vocational Education and Training (EQAVET) should be applied.

Credits are awarded when appropriate assessment has shown that the defined learning outcomes of a programme component or a standalone learning opportunity have been achieved. The number of credits awarded to the learner is the number of credits allocated to the component (module, unit) or other opportunity.

The number of credits awarded is fixed and does not vary according to performance or other factors.

If the learner has not achieved the learning outcomes, no credits are awarded.

4.2 Awarding Credits Based on Validation of Non-formal or Informal Learning

If learners have achieved learning outcomes in non-formal or informal learning contexts, education institutions should award credits based on validation of such learning.

Learners enrolled in an education institution or applying for admission to a learning opportunity can request the validation of learning outcomes they have achieved in non-formal or informal contexts. Validation of non-formal and informal learning is a key element of life-long learning and helps make education more inclusive. It widens access and opens opportunities for all learners including those from professional life and coming from a broad range of non-traditional learning environments, thus making possible flexible life-long learning.

Institutions should facilitate the recognition of all forms of prior learning[8], including validation of informal and non-formal learning (e.g. through work experience, voluntary work, learner participation or independent study). These policies should include elements such as advice, feedback to learners on the results of the assessment and the possibility for learners to appeal. Institutions' policies and practices should be accessible on their websites with full information on how to access the procedures.

In line with the commitments made in the Bologna Process (e.g. Bergen Communiqué 2005), higher education institutions must have clear systems in place to award credits for learning outcomes acquired outside the formal learning context.

Validation often happens when learners transition into a formal education programme and wish to be exempt from taking courses or components whose learning outcomes they already achieved. Learners can also seek the award of credits for their prior learning purely to formally document their personal learning achievements.

Provided that these learning outcomes satisfy the requirements of a qualification or educational component offered by the institution, the recognition must lead to the award of the ECTS credits attached to the corresponding qualifications or educational component. These credits can be accumulated in the same way as those acquired in formal learning.

Qualified staff should be appointed in each department or subject area, who should have the formal authority to award credits for learning outcomes acquired through non-formal or informal learning.

As with formal education, the award of credits is preceded by an assessment to verify the achievement of learning outcomes. Assessment methods and criteria should be defined without reference to specific learning activities or workload. If the non-formal learning is documented and already includes reliable assessment (e.g. supported by a tool for identifying and documenting the outcomes of non-formal and informal learning, such as Youthpass), the education institution should take that into account and not repeat the assessment.

Institutions should also create facilities for counselling and guidance as regards the validation of non-formal and informal learning. These may take different forms depending on national and institutional practices (e.g. they may exist within single higher education institutions or as joint centres for several institutions).

Further information

Validation of non-formal and informal learning

The EU Council Recommendation on validation of non-formal and informal learning (Recommendation 2012/C 398/01) defines four main stages in the validation of non-formal and informal learning:

[8] Recognition of prior learning is here understood as any learning that has not previously led to the award of ECTS credits. If credits were already awarded, they should be transferred and considered for stacking.

- Identification of the learning outcomes acquired, including through counselling and guidance provided by the institution;
- Documentation of the learning outcomes acquired, incl. relevant proof and evidence;
- Validation based on the documentation or assessment against reference points;
- Certification of the learning outcomes through the award of credits and, where applicable, recognition towards a qualification/credential.

An inventory on validation of non-formal and informal learning is maintained by Cedefop, which includes detailed information on national policies and initiatives in educational institutions at different levels of education.

The European guidelines for validation of non-formal and informal learning following the 2012 Council Recommendation. They clarify the conditions for developing and implementing validation. They provide insights into validation provision and methodologies and how the process can be coordinated and carried out. They are written for everybody involved in initiating, developing and implementing validation.

There are a wide range of assessment tools and methods for recognising prior learning and experience. To capture the range of learning involved, a combination of tools and methods may be required.

Example: Portfolio

One of the assessment tools is a portfolio method. Portfolios include documents that learners have collected to demonstrate the knowledge and skills the learner has acquired in different contexts, such as work experience, volunteering, during leisure time.

A portfolio considers a collection of materials that verify skills and knowledge acquired through previous experience in non-formal and informal learning. A portfolio can include references from employers, supervisors and mentors/coaches; it may also include a performance appraisal, CV and other documents. By using a portfolio, the assessor analyses a range of information that learners have provided. This may be followed by an oral defence of the portfolio. Learners may require help and advice when preparing their portfolios of evidence during the identification and documentation stages of validation.

For example, Youthpass is a long-standing European transparency instrument which includes a supportive process for identifying and documenting learning outcomes. By offering both a structured process and a certificate, Youthpass facilitates personal reflection and guided assessment, effectively highlighting non-formal and informal learning achievements. This approach makes learning visible to the learners and aids the further pathway to validation for ECTS credits.

4.3 Documentation of Credits Awarded

The award of ECTS credits should be certified in a verifiable digital format. The education institution awarding the credits must be clearly identifiable. The digital format should include information on the

learning outcomes and other relevant metadata, e.g. the context (formal learning or non-formal learning) and type of learning for which the credits were awarded.

All credits awarded – whether for educational components that are part of programmes, for stand-alone learning opportunities such as micro-credentials or for any other educational components freely taken by a learner – should be certified in a digital document issued to the learner.

Digital documents must be issued in a format that is verifiable to ensure trust. The digital format used should ensure that the identity of the issuer can be trusted and that unauthorised modification of the content can be easily detected. Europass and its tools can support the digitalisation and portability of credits.

In the case of learners enrolled in a programme leading to a full qualification, the credits awarded should be documented in the Transcript of Records (see section 7.3) and the Diploma Supplement, if applicable.

European Digital Credentials for Learning (EDC) is an EU standard for digital credentials for any type of learning achievement. EDC is underpinned by an accreditation database that reflects the rules for awarding credit. Hence, any ECTS credits awarded in an accredited EDC credential are validly awarded.

One or more accredited EDC credential(s) can thus serve in lieu of a Transcript of Records for all intents and purposes.

Providers of non-formal learning may issue non-accredited EDC credentials. Non-formal learning might also be certified in other types of digital credentials, such as Open Badges. While non-formal learning providers may not award ECTS credits, the information contained in their credentials can be used in the validation process.

After validation, education institutions should issue an accredited EDC credential that documents the ECTS awarded based on the validation of non-formal or informal learning.

4.4 Accumulation and Stacking of Credits

Accumulation of credits *means collecting credits awarded in formal education contexts, or awarded based on the validation of learning outcomes achieved in non-formal or informal contexts. A learner can accumulate credits in order to:*

- stack them to obtain a qualification or larger credential based on the requirements of the awarding body;

- gain admission to a further learning opportunity based on the prerequisites and admission requirements;

- document achievements in a lifelong learning context.

ECTS credits are suitable for documenting all kinds of learning. Learners are awarded credits based on assessment or validation of the achievement of learning outcomes. Learners can '**accumulate**' (i.e. 'pile up') credits they have been awarded as they progress on their educational pathway.

In formal education, credits are awarded for components (e.g. courses or modules) of programmes leading to a full qualification as well as for standalone learning experiences, such as micro-credentials or summer schools.

Credits are furthermore used to express learning achieved in non-formal or informal contexts, such as work or professional experience, using the validation procedures for non-formal and informal learning. These credits can be accumulated in the same way as credits from formal learning.

Learners also accumulate credits gained through mobility experiences, see section 5.3 on credit transfer in the following chapter.

Learners can accumulate credits to develop their personal skills profile and to document their achievements along their personal flexible learning path. Learners can accumulate credits without linking them to a qualification or other credential.

Learners can also present records of their accumulated credits to be awarded a specified qualification or degree, or to gain admission to a specific programme or learning opportunity, according to the regulations of the education institution offering that learning opportunity or qualification. In this case, the relevant accumulated credits are '**stacked**' (e.g. as building blocks) to demonstrate achievement of the required learning outcomes.

Education institutions decide on the recognition and stacking of credits towards of a qualification, in line with the applicable national regulations and international treaties.

Where pre-approved stacking pathway exist, education institutions should indicate clearly the qualifications or credentials towards which other credentials and credits can be stacked, the process (e.g. automatic or involving an individual decision/approval), as well as any prerequisites, requirements, or applicable time limits.

Learners following a programme (e.g. a traditional higher education degree programme or a programme leading to a full qualification) will accumulate and stack credits as they study their curriculum. In this case, both accumulation and stacking happen implicitly and at the same time.

5. Mobility and Recognition

5.1 Transparency and Information

***Course Catalogue**: To ensure transparency and clarity for learners, in particular mobile learners, as well as other stakeholders, such as recognition bodies or employers, ECTS includes a standard format to describe learning opportunities. Education institutions must publish in an easily identifiable place on their website, and in a timely manner, a Course Catalogue that includes accessible information on all learning opportunities offered.*

Successful learning mobility requires full, clear and timely information about the offer of each education institution to plan meaningful learning activities during a stay abroad. Such information also supports the transfer and recognition of credits.

The standard Course Catalogue format (see section 3.9) includes the required information and should be available to learners in a timely manner for learners to be able to choose the most appropriate receiving institution.

The Course Catalogue then supports the creation and approval of Learning Agreements (see scenario 1) below) or allows learners to choose learning opportunities (see scenarios 2) & 3) below). Information on courses offered in the coming semester/year should be published sufficiently in advance for prospective learners to make their choices.

As part of the Course Catalogue, the institution's website should include general information on the institution, its resources and services, with a specific focus on the needs of mobile students.

For virtual/online or blended learning outside their own institution, the same principles apply and the same templates should be used.

5.2 Planning a Mobility Experience

There are different ways in which a mobility experience can be planned, individually or following a standard pathway.

1) Individual Mobility Period Based on a Learning Agreement

***Standard formats necessary for the use of ECTS**: ECTS supports the transparency of learning opportunities and facilitates agreed individual inter-institutional learner mobility and automatic recognition by defining the necessary procedures and standard formats. Next to the Course Catalogue (see above), the standard formats include Learning Agreement, Transcript of Records, and Traineeship Certificate. Education institutions must use these formats in digital records or documents when organising and documenting mobility experiences.*

Based on the information in the Course Catalogue (see section 3.9), the three parties involved – the learner, the sending institution and the receiving institution or organisation/enterprise – agree on a suite of learning opportunities to be followed abroad. This is formalised in a Learning Agreement (see below).

Institutional arrangements

In the Erasmus+ programme, several quality standards documents such as the Erasmus Quality Standards (for participating institutions/organisations) and the Erasmus Student/Learner Charter (for Erasmus+ students/learners) provide frameworks for learner mobility and recognition of credits.

The institution should clearly define responsibilities for implementing and monitoring credit mobility. The institution should ensure that application procedures and selection criteria for credit mobility are transparent and fair, and that an appeal mechanism is in place.

Further information

Integration of credit mobility into programmes

Structurally embedding credit mobility in learning opportunities can facilitate mobility and recognition. Institutions may use one or several of these approaches:

- identify the semester or year when a period of study or traineeship abroad would best fit into the programme (mobility window);
- schedule in that semester/year the educational components with learning outcomes that can be easily achieved abroad (e.g. international or comparative courses, supplementary/elective courses, preparation of dissertation, language courses, traineeships);
- identify partner institutions/organisations, where compatible/complementary learning outcomes could be achieved.

Learning Agreement

The Learning Agreement is the pivotal planning document for individual student mobility, binding all three parties involved. The Learning Agreement assures the learner that their chosen programme is accepted and that their credits achieved during the mobility period will be automatically recognised.

The Learning Agreement format exists in two versions:

-
-

Learning Agreement for Studies

The Learning Agreement identifies a set of suitable learning opportunities to be completed at the receiving institution and states how they will be recognised as part of the programme of the sending institution. The number of credits to be gained at the receiving institution should be proportionate to the time of study abroad, i.e. in line with the reference of 60 ECTS credits per year of full-time learning.

An open and flexible approach to the recognition of credits obtained in another context, including learning mobility, should be followed, based on comparability of learning outcomes rather than equivalence of course contents. The substantial difference principle of the Lisbon Recognition Convention (LRC), see section 5.4 below, must be respected when drafting a Learning Agreement for higher education studies.

Given the diversity of learning opportunities and education institutions, the credits and learning outcomes of two single educational components in two different programmes will usually not be identical. Hence, the educational components to be completed during the mobility period cannot be expected to match components offered at the sending institution “one-to-one". Rather, the learning outcomes of the whole package of learning opportunities taken abroad should be compared with the learning outcomes of the whole package of educational components at the sending institution for which recognition is to be granted after the study period abroad.

It is also possible to record the entire mobility period as a whole, instead of recording it component by component. This is suitable especially for traineeships.

The Learning Agreement is tripartite. By signing the Learning Agreement:

- the *sending institution* commits to automatically recognise the credits earned by the learner during their mobility period;
- the *receiving institution* commits to admit the incoming learner to the planned educational components;
- the *learner* commits to complete the planned educational components.

Learning Agreement for Traineeships

The Learning Agreement is also essential for traineeships, as a binding document outlining the learning activities to be carried out by the learner within this educational component.

The receiving organisation commits to provide a quality traineeship, relevant to the learner's learning path, with clearly defined learning outcomes, and to issue a Traineeship Certificate upon completion of the traineeship.

The sending institution commits to ensure the quality and relevance of the traineeship, monitor the learner's progress, and to grant recognition of the ECTS credits for the successfully completed traineeship.

Learning Agreement process

Learners should draft a proposal for the Learning Agreement with the support and guidance of both the sending and receiving institutions/organisations.

A staff member should be appointed in each department or subject area and formally authorised to discuss the programme of study abroad with the learner. That staff member should be authorised to approve and sign the Learning Agreement on behalf of the sending institution. Learners should not be asked to negotiate recognition with staff members who are not authorised to do so, before or after their study abroad period.

The initial version of the Learning Agreement should be agreed by the three parties before the mobility period. At this stage, the agreement of the sending institution is most crucial in order to guarantee automatic recognition upon return.

Receiving institutions should verify that the planned educational components are available for the mobility period. The Learning Agreement most often needs to be modified or updated later on, e.g. to accommodate changes in the learning opportunities available at the receiving institution.

Amendments must be agreed by all three parties. Most frequently, amendments are primarily the result of discussions between the receiving institution and the learner. When reviewing to proposed amendments, the sending institution should exercise the maximum amount of flexibility and limit itself to assuring that the learning outcomes of the whole package of learning opportunities taken abroad does not change substantially by the amendment.

The digitalisation of learner mobility processes can enhance their efficiency, transparency and reliability. The approval of the Learning Agreement and its amendments is possible through digital signatures or copies of scanned signatures, sent electronically, in line with institutional regulations or practice.

2) Embedded or Pre-Approved Mobility Pathways

The mobilities described above are individually planned programmes of learning and thus require a case-by-case analysis of learning outcomes for recognition prior to the mobility period. Consortia or partnerships of education institutions may also agree standard mobility pathways that are generally available to learners, without a need for individual Learning Agreements.

In this case, only the institutions enter into a general (bilateral or multilateral) agreement. This can be a dedicated agreement about the mobility pathway, a general cooperation agreement or any other suitable form.

The agreement serves as a universal agreement and the pathways it creates are generally open to all learners. It specifies agreed rules, conditions or requirements that apply. If these are met, individual Learning Agreements are not necessary.

The agreement must ensure the learner that their credits achieved during the mobility period are transferred and automatically recognised by the relevant institution(s) in the consortium.

Institutions must ensure that the mobility opportunities and the prerequisites for using them are clear and transparent for learners. Such information may be integrated into their Course Catalogues (see section 3.9) or be part of joint Course Catalogues established by partnerships/consortia.

If administrative and technical frameworks permit, learners can be enabled to enrol directly in the respective educational component at a partner institution.

An emerging example of such pathways are mobility or virtual exchange opportunities within European Universities alliances. As a result of the European Universities initiative, alliances have been working towards mobility pathways available to learners on a large scale.

3) Open Mobility

Rather than following an individually or generally/collectively planned mobility pathway, learners may decide to enrol in learning opportunities offered by other education institutions without coordinating with their home/sending institution specifically.

In this case, recognition cannot be guaranteed, but can only be decided after the mobility has taken place.

In higher education, the learner has the right to their credits being transferred and considered for recognition towards a programme or qualification in line with the LRC (see section 5.4 below).

5.3 Credit Transfer

Transfer of credits *is the process by which credits awarded by one education institution are included (i.e. accumulated) in the learner's record at another provider, in a learner's personal wallet, or in a learner's account/profile in a national database or repository. Any ECTS credits awarded in line with the provisions above must be accepted as validly achieved (at the indicated level) and thus eligible for transfer by any other European education institution or other organisation concerned.*

The receiving institution provides the learner and the sending institution with a Transcript of Records immediately after proclamation of the learner's results at the receiving institution. The Transcript of Records provides an up-to-date record of learners' progress in their studies: the educational components they have taken, the number of ECTS credits they have achieved, and the grades they have been awarded. The Transcript of Records is accompanied by Grade Transparency Information.

In the case of a short mobility, e.g. for a micro-credential, BIP or other stand-alone learning opportunity, the Transcript might contain only a single educational component.

Since the Transcript may be used in various contexts, the information provided should always be transparent, complete and clear for different possible audiences.

The Transcript of Records should be issued and transmitted in a digital format, using widely accepted data models and standards that include a digital signature/seal to make the digital document tamper-evident. Furthermore, the formats and standards should ensure that the authenticity of the issuing institution is guaranteed.

For example, this can be ensured by issuing an accredited credential using the European Digital Credentials for Learning (EDC) standard.

A digital credential (e.g. EDC) that is differently titled (e.g. Certificate, ...) but contains the elements listed in section 7.3 serves in lieu of an ECTS Transcript of Records and must be accepted as equivalent for all intents and purposes.

The sending institution should transfer the ECTS credits achieved, i.e. formally record the credits in its own learner records, e.g. in its student information system (SIS), without delay following the learner's request or consent.

This is regardless of the scenario above: any ECTS credits awarded in line with the key features should be transferred to the learner's record without any additional assessment/work or verification procedures.

Accredited EDC credentials ensure that awarded credits are documented in a secure digital format, with the authenticity of the issuing provider guaranteed; they can thus be used for a seamless, fully automated transfer of credits.

When issuing their own Transcripts of Records, institutions should include, annex or link the original grades and the relevant grade transparency information (see section 7.4) of other institutions from which credits where transferred.

5.4 Recognition of credits

Recognition of credits *is the process of having transferred credits accepted to be stacked, i.e. counted towards a qualification. For example, credits transferred after a mobility period are counted towards the credits required for obtaining a qualification, replacing credits usually acquired through a course or module that is part of the programme. Between higher education institutions, the provisions of the Lisbon Recognition Convention (LRC) must be observed. Credit recognition should be primarily based on a comparison of learning outcomes, while taking into account level and workload (number of ECTS credits). Credit recognition is necessary for successful mobility.*

Recognition of credits means that an institution accepts that learning outcomes achieved and assessed in another context satisfy the requirements of one or more learning opportunities it offers. That is, the credits gained for comparable learning outcomes achieved in another context will replace the number of credits that are allocated for comparable learning outcomes at the awarding institution, and be "stacked" towards a qualification.

An open and flexible approach to the recognition of credits obtained in another context, including learning mobility, must be followed, based on comparability of learning outcomes rather than equivalence of course contents.

In higher education, in line with the Lisbon Recognition Convention (LRC), recognition should be granted unless the institution can demonstrate a substantial difference.

If the learning opportunity is quality assured or accredited as specified in the key features (see "awarding credits"), it can be trusted that it fulfils the minimum quality standards. A substantial difference may thus only be in terms of **learning outcomes**. A small discrepancy should, however, not be considered a substantial difference, since learning outcomes cannot be expected to be 100% identical in different contexts.

Two additional aspects may be considered when deciding on recognition:

- **level**: a different level under a qualifications framework can, but does not necessarily imply a substantial difference. Credits at one level may be recognised towards a qualification at another level if the learning outcomes are relevant. For higher education qualifications, the credit ranges of the QF-EHEA (see section 3.7) need to be respected;

- **volume in credits**: a small discrepancy in the number of credits should not be considered a substantial difference if the learning outcomes are comparable, as they can result from different institutional or national approaches; e.g. 5 ECTS credits may be recognised to replace 6 ECTS credits, or 28 ECTS might be recognised to replace a set of 30 ECTS for a full semester, at the degree-awarding institutions if the learning outcomes match).

Differences in the following must not be considered a substantial difference in themselves:

- mode of delivery (on site, online, hybrid)
- pace (full time, part time)
- prerequisites or admission requirements

- teaching methods
- assessment methods
- details in course content and syllabus (beyond the learning outcomes)
- recommended literature

Please see European Area of Recognition Manuals – EAR HEI Manual (Fourth edition, 2025) and EAR Manual (2023) for details. These manuals include useful flowcharts on the recognition of periods of study abroad.

Outside higher education, national authorities and education institutions may choose to apply the principles of the LRC *mutatis mutandis*, or may establish other suitable policies on recognition.

Institutions should make their recognition policies and procedures known and easily accessible[9]. Specific institutional rules should be developed to deal with various types of mobility (including for open mobility), work experience, virtual learning, prior and informal learning.

The applicable policies and practices should enable the learner to promptly undergo (re-)assessment for educational components at the sending institution that were meant to be replaced by credits transferred from the receiving institutions, but which the learner failed to complete successfully at the receiving institution. Such procedures should be communicated to learners beforehand.

In the case of traineeships abroad, the transfer of credits will be based on the traineeship certificate or equivalent document.

1) Automatic Recognition

Automatic recognition of credits *is the recognition of credits without undue delay, additional work for the learner or assessment. Automatic recognition can be based on the ECTS standard process and formats for individual learner mobility (i.e. Learning Agreement and Transcript of Records), on respective provisions in the curriculum, or on general agreements between education institutions or consortia (e.g. in the case of embedded mobility pathways). Automatic recognition must be ensured for all credits acquired at another education institution in line with a previously agreed Learning Agreement or other agreement.*

For mobilities planned individually (section 5.2 1)) or using standard pathways or curricula provisions (section 5.2 2)), recognition is "pre-decided" and must therefore be automatic.

The golden rule of recognition is: all credits gained during the period of learning abroad or during the virtual exchange – as agreed in the Learning Agreement or in line with the conditions/general agreement of the embedded mobility pathway, and confirmed by the Transcript of Records – must be transferred without delay and automatically recognised towards the learner's qualification.

[9] This is also recommended by the "Europe on the Move" Council Recommendation (ST/9804/2024/INIT).

Automatic recognition means that this happens without any additional work by or assessment of the learner. Frequent questions arise regarding what qualifies as “automatic recognition”. For example, does it count as full automatic recognition if:

- ... the learning agreement was changed during the mobility? Yes, if the latest version is signed by all parties, see 5.21) above.
- ... the learner needs to complete a small administrative procedure upon return? Yes, if the learner does not have to complete any additional courses, assignments or assessment.
- ... only the learner's credits are transferred and not the grades? Yes.
- ... the learner only completed electives abroad and not just mandatory/specialised courses? Yes, as long as the courses are recognised as part of the learner’s degree programme or other learning opportunity.

Further information:

Degree mobility in higher education

Degree programmes can vary in the number of ECTS credits they include (see Nota Bene box in Section 3). For the purposes of recognition of qualifications, the difference in the number of ECTS credits gained after successful completion of a qualification are not a consideration, provided the number of credits is within the QF-EHEA range.

Higher education qualifications should be automatically recognised if they were awarded in a system where quality assurance operates in compliance with the ESG and where a fully operational national qualifications framework (NQF) has been established (see Rome Communiqué, 2020).

Further information:

Automatic Recognition in Higher Education

In 2012, the EHEA ministers agreed to work towards "the automatic recognition of comparable academic degrees, building on the tools of the Bologna framework, as a long-term goal of the EHEA" (Bucharest Communiqué 2012).

This addressed by a “Pathfinder Group” and led to ministers setting “automatic recognition of qualifications [...] so that students and graduates can move easily throughout [the EHEA]” as a goal to achieve by 2020 (Yerevan Communiqué 2015). The agreed action plan called upon EHEA countries to ensure that qualifications from other EHEA countries “are automatically recognized at the same level as relevant domestic qualifications” (idem).

In 2018, the Council of the European Union adopted a recommendation to support automatic recognition of higher education qualifications and periods of study in Europe.

The recommendations describes the preconditions and necessary steps that Member States should take to make automatic recognition a reality. This includes steps such as the establishment of national qualifications frameworks referenced to the QF-EHEA and EQF, or the establishment of quality assurance in line with the ESG.

The recommendations addresses four types of automatic recognition, namely of:

1. higher education qualifications for the purpose of access to further studies;
2. outcomes from a learning period abroad, as agreed beforehand in a learning agreement;
3. upper secondary education and training qualifications for the purpose of access to higher education;
4. outcomes from a learning period abroad during upper secondary education and training.

In general, the recommendation focuses on recognition for access, but emphasises that it does not aim to prejudice an education institution's or the competent authorities' right to set specific admission criteria or to check the authenticity of documents.

Further information:

Convention on the Recognition of Qualifications concerning Higher Education in the European Region (Lisbon Recognition Convention, LRC)

The Lisbon Recognition Convention, which entered into force in 1999, provides a legal framework for cross-border academic recognition. It promotes a culture of recognition focused on learning outcomes, rather than on differences in the curricula. ECTS can therefore be seen as a tool to support the shift to the recognition of learning outcomes aimed for by the Convention.

The Convention stipulates:

'36. Qualifications of approximately equal level may show differences in terms of content, profile, workload, quality and learning outcomes. In the assessment of foreign qualifications, these differences should be considered in a flexible way, and only substantial differences in view of the purpose for which recognition is sought (e.g. academic or de facto professional recognition) should lead to partial recognition or non-recognition of the foreign qualifications.

37. Recognition of foreign qualifications should be granted unless a substantial difference can be demonstrated between the qualification for which recognition is requested and the relevant qualification of the State in which recognition is sought.'

The European Area of Recognition manual (EAR Manual, 2023) gives the following explanation for the interpretation of substantial difference:

"The principle that a qualification should be recognised unless a substantial difference can be demonstrated by the recognition authority, has led to an important move away from equivalence based approaches that have previously provided an obstacle for academic mobility and in many cases made recognition unobtainable.

[...]

Although many differences can be found, the substantial differences are only those differences between the foreign qualification and the national qualification that are so significant that they would most likely prevent the applicant from succeeding in the desired activity such as further study, research activities or employment.

The burden of proof of a substantial difference lies with the competent recognition authority of the host country.

For practical purposes, this means that:

- not every difference should be considered to be "substantial";
- the existence of a substantial difference entails no obligation to deny recognition to the foreign qualification. Partial recognition should be considered in cases where full recognition cannot be given;

- the difference should be substantial in relation to the function of the qualification and the purpose for which recognition is sought, rather than in the formal characteristics of the qualification, such as nominal length of study or the structure of a study programme."

For more on the topic of substantial differences, see the full text of the EAR Manual and the specific publication developed in the framework of the TPG-LRC project, co-funded by the European Union under the Erasmus+ programme (CIMEA, 2021).

Further information:

The UNESCO Global Convention

In November 2019, the Global Convention on the Recognition of Qualifications concerning Higher Education was adopted by the 40th session of the UNESCO General Conference, becoming the first United Nations treaty on higher education with a global scope.

The Global Convention establishes universal principles for fair, transparent and non-discriminatory recognition of higher education qualifications and qualifications giving access to higher education and offering avenues for further study and employment. With provisions on non-traditional learning modes, the Global Convention also facilitates the recognition of qualifications, prior learning and study periods earned remotely. In addition, it promotes the recognition of refugees' qualifications, even in cases where documentary evidence is lacking.

By ratifying the Global Convention, countries commit to strengthening international cooperation in higher education, raising its quality at home and worldwide, and helping make academic mobility and the recognition of qualifications a reality for millions around the world. It complements UNESCO's five regional conventions, creating a cohesive international system for higher education recognition.

It is open to UNESCO Member States and the Holy See. The Global Convention received its 20th ratification on 5 December 2022, and entered into force on 5 March 2023. As of March 2026, 40 States have ratified it.

https://www.unesco.org/en/higher-education/global-convention

Info box

Recognition of professional qualifications

To do: update if a new Directive is adopted in the Skills Portability Initiative.

EU Directive 2013/55/EU amends Directive 2005/36/EC on the **recognition of professional qualifications**.

It allows ECTS to be used as an additional means of expressing full-time course duration in the case of the seven 'sectoral' professions. The obligation to express course duration in terms of full-time academic years and total numbers of hours will remain for medical doctors, general care nurses, dentists, and midwives. For veterinary surgeons, pharmacists and architects, the obligation covers only full-time academic years.

Similarly, ECTS may also be used in levels (d) and (e) of the qualifications grid used in the **General System**, which covers all other qualification-based regulated professions in the EU and the EEA.

The Directive also addresses the recognition of **work placements** which are necessary to have access to a regulated profession. These can be undertaken in any EU/EEA member state, irrespective of where the qualification is delivered, and enjoy full recognition. Recital 27 states that the 'recognition of a professional traineeship completed in another Member State should be based on a clear written description of learning objectives and assigned tasks, to be determined by the trainee's supervisor in the host Member State.' Article 55a requires Competent Authorities to 'publish guidelines on the organisation and recognition of professional traineeships carried out in another Member State or in a third country, in particular on the role of the supervisor of the traineeship.

Finally, **common training frameworks** (CTF) based on 'common sets of knowledge, skills and competences' can be established for professions that are regulated in at least one third of EU Member States. CTFs may be proposed by representative professional bodies operating at EU or national level, or by Competent Authorities. They are to be referenced to the European Qualifications Framework and are free to make full use of ECTS.

5.5 Individual Records and the Diploma Supplement

Standard formats necessary for the use of ECTS*: ECTS supports the transparency of learning opportunities and facilitates agreed individual inter-institutional learner mobility and automatic recognition by defining the necessary procedures and standard formats. Next to the Course Catalogue (see above), the standard formats include Learning Agreement, Transcript of Records, and Traineeship Certificate. Education institutions must use these formats in digital records or documents when organising and documenting mobility experiences.*

The Diploma Supplement is designed to provide higher education graduates with a transparent record of their achievements. A personalised Certificate Supplement may be issued for other qualifications.

Usually, a full Transcript of Records is included within the Diploma Supplement/Certificate Supplement (section 4.3) or attached to it. The learner's mobility periods and virtual exchanges should be visible in the Transcript of Records and reflected in the Diploma Supplement/Certificate Supplement.

Learners sometimes earn credits at another education institution that are not recognised as part of a programme, e.g. credits beyond those planned in the Learning Agreement or in case the Learning Agreement includes a limited number of credits that cannot be automatically recognised. These credits should nevertheless appear as additional credits on the Transcript of Records and, where applicable, the Diploma Supplement – with an indication of their issuing institution and the grades awarded (if applicable).

6. Quality Assurance of ECTS Implementation

Box: European quality assurance frameworks

Annex IV to the EQF contains quality assurance principles for all education sectors. Different sector-specific quality assurance frameworks exist, which are compatible with these overarching principles.

Higher education

The primary responsibility for quality assurance lies with each institution, as agreed by Higher Education Ministers of the countries involved in the Bologna Process (Berlin Communiqué, 2003). The Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG, add reference to 2027 version) are the framework for quality assurance in higher education.

Standards 1.2, 1.3, 1.4 and the associated guidelines refer to areas related to ECTS (in particular programme design, student-centred learning, teaching and assessment and student admission, progression, recognition and certification). (To do: Update to ESG 2027)

The European Approach for Quality Assurance of Joint Programmes (add reference to 2027 version) is a specific framework that facilitates integrated approaches to quality assurance of joint programmes, which genuinely reflect and mirror their joint character.

Standards 3.2 and 3.3 of the European Approach refer to the correct use of ECTS. (To do: Update to EA 2027)

Vocational education and training (VET)

In VET, the primary responsibility for quality assurance lies with each national education system. The European Quality Assurance Reference Framework for Vocational Education and Training (EQAVET) was established by a 2009 Council Recommendation and updated in 2020.

It provides a common quality assurance approach for both initial and continuing VET, based on a continuous improvement cycle (Plan, Do, Check, Act). EQAVET includes ten indicators and descriptive criteria applicable at both system and provider levels. EQAVET is not a binding set of standards but functions as a flexible "toolbox" from which countries and VET providers can select those elements most relevant to their specific needs and contexts.

The framework is supported by a European EQAVET Network, bringing together National Reference Points from EU member states, social partners, and the European Commission.

6.1 Principles

Good practice in using ECTS will help institutions improve the quality of their programmes and their learning mobility offer. Thus, ECTS use should be quality assured through appropriate evaluation processes (e.g. monitoring, internal and external quality reviews and learners' feedback) and continuous quality enhancement.

In evaluating the effectiveness of a programme (including the learning outcomes, workload and assessment methods) a number of indicators will be used. These may include dropout or failure rates

or completion times. A programme can be considered effective when learners are able in practice to achieve the defined learning outcomes, accumulate the required credits and obtain the qualification in the regular time planned for the programme. However, care should be taken to analyse the reasons if that is not the case, as they may include ineffective planning, delivery of the programme, inadequate measures for supporting learners, or other factors, such as the learners also being employed.

Where learning opportunities are developed or delivered in cooperation with external partners, e.g. employers or professional associations, the ultimate responsibility for educational standards, assessment decisions, certification, and the accuracy of published information should always remain with the recognised education institution.

6.2 Indicators

The following indicators should be used by education institutions (internal quality assurance) or quality assurance agencies (external quality assurance) for evaluating the quality of ECTS implementation:

- Educational components are expressed in terms of appropriate learning outcomes, and clear information is available concerning their level, credits, delivery and assessment;

  Key features: credits, learning outcomes

- Learning activities can be completed in the time officially allocated to them (i.e. the workload associated with a programme, a year, or a single course component is realistic);

  Key feature: workload

- Regular monitoring examines any variations between the estimated workload and the actual time spent by learners, and follows up with appropriate revision;

  Key feature: monitoring

- Learners are provided with detailed information and advice so that they can follow progression rules, exploit options for flexible pathways and select educational components at an appropriate level for their qualification;

  Key feature: accumulation, documents

- Learners are informed promptly of their results.

For mobile learners and recognition, this means that:

- Appropriate staff are designated as responsible for credit recognition and transfer matters;

  Key feature: transfer, recognition

- Incoming mobile learners can easily access the Course Catalogue in time to receive clear information on the available learning opportunities for planning their mobility;

  Key feature: documents

- Learning Agreements are used for individually organised mobilities; the processes for approving the Learning Agreement and subsequent changes are flexible yet robust;

  Key feature: documents

- Transcripts of Records are provided to mobile learning, recording the credits and grades awarded, including the ECTS reference level and standardised grade distribution information where available;

  Key feature: documents, grade transparency

- All credits awarded by another institution are automatically transferred and accumulated as part of the learner's record;

  Key feature: transfer

- Recognition as part of a programme is decided[10] based on learning outcomes, level and number of credits only;

  Key feature: recognition

- Recognition as part of a programme is automatic for all credits achieved as part of an approved Learning Agreement or an embedded mobility pathway;

  Key feature: automatic recognition

- Where relevant, grade conversion is performed in line with the methodologies of the Guide, Grade conversion rules and methods are transparent and known by the learners before going on mobility.

  Key feature: grade conversion

Learners and learner representatives should be actively engaged in quality assurance processes for ECTS:

- In internal quality assurance, where learners provide information (by responding to surveys on a regular basis, focus groups); participate in the preparation of the institutions' self-assessment reports; are actively engaged in the bodies responsible for internal quality assurance processes and monitoring of the ECTS credit allocation.

- In external quality assurance, where learners are members of external review panels of education institutions and/or programmes.

[10] For mobility based on a Learning Agreement, this refers to decisions made when drawing up such a Learning Agreement.

7. Standard Formats

ECTS is supported by a set of standard formats. They represent a widely used and accepted way of communicating information which is useful for all learners (including mobile and non-mobile learners), teaching and administrative staff, employers and other stakeholders.

The standard formats are used in digital learner records or documents.

7.1 Course Catalogue

(see section 3.9)

1) General Institutional Factsheet

Education institutions should provide the following general information on their website.

- name and address
- description of the institution (including type and status)
- teaching calendar
- general admission requirements, including language policy, and registration procedures
- arrangements for the recognition of credit mobility and prior learning (formal, informal and non-formal)
- arrangements for counselling and guidance
- links to any relevant institutional regulations and policies for ECTS

Information on the following is particularly relevant for incoming mobile learners:

- international relations office or equivalent
- accommodation/housing
- meals
- cost of living
- financial support for learners
- medical facilities
- insurance
- facilities for learners with disabilities and special needs
- learning facilities
- language courses

- traineeship possibilities
- sports and leisure facilities
- student associations

2) Information on Learning Opportunities

The access point to the Course Catalogue should be a **list of all learning opportunities offered by the institution**. The Course Catalogue is a key reference for (potential) learners as well as for staff of the local and other institutions. Institutions may publish different views for different target groups.

Required information on each programme or stand-alone learning opportunity, e.g. micro-credential:

(To do: map and add references to European Learning Model – ELM – fields for all items.)

- qualification awarded
- length of programme
- required number of ECTS credits
- level according to the national qualifications framework (NQF), QF-EHEA (if applicable) and EQF (if applicable)
- field(s) of education (using ISCED-F[11])
- specific admission requirements (if applicable)
- specific arrangements for recognition of prior learning (formal, non-formal and informal) (if applicable)
- qualification requirements and regulations, including graduation requirements (if applicable)
- profile of the programme (see section 3.1)
- occupational profiles of graduates (if applicable)
- access to further studies (if applicable)
- programme learning outcomes
- programme structure diagram with credits (if applicable, 60 ECTS credits per full-time equivalent academic year)
- learning schedule (full-time/part-time/e-learning etc.)

[11] For interdisciplinary programmes, the classification should follow the ISCED-F guidance for interdisciplinary programmes.

- grading scale
- compulsory or optional mobility windows (if applicable)
- work-based learning and traineeship(s) (if applicable)
- programme director, coordinator or equivalent contact information
- links to examination regulations and other relevant regulations/policies

For joint programmes, some additional elements are recommended:

- information on the form of the diploma and Diploma Supplement (joint/multiple)
- members of the consortium
- mobility structure of the programme
- virtual exchanges embedded in the programme

Information on individual educational components of full programmes:

- code
- title
- type (compulsory/elective/optional)
- if different from the programme: level according to the national qualifications framework (NQF), QF-EHEA (if applicable) and EQF (if applicable)
- year of study/semester/trimester when the component is delivered (if applicable)
- number of ECTS credits allocated
- name of lecturer(s), coordinator or equivalent contact information
- learning outcomes
- mode of delivery (face-to-face/distance learning etc.)
- prerequisites and co-requisites (if applicable)
- summary of course content
- planned learning activities and teaching methods
- assessment methods and criteria
- mode of supervision and identity verification during assessment
- language of instruction

- integration/stackability options (if applicable)
- date of latest update

(To consider later: *is the ELM Learning Opportunities and Qualifications (LOQ) application profile fully aligned with the Guide? should be reviewed after the recommended Course Catalogue info below is agreed.)*

7.2 Learning Agreement

(see section 5.2)

The Erasmus+ programme provides specific official formats for the Learning Agreement for studies and for traineeships for institutions participating in the programme. It also provides guidance for institutions on how to use the formats, and sets out specific deadlines institutions need to comply with.

Institutions outside the Erasmus+ programme may use the following generic formats.

1) Learning Agreement for Studies

The Learning Agreement for Studies must include the following standard elements:

- name and contact details of the learner
- name and identifier(s) of the sending institution
- name and identifier(s) of the receiving institution
- name and qualification level of the learner's programme at the sending institution
- learner's field of education at the sending institution (ISCED-F codes)
- programme abroad: list of educational components to be taken (with codes and allocated number of ECTS credits)
- expected level of competence in the main language(s) of instruction of the receiving institution (if applicable)
- automatic recognition by the sending institution: list of educational components at the sending institution for which the components successfully taken abroad will be recognised, or stipulating how the mobility period as a whole will be recognised as part of the learner's programme at the sending institution
- signatures of the three parties (the learner, authorised representatives of sending and receiving institutions)

2) Learning Agreement for Traineeships

The Learning Agreement for Traineeships must include the following standard elements:

- name and contact details of the learner (trainee)
- name and identifier(s) of the sending institution

- name and identifier(s) of the receiving organisation/enterprise
- names and contact details of the contact person(s) at the sending institution
- name and contact details of the contact person(s) and mentor(s) at the receiving organisation/enterprise
- qualification level and field of education (ISCED-F code) of the learner's programme at the sending institution
- type of organisation/enterprise (private/public/third sector/etc.)
- period of training (from/to) at the receiving organisation
- number of working hours per week
- number of ECTS credits to be awarded for the traineeship
- automatic recognition in the sending institution: (list of) educational component(s) as which the traineeship will be recognised
- learning outcomes to be acquired by the learner (trainee) at the end of the traineeship
- detailed programme of the traineeship, including tasks/deliverables and learning/training content
- expected level of competence in the workplace language (if applicable)
- monitoring arrangements and evaluation plan
- provisions for changes for the Learning Agreement for Traineeships
-
- signatures of the three parties (the learner, representative of the sending institution, and receiving organisation/enterprise – including the supervisor of the trainee)

7.3 Transcript of Records

(see sections 4.3 and 5.3)

The Transcript of Records must include the following standard elements:

(To do:

indicate corresponding ELM)

- name of the learner
- names and contact details of the institution
- field of education (ISCED-F code), name and level of the programme (if applicable)
- current year of study (if applicable)

- learning experiences completed at the institution:
    - code
    - title
    - credits
    - grade (if applicable)
    - ECTS reference grade (if applicable)
- if any learning opportunities have grades awarded:
    - The standardised ECTS grade transparency information (see below)
- date of issue and signature of the responsible person

The sending institution should provide the learner with an updated Transcript of Records (or equivalent document/database) as soon as possible to confirm the transfer of credits and provide clarity about the recognition of credits from the mobility period abroad.

7.4 Grade Transparency Information

(see section 3.8)

Institutions should provide clear information on their local grades, including their definition, how they correspond to the ECTS reference grades and ideally information on the statistical grade distribution. This information can be included or annexed to the Transcript of Records or Diploma Supplement.

Local grade	**Label**	**Local definition**	**ECTS reference grade**	**Grade distribution (optional)**
(short notation, i.e. letter or digit)	*(long label if applicable)*	*(either qualitative definition or minimum score/points/percentage needed to achieve this grade/statistical distribution of grades)*	*(A - F, see below)*	*(percentage of learners in the sample who have achieved this grade – passing grades sum up to 100%)*
X	Excellent	70	A	15%
Y	Good	55	C	80%
Z	Minimum	45	E	5%
	Failed	0	F	n/a

1) ECTS reference grades

The ECTS reference grades represent five typical levels of proficiency in the achieved learning outcomes and one failing grade.

Education institutions or national authorities should map local grades to the reference grades using one of the two approaches as described below (qualitative definitions, or based on scores or points). National authorities may provide a system-wide mapping of their grading scale to the reference table based on one of the approaches.

In the context of joint programmes, institutions may also directly use the ECTS reference grades as their main grading scheme.

ECTS Reference Grade	Level of proficiency of the achieved learning outcomes	Definition	Reference scores (0-100%, based on hypothetical 50% threshold)
A	Excellent/very high proficiency	This grade represents outstanding proficiency in the achieved learning outcomes. The learner demonstrated a high degree of independent thinking and the ability to apply knowledge and skills in new and complex situations.	S ≥ 90% (e.g 18–20/20 in local grade)
B	High proficiency	This grade demonstrates a very good proficiency in the achieved learning outcomes, well above average. The learner demonstrated a good degree of independent thinking and the ability to apply knowledge and skills in new situations to some extent.	80% ≤ S < 90% (e.g. 16–17/20 in local grade)
C	Good proficiency	The learner's proficiency in the achieved learning outcomes is above average. The learner demonstrated a fair degree of independent thinking and the ability to apply knowledge and skills in new situations to a limit extent.	70% ≤ S < 80% (e.g. 14–15/20 in local grade)
D	Satisfactory proficiency	The learner's proficiency in the achieved learning outcomes is of an acceptable level, but with some significant shortcomings. The learner demonstrated only a limit degree of independent thinking.	60% ≤ S < 70% (e.g. 12–13/20 in local grade)

E	Threshold/barely satisfactory proficiency	The learner's proficiency in the achieved learning outcomes is at a bare minimum level, with a number of major shortcomings. The learner demonstrated no or a very limited degree of independent thinking.	50% ≤ S < 60% (e.g 10–11/20 in local grade)
F	Fail	The learner has failed to achieve the intended learning outcomes. The assessment showed several major errors or significant misunderstandings.	S < 50% (e.g. 0-9/20 in local grade)

Mapping based on a qualitative definition

Local grades can be mapped to the ECTS reference grades using the qualitative definition. In this case, institutions should compare the qualitative definitions of their local grades with the table above, and identify for each local grade which reference grade represents it most closely.

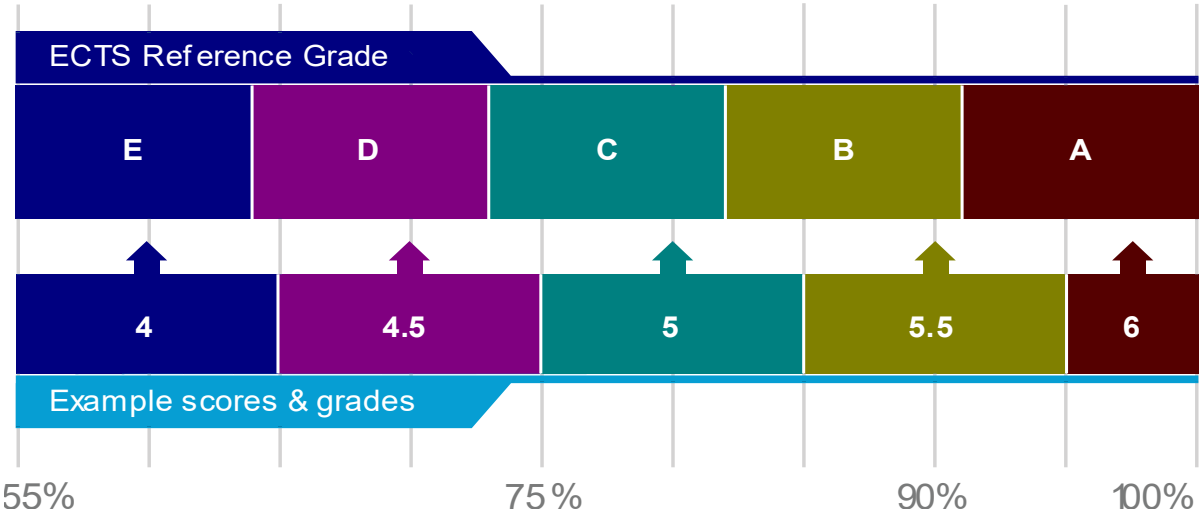
Mapping based on scores or points

Several local grading schemes are defined in such a way that the grade is a function of test scores or points achieved in an assessment – i.e. each grade represents a score or range of scores. If that is the case, local grades can be mapped to a reference grade based on the score they represent.

The five ECTS reference grades are understood to divide the range of passing scores into five equally-sized bins. For example, if 50 points are required to pass and a maximum of 100 points can be achieved, then grades representing average scores between 50 and 60 should be mapped to E, etc..

The passing score of 50% in the reference levels' definition does not affect local scoring systems, grades and score thresholds used. It solely serves as a reference model to which local scores can be translated or mapped for comparability.

If a local grade represents a range of scores overlapping with several reference grades, it should be mapped to the reference grade based on the average score it represents.



In general, the scores or points leading to a grade X can be converted to a normalised average S_{normal} on the 50-100 scale used in the reference table with the following parameters:

s_{Xavg} Average score for which grade X is awarded
(= arithmetic mean of minimum and maximum scores for grade X)

S_{pass} Minimum passing score

S_{max} Maximum achievable score

$$S_{normal}=50+50 \cdot \frac{s_{Xavg}-S_{pass}}{S_{max}-S_{pass}}$$

2) Grade distribution (optional)

Grade distribution information represents the statistical distribution of positive grades (pass and above) for a sufficiently large reference group, e.g. across all courses in a subject area during the past 2-3 years. Grade distribution information provides additional context and may be used by other institutions for grade conversion.

The sample should include learner results from all learning opportunities across a given discipline or subject area. It is recommended to create reference groups including all learning opportunities (in the listed order of preference):

1. In one ISCED-F “broad” field of study (UNESCO Institute for Statistics, 2014)
2. In one ISCED-F “narrow” field
3. Offered by the education institution (that is, regardless of field)
4. In one ISCED-F “detailed” field
5. In the same education system (possible if data is collected at system level)
6. Part of one programme

The current version of the Guide gives a preference to ISCED-F “broad” rather than “narrow” field to increase cohort size. This increases stability and reduces the number of different distribution tables/calculations to be maintained.

The sample should cover learner results of the last two to three years.

In any case, the sample must include at least 30 learner results. If that is not the case, institutions should widen the sample, e.g. by including additional years or using a broader reference group.

7.5 Traineeship Certificate

The Traineeship Certificate aims to provide transparency about the learner’s traineeship. This document is issued by the receiving organisation/enterprise upon the trainee’s completion of the traineeship, and it can be complemented by other documents, such as letters of recommendation.

(To check: can employers issue a Traineeship Certificate as a EDC?)

The Traineeship Certificate must include the following standard elements:

- name and contact details of the learner (trainee)
- name of the organisation/enterprise
- contact details of the organisation/enterprise [street, city, country, phone, e-mail address, website]
- awarded number of ECTS credits (according to the Learning Agreement for Traineeships)
- type of organisation/enterprise (private/public/third sector/etc.)
- start and end of the traineeship
- detailed programme of the traineeship, listing the tasks/deliverables and learning/training content
- knowledge, skills (intellectual and practical) and competences acquired (learning outcomes achieved)
- evaluation of the learner’s performance
- date of issue, name and signature of the responsible person at the receiving organisation/enterprise

8. Acknowledgements

This Guide has drawn on the considerable amount of work that has been done in recent years within the Bologna Process and in individual countries. It would be impossible to give credit to all the organisations and individuals who have carried this out.

In particular, the European Commission wishes to thank the members of the Advisory Group on the review of the ECTS Users' Guide for their support and commitment:

- (new list of members to add)

9. Annexes

9.1 Annex 1 : Glossary

Accumulation of credits

see key features

Active learning

Active learning is an educational approach that engages learners directly in the learning process through activities that nurture critical thinking, collaboration, and problem-solving, rather than passively receiving information. It engages learners in higher-order thinking task such as analysis, synthesis, and evaluation to enhance retention of knowledge and development of skills.

Allocation of credits

see key features

Automatic recognition

see key features

Award of credits

see key features

Blended Intensive Programme (BIP)

A specific type of short learning opportunity delivered in a blended format. BIPs are supported by the Erasmus+ programmes. A BIP combines a virtual exchange component (online learning and collaboration) with a short-term physical stay.

Certificate Supplement

The Europass Certificate Supplement is a document that provides information for employers and other educational institutions to understand a vocational qualification. It describes the purpose of a qualification, its level, its learning outcomes and includes information on the relevant education system.

Unlike the Diploma Supplement, the Certificate Supplement is usually a standard document for a specific qualification and is not necessarily issued as a personalised document.

Competence

EQF defines competence as the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development. Fostering competences is the object of all learning opportunities.

Course Catalogue

The Course Catalogue is a standardised format of presenting information on the learning opportunities offered by an education institution and on the provider itself. See section 7.1.

Course

A self-contained, formally structured educational component that is part of a larger learning opportunity. It should have a coherent and explicit set of learning outcomes, defined learning activities consistent with the time and credits allocated within the programme, and appropriate assessment criteria.

Credit (ECTS)

see key features

Credit mobility

The mobility of a learner, who stays at a receiving institution/organisation for a period, during which they can carry out activities and are awarded the allocated credits, which are then recognised by the sending institution.

Credit transfer

see key features

Cycle

The EHEA has defined a hierarchy of three higher education cycles (first cycle, second cycle and third cycle) and an optional short cycle. All higher education qualifications in the European Higher Education Area are located within these cycles.

The Bologna Declaration in 1999 adopted 'a system based on two main cycles, undergraduate and graduate.' In 2003, doctoral studies were included in the Bologna structure and referred to as the third cycle. In 2018, short cycle qualifications were added as an optional level, i.e. countries are free to decide whether and how to integrate short-cycle qualifications in its national qualifications framework.

Cycle (Level) Descriptors

Generic statements about the expected learning outcomes for each cycle or level in a qualifications framework. (see section 3.7)

Diploma Supplement

The Diploma Supplement (DS) is a required document accompanying a higher education diploma, providing a standardised description of the nature, level, context, content and status of the studies completed by its holder. It is produced by the higher education institutions according to standards agreed by the European Commission, the Council of Europe and UNESCO.

Graduates in EHEA countries have the right to receive the Diploma Supplement automatically, free of charge, and in a major European language.

Double degree

To do: To align with the forthcoming revised European Approach.

Separate qualifications awarded by education institutions offering a joint programme attesting the successful completion of this learning opportunity. See also European Approach for QA of Joint Programmes

Educational component

A part, e.g. a course, module, or traineeship, of a larger learning opportunity, such as a programme. An educational component has defined learning outcomes and credits allocated to it.

Erasmus+

The EU programme for Education, Training, Youth and Sport.

Europass

Europass is the EU framework for the provision of better services related to skills and qualifications. It includes a skills and career management platform as well as a set of standard documents (Curriculum Vitae, Europass Mobility, Certificate Supplement, Diploma Supplement) which aim to make skills and qualifications clearly and easily understood in Europe.

Europass Mobility is a document to record knowledge and skills acquired in another European country, completed by the institutions involved in the mobility of the individual (sending and receiving institution).

European Higher Education Area (EHEA)

The European Higher Education Area (EHEA) was launched at the Bologna Process' decade anniversary, in March 2010, during the Budapest-Vienna Ministerial Conference. Building on the main objective of the Bologna Process since its inception in 1999, the EHEA is meant to ensure more comparable, compatible, coherent and attractive systems of higher education in Europe.

European Qualifications Framework for Lifelong Learning (EQF)

The European Qualifications Framework for Lifelong Learning is a common European reference framework which enables countries of the European Union and other cooperating countries[12] to link their qualifications systems to one another. It makes qualifications more readable and understandable across different education systems.

[12] In addition to the EU Member States: Bosnia and Herzegovina, Iceland, Kosovo, Liechtenstein, North Macedonia, Montenegro, Norway, Serbia, Switzerland, Türkiye

The EQF was adopted by the European Parliament and Council in 2008 and revised in 2017. It defines eight reference levels based on learning outcomes.

Formal learning

Learning that takes place in an organised and structured setting (in terms of learning objectives, learning time or learning support) and typically leads to certification. Formal learning takes place in officially recognised education or training institution. See also Recommendation 2012/C 398/01.

Framework for Qualifications of the European Higher Education Area (QF-EHEA)

The QF-EHEA is an overarching qualifications framework for the EHEA, adopted in 2005 and revised in 2018. All EHEA countries committed themselves to develop national qualifications frameworks that are compatible with this overarching framework.

The QF-EHEA provides generic cycle (level) descriptors for the agreed cycles in the EHEA (first, second and third cycle, optional short cycle). The descriptors are based on the Dublin Descriptors, which were developed by a group of higher education quality assurance experts from several European countries between 2002 and 2004.

The short, first and second cycles are also characterised by credit ranges.

Free mover

A student participating in credit mobility outside an organised student mobility programme (for example Erasmus+). A free mover chooses a receiving institution and organises their credit mobility at that institution.

Full programme

A learning opportunity leading to the award of a full qualification to a learner after successful completion of all the requirements.

Informal learning

Learning resulting from daily activities related to work, family or leisure. Informal learning is not organised or structured in terms of objectives, time or learning support. It may be unintentional from the learner's perspective.

Examples of learning outcomes acquired through informal learning are: project management skills, ICT skills or languages learned through life and work experiences, intercultural skills acquired during a stay in another country, skills acquired through volunteering, cultural activities, sports, youth work or through activities at home, e.g. taking care of a child. See also Recommendation 2012/C 398/01

Joint degree

To do: To align with the forthcoming revised European Approach.

A single document awarded by higher education institutions offering the joint programme and nationally acknowledged as the recognised award of the joint programme. See also European Approach for QA of Joint Programmes

Joint programme

To do: To align with the forthcoming revised European Approach.

An integrated learning opportunity coordinated and offered jointly by several education institutions, leading to double/multiple degrees or a joint degree. See also European Approach for QA of Joint Programmes

Learner

An individual engaged in a learning process (formal, non-formal or informal learning).

Learning Agreement

A formalised agreement of the three parties involved in a pre-organised mobility - the learner, the sending institution and the receiving institution or organisation/enterprise – to facilitate the organisation of credit mobility and its recognition. The agreement assures the learner that their credits achieved during the mobility period will be automatically recognised by the sending institution. See 5.2 a) Credit mobility and 7.2 Learning Agreement

Learning outcome

See key features

Learning opportunity

An opportunity to achieve a given set of learning outcomes, offered by an education institution. A learning opportunity can be subdivided and consist of several smaller ones, such as courses or modules. A learning opportunity can be a programme leading to a full qualification or a shorter learning opportunity, e.g. leading to a micro-credential.

Learning pathway

Learning pathway is a route taken by a learner to progressively acquire desired learning outcomes. The learning pathway may be 'signposted' through institution guidance and regulations (including the recognition of prior learning and experience) and different learning pathways may lead to the award of the same qualification. In essence the concept of a 'learning pathway' emphasises the choice of the learner in reaching the desired educational goals.

Level descriptors

See Cycle (Level) Descriptors

Lifelong learning

All learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences within a personal, civic, social and/or employment-related perspective (Communication (2001) 678).

Learning opportunities contributing to lifelong learning may include mainstream programmes, continuing education, evening classes, specific programmes for part-time learners, access to libraries/other resources, distance learning, training courses, targeted guidance and counselling services among other actions and initiatives.

Micro-credential

A micro-credential is a certified small volume of learning (see MICROBOL Common Framework for Micro-credentials in the EHEA, 2022).

The European approach to micro-credentials for lifelong learning and employability (Council Recommendation 2022/C 243/02) defines a micro-credential as the record of the learning outcomes that a learner has acquired following a small volume of learning, proven through an assessment against transparent and clearly defined criteria. The allocation of ECTS credits to micro-credentials is understood to be in accordance with applicable national legal frameworks relating to qualifications and credentials.

Mobility window

A mobility window is a period of time reserved for international learner mobility that is embedded into the curriculum of a learning opportunity (Ferencz et al., 2013).

Module

An educational component that is part of a learning opportunity/programme, often in a system in which each module carries the same number of credits or a multiple of it. A module may or may not be further subdivided and consist of several courses.

Multiple degrees

To do: To align with the forthcoming revised European Approach.

Separate qualifications awarded by education institutions offering a joint programme attesting the successful completion of this learning opportunity. See also European Approach for QA of Joint Programmes

National Qualifications Framework (NQF)

An instrument for the classification of qualifications according to a set of criteria for specified levels of learning achieved, which aims to integrate and coordinate national qualifications subsystems and improve the transparency, access, progression and quality of qualifications in relation to the labour market and civil society (Council Recommendation 2012/C 398/01).

National qualifications frameworks encompass all qualifications or those from a specific education sector, e.g. all higher education qualifications. NQFs usually describe levels in terms of learning outcomes.

NQFs in Europe are usually referenced to the EQF and the QF-EHEA.

Depending on each national legal framework, the indication of an EQF level does not necessarily imply registration in the national framework of qualifications.

Non-formal learning

Learning which takes place through planned activities (in terms of learning objectives, learning time) and where some form of learning support is present (e.g. learner-teacher relationships). Common cases of non-formal learning include in-company training, through which companies update and improve the skills of their workers such as ICT skills, structured on-line learning (e.g. by making use of open educational resources), and courses organised by civil society organisations for their members, their target group or the general public (Ibid.).

Programme (educational)

A learning opportunity that usually consists of several educational components that are offered as a coherent curriculum and lead to the award of a qualification.

Progression

The process which enables learners to accumulate credits towards a qualification and to access educational programmes that prepare for qualifications at a higher level than those they already possess.

Progression rules

Set of rules that define conditions for learners' progression within qualifications and towards other qualifications.

Qualification

A formal outcome of an assessment or validation process in which a competent authority attests that a learner has achieved learning outcomes to given standards. It is awarded as degree, diploma or other certificate issued by a competent authority.

Quality assurance

The set of processes implemented to ensure the quality of learning opportunities and qualifications awarded. Quality assurance should ensure a learning environment in which the content of learning opportunities and facilities are fit for purpose. Quality assurance is often referred to in the context of a continuous improvement cycle (i.e. assurance and enhancement activities).

Recognition (academic recognition)

An institution accepts that learning outcomes achieved and assessed in another institution satisfy the requirements of one of the learning opportunities it offers. This includes:

(1) **recognition of qualifications** for the purpose of access to a learning opportunity;

(2) **recognition of credits** for periods of learning, e.g. in relation to student mobility; that is, the credits gained for comparable learning outcomes achieved in one institution/context will replace the number of credits that are allocated for comparable learning outcomes at another institution;

(3) **recognition of non-formal and informal learning**, for access or for credit.

Recognition of non-formal and informal learning

The process through which an institution certifies that the learning outcomes achieved and assessed in another context (non-formal or informal learning) satisfy (some or all) requirements of a particular programme, its component or qualification (Council Recommendation 2012/C 398/01). See also Validation

Recognition of professional qualifications (professional recognition)

Recognition of a qualification for the purpose of access to or pursuit of a regulated profession. In the EU, professional recognition is regulated by Directive 2005/36/EC. See box on p. 41

Stackability

A term that became used with reference to micro-credentials to show that, in addition to having a stand-alone value, they can offer a route to a larger qualification. Both the MICROBOL Common Framework and the European approach to micro-credentials indicate that micro-credentials may be combined into larger credentials or qualifications.

Stacking credits means that accumulated credits (from courses, modules or micro-credentials) are counted towards a qualification or larger credential, or used for access to a further learning opportunity. All ECTS credits are stackable: that is, they can be recognised by an education institution as a record of part of the achievement necessary to obtain a specified qualification or credential.

Pathways to stack credits can be offered by a single education institution, education institutions can offer standardised pathways to stack credits obtained from another education institution, or education institutions can make case-by-case decisions to recognise credits towards a qualification or credential.

Student

A learner enrolled in a higher education institution. To reflect the shift towards more flexible learning and to enhance its usability in other education sectors, the more general term ‘learner’ is used throughout the Guide.

Traineeship

A planned period of experience outside the institution (for example, in a workplace) to help learners to develop particular skills, knowledge or understanding as part of their programme (also called work placement and internship).

Traineeship Certificate

A document issued by the receiving organisation/enterprise upon the learner/trainee's completion of the traineeship. It aims to provide transparency and document the value of the experience of the learner's traineeship. See 7.4 Traineeship Certificate

Transcript of Records

A record of the learner's progress drawn up by an education institution, listing the educational components a learner has taken, the number of ECTS credits they have achieved, and the grades they have been awarded. See 7.3 Transcript of Records

Transfer (of credits)

see key features

Validation of non-formal or informal learning

A process of confirmation by an authorised body that an individual has acquired learning outcomes measured against a relevant standard. See also Recognition of non-formal and informal learning and 4.3 Awarding of ECTS Credits for Non-Formal and Informal Learning

Vocational education and training (VET)

Learning which aims to acquire knowledge, know-how, information, values, skills and competences – either job-specific or transversal – required in specific occupations or more broadly on the labour market.

VET covers initial vocational education and training, continuing vocational education and training at secondary, post-secondary and higher levels. VET can take place in a broad range of – formal and non-formal – settings and – public or private – sectors (Cedefop, 2021).

Virtual exchange

Learning delivered online to learners of another education institution, within the same country or abroad.

Work-based learning (work placement/internship, dual study or other)

All forms of learning that takes place in a real work environment. It provides individuals with the skills needed to successfully obtain and keep jobs and progress in their professional development.

Apprenticeships, internships/traineeships and on-the-job training are the most common types of work-based learning. These types usually – but not always – combine elements of learning in the workplace with classroom-based learning (CEDEFOP).

Workload

See key features

Work placement

See traineeship

9.2 Annex 2: Grade conversion

Grade conversion *(optional) refers to translating a grade from a different grading scale to the institution's grading scale. Conversion should only be performed for credits transferred within the same sector (e.g. between higher education institutions). The decision whether and how to convert grades rests with the education institution. If grades are converted, that conversion should be based on one of the methodologies provided in the annex 2. The grade conversion methodology used must be transparent and the information should be readily available for the learners and other interested parties.*

If grade conversion is necessary, one of the following methodologies should be used. The choice depends on the information made available by the grade-awarding institution in the ECTS grade transparency information (see section 7.4).

The following terms are used:

- **Incoming grade**: a grade awarded by another institution, under a different grading scheme than that of the institution to which credit is transferred;
- **Local grade**: a grade in the institution's own grading scheme.

1) Grade distribution method

When to use: grade distribution information is available for both institutions

Advantage: can help preserve greater precision in some scenarios, especially if one or both grading scales involved have more than five passing grades.

How:

The staff member responsible for credit transfer compares the grade distribution information provided by the other institution with their local grade distribution table.

1. Select the local grade distribution table

   If your institution maintains grade distribution information for different reference groups, select the table whose reference group most closely matches the one used by the other institution.

2. Calculate the incoming grade's midpoint percentile

   In the ECTS grade transparency information (see section 7.4) provided by the other institution, look up the incoming grade and its cumulative percentile band. Calculate the midpoint percentile as the sum of lower and upper bounds divided by two.

3. Locate the midpoint in the local table

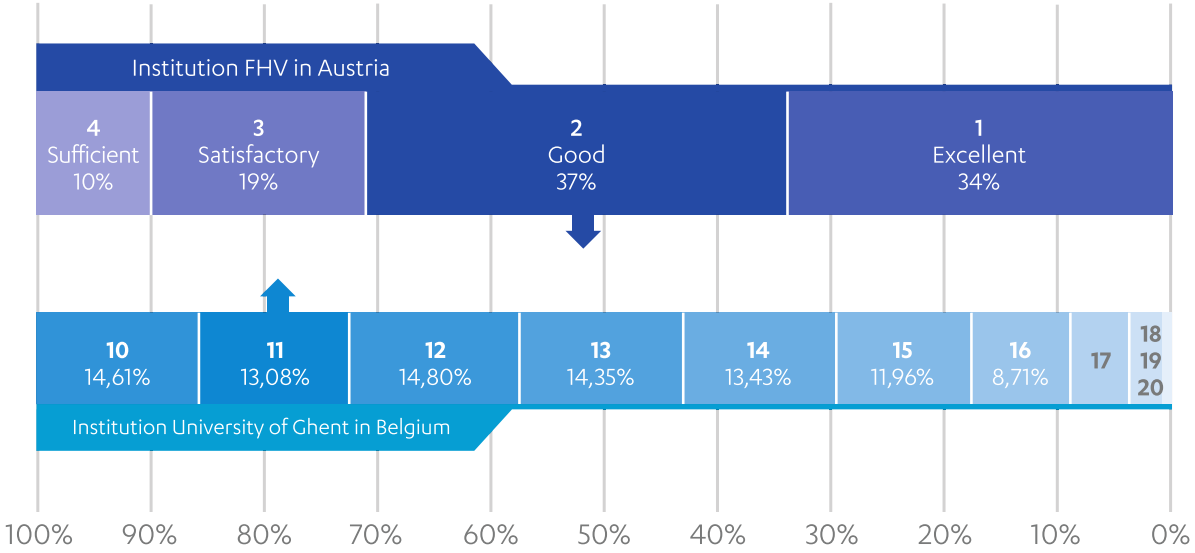
   Find the local grade whose percentile band contains the midpoint calculated in step 2. If the midpoint equals exactly the upper bound of one local grade's band and the lower bound of the next, assign the better of the two grades.

Example 1:

Reference group: incoming ISCED broad field of study 07 (Engineering, manufacturing and construction) → same local ISCED broad field

Incoming grade 2 (Good), awarded by an institution in Austria (passing grades from 1 to 4) → converted to local grade 13 at an institution in Belgium (passing grades from 10 to 20)

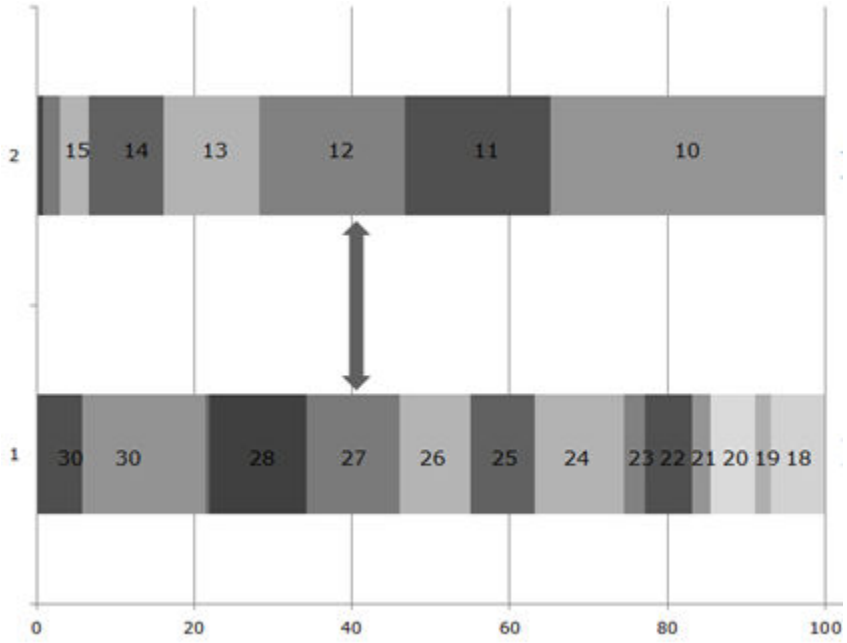
Incoming grade 11, awarded by an institution in Belgium → converted to local grade 3 (Satisfactory) at an institution in Austria



Example 2:

Reference group: incoming ISCED narrow field of study 023 (Languages) → local ISCED broad field of study 02 (Arts and humanities)

Incoming grade 27, awarded by an institution in Italy (passing grades from 18 to 30 cum laude) → converted to local grade 12 at an institution in France (passing grades ranging from 10 to 20)



2) Using ECTS reference grades

When to use: grade distribution information is not available for one or both institution(s)

Advantage: can always be used

How:

The institution can use the standardised ECTS reference grade as a translation tool to convert an incoming grade to a local grade.

1. Look up the ECTS reference grade

   Use the grade transparency information (see section 7.4) provided by the other institution to find the ECTS reference grade to which the incoming grade is mapped

2. Identify the matching local grade

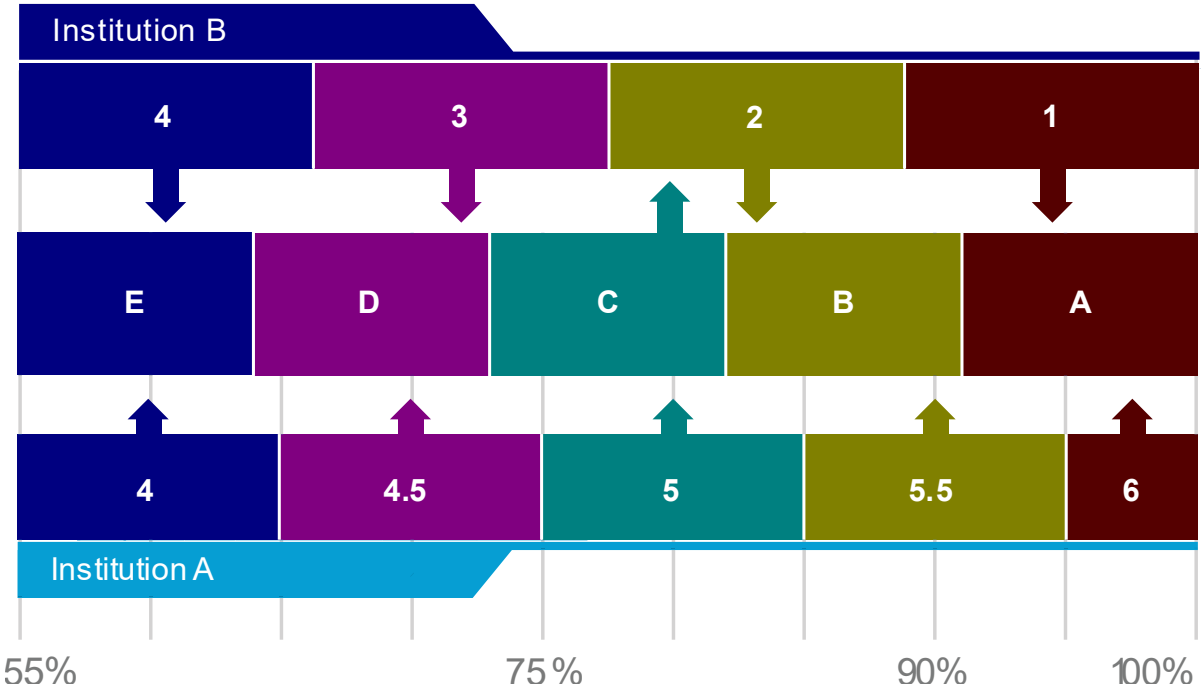
   Assign the local grade that is mapped to the same ECTS reference grade. If several local grades are mapped to one ECTS reference grade, assign the average of those, follow the local institution's policy for such cases or make a discretionary judgement which local grade to assign.

Example:

Incoming grade 6, awarded by institution A (passing grades from 4 to 6) → ECTS reference grade A → converted to local grade 1 at institution B (passing grades from 4 to 1).

Incoming grade 5, awarded by institution A (passing grades from 4 to 6) → ECTS reference grade C → converted to local grade 2 at institution B (passing grades from 4 to 1) — per institution B's policy for handling incoming ECTS reference grade C.

Incoming grade 3, awarded by institution B (passing grades from 4 to 1) → ECTS reference grade D → converted to local grade 4.5 at institution A (passing grades from 4 to 6).



9.3 Annex 3 : Recommended Reading List

1) Official documents of the European Higher Education Area (EHEA)

Communiqués of the conferences of European ministers responsible for higher education: https://ehea.info/ministerial-conferences-and-communiques/

The Framework of Qualifications for the European Higher Education Area, May 2018: https://ehea.info/Upload/document/ministerial_declarations/EHEAParis2018_Communique_AppendixIII_952778.pdf & https://ehea.info/bologna-policy/qualification-frameworks/

Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), May 2027: *** LINK TO ADD ***

European Approach for Quality Assurance of Joint Programmes, May 2027: *** LINK TO ADD ***

2) Official documents of the European Union (EU)

Council Recommendation (2012/C 398/01) of 20 December 2012 on the validation of non-formal and informal learning: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2012:398:0001:0005:EN:PDF

Directive of The European Parliament and of The Council (2005/36/EC) of 7 September 2005 on the recognition of professional qualifications: https://eur-lex.europa.eu/eli/dir/2005/36

Council recommendation (2017/C 189/03) of 22 May 2017 on the European Qualifications Framework for lifelong learning: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=oj:JOC_2017_189_R_0003

Council Recommendation (2018/C 444/01) of 26 November 2018 on promoting automatic mutual recognition of higher education and upper secondary education and training qualifications and the outcomes of learning periods abroad: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018H1210(01)

Council Recommendation (2022/C 243/02) of 16 June 2022 on a European approach to micro-credentials for lifelong learning and employability: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022H0627(02)

Council Recommendation (C/2024/3364) of 13 May 2024 'Europe on the Move' — learning mobility opportunities for everyone: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:C_202403364

Council Recommendation (C/2025/3006) of 12 May 2025 on a European quality assurance and recognition system in higher education: https://eur-lex.europa.eu/eli/C/2025/3006/oj

3) Websites and useful links

ENIC-NARIC Network: http://www.enic-naric.net/

European Quality Assurance Register for Higher Education (EQAR): https://www.eqar.eu/

UNESCO (2014), ISCED: International Standard Classification of Education. Available: https://www.uis.unesco.org/en/methods-and-tools/isced

European Learning Model (ELM): https://europa.eu/europass/elm-browser/index.html

European inventory on validation of non-formal and informal learning: https://www.cedefop.europa.eu/en/country-reports/european-inventory-on-validation

4) Literature

Bergan, S. (2007), Qualifications – Introduction to a concept (Council of Europe higher education series No.6): https://book.coe.int/eur/en/higher-education-and-research/3794-qualifications-introduction-to-a-concept-council-of-europe-higher-education-series-no6.html

Bergan, S; Rauhvargers, A. (eds.) (2005), Standards for recognition: the Lisbon recognition convention and its subsidiary texts (Council of Europe higher education series No. 3): http://www.coe.int/t/dg4/highereducation/resources/heseries_en.asp

Biggs, J. (2003), Aligning teaching for constructing learning. Higher Education Academy: https://www.heacademy.ac.uk/aligning-teaching-constructing-learning

Cedefop (2011), Using learning outcomes: European Qualifications Framework Series: Note 4 http://www.cedefop.europa.eu/EN/Files/Using_learning_outcomes.pdf

Cedefop (2023), European guidelines for validating non-formal and informal learning. Luxembourg: Publications Office. Cedefop reference series; No 124. http://data.europa.eu/doi/10.2801/389827

Gosling, D. and Moon, J. (2002), How to use learning outcomes and assessment criteria (Third Edition) London: (SEEC); http://www.aec-music.eu/userfiles/File/goslingmoon-learningoutcomesassessmentcriteria(2).pdf

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9.4 Annex 4: Examples for Programme Profiles and formulations of programme learning outcomes

NB: THIS ANNEX HAS NOT YET BEEN REVISED

The examples below show different ways of describing programme profiles and/or single course units. These are not absolute models to be followed, but examples of good practice, based on the recommendations of the ECTS Guide.

EXAMPLE I – description of the First Cycle degree programme in Computer Engineering and learning outcomes for the course unit Physics I

Profile of the degree programme

The Bachelor's degree programme in Computer Engineering is designed to prepare students with a sound cultural background based on proficiency in different engineering areas and strong computer science expertise. Courses are intended to provide participants with the skills needed to design, install and maintain computer systems and computer networks, software applications, industrial automation systems, management information systems, integrated processing and control systems. The Computer Engineering graduate is mainly an Engineer as well as a good IT Professional.

Key Learning Outcomes

Graduates of the First Cycle Degree programme in Computer Engineering will be able to: design, install and maintain computer systems and computer networks, software applications, industrial automation systems, management information systems, integrated processing and control systems.

Occupational Profile/s of Graduates

Graduates of this degree are qualified to work inside information technology companies specialised in the computer hardware and software production and inside industrial automation industries as well as inside all kind of enterprises using information systems and computer networks for internal production and management processes. They will also be able work as freelancers or independent contractors mainly for the development of digital control systems for specific applications. Moreover, the Programme will provide the students with the necessary requirements for academic advancement in the computer engineering and automation field.

Single course unit: Physics I

Learning outcomes

The student who successfully completes the course will have the ability to master the basic concepts of physics both in Newtonian mechanics and in classical electromagnetism. He/she will be able to demonstrate a solid knowledge of the conservation laws and of the Maxwell equations whose application will allow him/her to solve basic problems of dynamics in mechanical systems and of fields configuration in problems of electromagnetism.

Assessment methods and criteria

Assessment methods

- Final written exam

- Final oral exam

The written exam is considered a threshold to access the final oral exam. A score of 15 points/30 is required to pass the written exam. Once the threshold is passed, the weight of the oral exam on the final score is about 70%.

Assessment criteria

The student will be assessed on his/her demonstrated ability to understand the main contents of the course and to adapt them to specific cases to solve problems. In the written exam (3 hours, 2 problems), the student must demonstrate his/her capability to deploy the basic concepts to find correct answers to a typical series of three questions per problem. During the oral exam (1/2h) the student must demonstrate the ability to put into practice and to execute, with critical awareness, the most important physics laws discussed in the course.

EXAMPLE II - description of the First Cycle degree programme in History and learning outcomes for the course unit Modern History

Profile of the degree programme

The Degree programme in History has the objective of preparing student for the practice of historical research, thanks to a solid knowledge of the great historiographical themes and debates and the acquisition of methodologies of the treatment and interpretation of the sources, and the use of a clear and rigorous language as appropriate to historiographical discourse. The learning experience is organised through cycles of lectures, seminars, workshops and laboratories. Alongside these activities, the students are able to attend conferences, workshops and meetings in order to have contact with scientific debate at national and international level. The Degree programme has four tracks: Ancient History, Medieval History, Modern History and Contemporary History.

Key Learning Outcomes

Graduates of the First Cycle Degree programme in History will be able to demonstrate a critical understanding of the relationship between the present and the past; knowledge of and an ability to use the basic techniques of historical research; the ability to identify the relevant scientific literature, bibliography and sources to address a historiographical problem; the ability to communicate research results in various ways according to the target audience; a knowledge of and ability to use the main tools of other social and humanistic sciences, as well as history; a solid knowledge of the general lines of human history; specialised knowledge of one broad period of history (Ancient, Medieval, Modern/Contemporary); an ability to communicate in at least one language of the EU, in addition to Italian; as well as basic ICT competences for communicating, retrieving and elaborating on historiographical texts and data.

Occupational Profile/s of Graduates

Those holding the First Cycle award (Laurea) in History are able to carry out various activities for public and private organisations, with responsibilities relating to coordinating and executing historical research, to preserving and valorising the cultural patrimony, especially as regards archives, libraries and material culture; to publishing, journalism and in the various contexts in which historical culture and its popularisation are useful, including public administration and international cultural relations. Graduates can enter programmes for the preparation of teachers in the areas of History and Literature; they can compete for positions in the public sector linked to teaching, archive management, libraries and museums, parliamentary documentation and information services, and diplomatic careers.

Single course unit: Modern History

Learning outcomes

The student who completes the course successfully will be able to demonstrate a solid knowledge of the main processes and events in European and world history from the age of the geographic explorations to the Napoleonic period.
Furthermore he or she will be able to demonstrate up-to-date and specific knowledge of the Spanish Empire in a Mediterranean and Atlantic context, and of the historiographical problems relating to it; and will be able to read and analyse texts and documents from the period.

Assessment methods and criteria

Assessment methods

- Final oral exam
- Periodic written tests

Students who attend the lectures and participate in the discussions and analyses of documents may take periodic written exams, normally consisting of written answers in essay form to questions relating to the course material, which will be evaluated and taken into account in the final oral examination. Those who are unable to attend are evaluated only in the final oral examination.

Assessment criteria

The timing and the form of the periodic written exams for those who attend are discussed with the students during the lectures. The final oral examination aims to ascertain that the student is able to demonstrate knowledge of the course material and to discuss the chosen monographs critically and comprehensively.

EXAMPLE III – Description of the First Cycle degree programme Business Administration

Title of the programme:

Business Administration

Level of programme:

Professional Bachelor's degree programme

Qualification awarded:

Enterprise and establishment manager

Level of qualification:

On successful graduation from the programme, the graduate obtains a Professional Bachelor's Diploma and the qualification: 'enterprise and establishment manager' which corresponds to the 5th professional qualification level and it corresponds to the level 6 of the Latvian Qualifications Framework (LGF) and European Qualifications Framework level 6.

Specific admission requirements:

Enrolment in the study programme, is organised according to the Enrolment Regulations of the School, which are endorsed by the Senate for each coming academic year.

Specific arrangements for recognition of prior learning:

For recognition of non-formal and informal learning there is a legal framework to promote and implement lifelong learning. On 10 January 2012, the Cabinet of Ministers issued 'Rules of Procedure for Recognition of Learning outcomes in Prior Learning or professional experience', Number 36. The procedural documents have been developed by the School and endorsed by the Senate. Lifelong learning activities have been designed to facilitate LLL. Programmes are designed with learning outcomes which ensures transparency and comparability. ECTS is applied to lifelong learning. General arrangements for the recognition of non-formal and informal learning are explained in the Rules of Procedure for the Recognition of Prior Learning which were endorsed by the Senate in 2012. The document explains the process, the criteria and the recognition.

Qualification requirements and regulations:

In order to obtain the professional Bachelor's degree and qualification, the student has to fulfil the following programme requirements:

- Acquire general and course specific course learning outcomes
- Acquire optional course learning outcomes
- Follow a company placement
- Prepare and defend the Bachelor's paper

Profile of the programme:

The programme equips students with the knowledge, skills and abilities to become competent managers – in changing socio-economic conditions. Students learn to apply their knowledge by managing processes, solving problems, and making decisions. The awarded qualification acknowledges that graduates are able to determine and formulate enterprise performance principles; to plan and manage work according to the business objectives; and to work with people and be ready to adapt in rapidly changing management environments. This is in accordance with the category 5 professional qualification level of

the professional standard 'enterprise and institutional manager' and corresponds to level 6 of both the Latvian Qualification Framework (LGF) and the European Qualification Framework. The students acquire 240 ECTS (160 Latvian credits) in an international study environment. The students are eligible to study under Erasmus+ exchange programme. They also have the opportunity to study with international academic staff from partner universities. Organisation and management of internships is part of the programme.

Key learning outcomes:

In the programme, students will acquire the ability to comprehend economic development regularities and the processes of the national economy. They will learn to explain them, take part in substantive discussions and make decisions according to changing circumstances.

They will be able to apply the knowledge gained in entrepreneurship management according to operational and strategic aims. They will learn to follow the implementation process, and to make decisions and adjustments in order to improve operational and strategic activities.

Students should be able to carry out professional activity, formulate and analyse information and problems and find solutions in their profession, using a scientific approach.

Moreover, they will understand how to act ethically and to take responsibility for the impact of their professional conduct upon the environment and society.

Finally, students will feel comfortable assuming responsibility in a team setting while delegating and coordinating tasks. This includes planning and organising their work efficiently and dealing with conflict situations.

Occupational profiles of graduates with examples:

Graduates work in companies and institutions, both public and private, they work in small to medium sized companies as managers/ heads of departments.

Access to further studies:

The graduates of Professional Bachelor's degree programme are eligible for further studies at Master degree programmes.

Single course unit: Consumer behaviour in Global Markets

Learning outcomes:

- The student is able to explain and apply the key terms, definitions and concepts relating to consumer behaviour.
- The student can analyse consumer behaviour trends and apply them in the given consumer market.
- The student is able to describe factors which influence the consumer's decision about purchasing a product.
- The student is able to assess the efficiency of different advertisements and other promotional activities as well as their impact on consumer behaviour.

EXAMPLE IV - description of the Second Cycle degree programme in "Advanced Spectroscopy in chemistry" and learning outcomes for the course unit "Mass Spectroscopy"

Profile of the degree programme:

The Master's programme prepares students to become experts and develop international skills that prepare them for doctoral studies, and/or professional industrial careers in chemical analysis and characterisation of the structure of materials. A mobility scheme ensures that, in addition to high specialisation and access to state-of-the-art technologies, students will follow a common core curriculum of studies in different higher education institutions throughout Europe.

Key learning outcomes:

- Students will acquire basic skills in:
    - chemical analysis
    - structural characterisation
    - imaging and molecular modelling
    - characterising fast reactions
    - quality control
    - Materials
- Students will acquire related skills in:
    - conducting research projects
    - decision-making in process management
    - foreign languages (presenting a scientific project in English, both orally and in writing)
    - conducting projects in an international and multicultural context
    - geographical mobility

Single Course Unit: Advanced Spectroscopy in Chemistry

Unit title: Mass Spectroscopy (**Prof. XY**).

Unit code: ASC 01 – LI semester I.

ECTS credits: 5 Credits

Prerequisites: Bachelor in chemistry or equivalent

Course description:

The course covers aspects of molecular mass spectrometry including the most recent developments in instrumental design, techniques and understanding of mass spectral processes. The methods available for the introduction of analytical samples are presented, and the advantages and disadvantages of these methods considered. The different types of mass analysers, their working principles and performances are discussed. Current software tools for data-dependent analysis and on-line techniques are described. Examples are presented of the application of mass spectrometric techniques in different areas of chemistry

Aims:

The aims of this unit are:

- To build upon and extend the theoretical and instrumental concepts introduced during the bachelor degree programme.
- To develop the competence and confidence of the students in mass spectrometry.

- To highlight modern advances in instrumentation and techniques within mass spectrometry.
- To identify appropriate instrumentation for particular applications.

Learning outcomes:

After completing this unit the student should be able to:

- Discuss in a comprehensive way the methods available for the introduction of samples to a mass spectrometer
- Identify methods for ionisation and their advantages and disadvantages.
- Review critically the available types of mass analysers.
- Discuss the use of software in obtaining and analysing mass spectral data.
- Identify the most suitable instrumentation for specific applications and describe the extent and limitations of the data obtained.
- Interpret mass spectral data and present the conclusions drawn in written and oral form.
- Explain to non-specialists how mass spectrometry can be expected to provide valuable information in different areas of chemistry and related disciplines.

Teaching and learning activities:

Lectures and colloquia: 40 hours

Student centred learning: 90 hours

Total student effort: 130 hours

Assessment criteria:

Examination on completion of teaching period: written or oral (weighting 100%)

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