



## Project acronym:

# Microguide

Project full title: DEVELOPING GUIDELINES
FOR THE IMPLEMENTATION OF
MICRO-CREDENTIALS IN HIGHER EDUCATION
Project No. 2021-1-ProjectRS01-KA220-HED-000027585
Funding Scheme: Erasmus+






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# Contents

# PREFACE

Micro-credentials enable the targeted acquisition of skills and competences without replacing traditional qualifications. In 2019, most EU countries surpassed the 40% tertiary education attainment target. However, adapting the knowledge and competences gained through formal education and training to a rapidly evolving society is essential. Micro-credentials provide high-quality, innovative, learner-centred education and training to address existing and emerging skills gaps, promote inclusion in lifelong learning by attracting new learners, and include individuals from disadvantaged backgrounds.

The aim of the ERASMUS+ project "Developing Guidelines for the Implementation of Micro-Credentials in Higher Education – MICROGUIDE" (2021-1-RS01-KA220-HED-000027585) is to develop guidelines for implementing micro-credentials in higher education. This involves analysing the legal framework, implementation practices, certification and credit evaluation, quality assurance mechanisms, and methods of linking micro-credentials to National Qualifications Frameworks (NQFs) in the partner states. The project partners include the University of Belgrade (Belgrade, Serbia), the Qualification Agency of Serbia (Belgrade, Serbia), FH Joanneum Gesellschaft MBH (Graz, Austria), the Accreditation Council for Entrepreneurial and Engaged Universities (Münster, Germany), and the University of Lleida (Lleida, Spain).

Based on the results of these analyses, a compilation of exemplary practices from the project partner states was created, along with a proposal for an optimal model of the legal framework, certification and credit evaluation, quality assurance, and integration with National Qualifications Frameworks (NQFs). The Guidelines include all these elements and present three micro-credential examples developed as proof-of-concept, offering a theoretical foundation for practical application. In this manner, the Guidelines serve as the theoretical underpinning for implementing micro-credentials in all project partner states and beyond, providing both legislators and higher education institutions (HEIs) with concrete solutions.

# INTRODUCTION

Micro-credentials (MCs), also often referred to as the new currency of lifelong learning1, have been a key topic of discussion in the field of higher education (HE) in Europe in recent years. They certify the learning outcomes of short-term learning experiences, such as a short course or training2.

On June 16, 2022, the Council of the European Union adopted the Recommendation for a European approach to MCs for lifelong learning and employability3. Experts believe that effective environments and lifelong learning tools help equip people with the knowledge, skills and competences needed for a successful personal and professional life.

MCs offer a way to gain insight and expertise quickly in an ever-changing landscape and stand out above the competition. In fact, a recent study from North-eastern University found that 61% of human resources leaders believe that credentials earned online are of generally equal quality to those completed in-person4.

There are several factors behind the great interest and demand for MCs:

### The cost of HE

Traditional education in Europe, the US, Canada, and Australia is renowned for its high tuition fees. On the other hand, MCs offer a cheaper alternative for people searching for academic and professional mobility.

### Skill gaps

Many employers, particularly large corporations like Google and Microsoft, know that a degree position does not necessarily indicate competence and, therefore, offer a wide range of credentials that largely solve the problem of knowledge and competence gaps.

### The rapid pace of technological development

The rapid development of technology has led to the emergence of new fields of knowledge (such as data science and data mining), as well as software or programming languages. Incorporating new knowledge into existing Bachelor's and Master's programmes is problematic and inefficient, while MCs offer certification in the latest fields of IT, engineering, etc.

1 https://www.hrk.de/resolutions-publications/resolutions/beschluss/detail/micro-degrees-and-badges-as- formats-of-supplementary-digital-credentials

2 https://education.ec.europa.eu/education-levels/higher-education/micro- credentials#:~:text=Micro%2Dcredentials%20certify%20the%20learning,their%20personal%20and%20professi onal%20development.

3 https://data.consilium.europa.eu/doc/document/ST-9237-2022-INIT/en/pdf

4 https://www.taotesting.com/blog/5-reasons-why-micro-credentials-matter/

### Pandemic

The pandemic has significantly changed lifestyles, including the format of education. MCs, available in both online and offline formats even before the pandemic, have easily adapted to the new environment.

### MCs in the context of digitisation of HE

Since the Ministerial Conference held in Paris in 2018, digitisation in HE has been given an important role, and its role in lifelong learning has been emphasised repeatedly5. This (as well as the increasing cost of HE, rapid labour market changes, and demand for more flexible learning opportunities) explains the proliferation of learning programmes and credentials positioned as "alternatives" to traditional formal education programmes. Alternative credentials include academic certificates, industry certifications and digital badges.

Such educational units as Massive Online Courses (MOOC) and Micro-Degrees, which can be defined as hyper-focused online courses, are designed to teach a practical skill set quickly. Along with them, rewards and certificates, namely MCs, Badges, etc., were developed as evidence of completing those courses.

| **MOOC** | **MIKRO-DEGREES** |
|---|---|
| Online courses that are designed for a large number of participants.<br>Mostly, does not reach the level of quality required to replace or be considered as sibstitude for actual HE.<br>Expands the existing forms of teaching. Often offered by private providers. | Hyper-focused and short-term degrees, designed to br immediately applicable to a very specific profession.<br>The fundamental idea is that topics covered by study programmes can be broken down into micro-components and reassembled in order to achieve maximum modularisation and to group conent as best possible. |
| **ZNAČKE** | **MICRO-CREDENTIALS** |
| Symbolic rewards given to lesrners for (learning) successes achieved, can be a type of MCs.<br>Can be a targets or positive mechanism that motivates learners to complete module or by costly offers.<br>May not have any assessment or formal processes to ensure academic quality and assessment rigor. | Certificates that are awarded for the successful completion of an educational unit, which is shorter than a study programmes and can be conducted flexibly at any time.<br>Usually follow a formally approved or accepted set of standards.<br>There is a demand for them be both recognised and awarded by universities. |

5 https://www.fzs.de/2021/09/22/statement-lebenslanges-lernen-massive-online-courses-und-micro- credentials/

The text presented in this publication is the result of five analyses carried out during the Project:

*Analysis of the MCs implementation practice in Project partner countries, making a list of examples of good practice;*

*Analysis of the legal framework in Project partner countries, proposing the best legislative model;*

*Analysis of the MCs certification and credit evaluation practice in Project partner countries, proposing the best model of certification and credit evaluation;*

*Analysis of the MCs quality assurance practice in Project partner countries, proposing the best model of MCs accreditation;*

*Analysis of the linking of MCs to the National Qualification Framework in Project partner countries, proposing the best link model.*

Methodological steps in research activity were:

Step 1. To identify information sources regarding the topic of the research;

Step 2. To collect relevant information;

Step 3. To analyse collected information;

Step 4. To discuss results obtained by analysis;

Step 5. To produce analysis reports;

Step 6. To implement all analysis results in the Guidelines for implementing MCs in Project partner countries' higher education and develop three micro-credential examples as proof-of-concept.

# 1. HIGHER EDUCATION SYSTEM IN SERBIA

Preparations for HE reform in Serbia began in 2000, and since 2003, the Republic of Serbia has been a full member of the Bologna Process and the European Higher Education Area (EHEA)6. The formal conditions for HE reform were fulfilled with the adoption of the Law on HE in 2005, which introduced new features such as a three-cycle study system, European Credit Transfer and Accumulation System (ECTS), mobility of students and teachers, diploma supplement, the National Council for HE and Commission for Accreditation and quality assurance (QA) establishments.

## 1.1. Legal and Institutional framework of the HE system

### 1.1.1 Relevant Laws on Higher Education

The following laws regulate the higher education system of the Republic of Serbia:

- The Law on Higher Education;
- The Law on the Dual Model of Studies in Higher Education;
- The Law on Regulated Professions and the Recognition of Professional Qualifications;
- The Law on the National Qualifications Framework of the Republic of Serbia (NQFS).

The Law on Higher Education incorporates the principles of the Joint Declaration of the European Ministers of Education convened in Bologna on June 19, 1999 (i.e., Bologna Declaration) and the Convention on the Recognition of Qualifications concerning Higher Education in the European Region (i.e., Lisbon Convention).

The Law on the Dual Model of Studies was adopted in September 2019, establishing a legal basis for introducing a dual study model in which part of the study programme is implemented through work-based learning with an employer. A national dual education model was developed in response to a strategic measure emphasising the necessity of involving employers in the programming, development, and implementation of secondary vocational education. This aligns with the planned measure from the Action Plan for the implementation of the Strategy, which calls for developing a system for accrediting and certifying employers where practical training is conducted. The adoption of the Law on Dual Education in 2017 and the relevant by-laws in 2018, along with the involvement of companies and the increase in the number of qualifications implemented according to the dual

6 EHEA National Report – http://www.ehea.info/pid34250-cid101594/serbia.html

education model, are clear indicators of an education policy focused on implementing a regulated system of work-based learning.

By adopting the Law on Regulated Professions and the Recognition of Professional Qualifications, Directive 2005/36/EC on the recognition of professional qualifications was integrated into the legal system of the Republic of Serbia. While drafting this law, which will come into effect after Serbia accedes to the EU, it was recognised that the requirements for performing professions regulated by individual laws needed to be standardised to prepare the system for implementing the Directive. With this in mind, the Law on Professions of Special Interest for the Republic of Serbia and Conditions for their Performance was adopted, establishing a legal basis for regulating the particular conditions regarding the minimum competences required for performing professions of special interest to the Republic of Serbia, as well as the procedures and competent bodies for determining the fulfilment of these conditions. Applying this law will cease once the Law on Regulated Professions and the Recognition of Professional Qualifications takes effect.

Bearing in mind that one of the strategic goals has been to increase the relevance of education, the development of the National Qualifications Framework in the Republic of Serbia, the adoption of the NQFS Law and the establishment of NQF-related institutional framework in 2018 have been identified as one of the key indicators of progress.

### 1.1.2 HE institutional framework

#### 1.1.2.1 Ministry of Education (MoE)

The competences of MoE in higher education are to:

- propose a higher education policy to the Government;
- plan the policy of enrolment of students to studies carried out by HEIs founded by the Republic of Serbia at the proposal of the NCHE;
- monitor the development of higher education;
- issue a license for work to HEIs;
- distribute financial resources from the budget of the Republic of Serbia intended for HEIs and control their use;
- take care of the involvement of HEIs in the process of recognition of higher education qualifications in Europe;
- supervise the legality of implementation of standards for initial accreditation and accreditation of HEIs and study programmes, standards for self-evaluation and quality assessment of HEIs and standards for external QA of HEIs;
- determine the procedure for external QA of HEIs.

The MoE particularly takes care of harmonising the education system of the Republic of Serbia with education development trends in Europe. To accomplish this goal, the MoE takes all necessary actions for:

- ensuring full participation in European Union cooperation programmes in the field of education and training and monitoring the effects of participation in these programmes;
- the participation of representatives of the Republic in the working groups and activities organised within the Open Method of Coordination, the Bologna Process and other similar initiatives launched at the European Union level and Europe as a whole.

To participate as effectively as possible in European initiatives, the MoE cooperates with other state bodies, educational institutions, citizen associations and other organisations if necessary and may appoint their representatives to working groups.

#### 1.1.2.2 National Council for Higher Education (NCHE)

The NCHE has 17 members appointed by the Government of the Republic of Serbia:

- six members having the rank of full-time professor, top experts with the title of scientific advisor, or artist with internationally recognised works or certified contribution to the national culture, considering the representation of educational-scientific, educational-artistic fields, as well as the representation of universities, at the proposal of the Conference of Universities;

- two members having the rank of professor of applied studies, at the proposal of the Conference of Academies of Applied Studies in Serbia (from now on, the Conference of Academies);
- seven members as top experts or artists with internationally recognised works or certified contributions to the national culture, considering the representation of educational-scientific and educational-artistic fields, at the proposal of the MoE;
- two members at the proposal of the Chamber of Commerce and Industry of Serbia.

In matters of importance for students, at the invitation of the NCHE, two student representatives designated by student conferences among students with an average grade of at least eight participate in its work with the right to make decisions. A representative of the national council of the national minority in question also takes part in the NCHE's work with the right to make decisions when teaching is conducted in the language of a national minority entirely or partially within the higher education, in matters of importance for teaching in a national minority language. The term of NCHE members lasts four years, with the possibility of re-election.

The member of NCHE cannot be a person elected, appointed or named to a position in a state body, autonomous province body, local self-government body, body of a political party or in a management body of a higher education institution, or a person who is a member of the Commission For Accreditation And QA (from now on the Commission For Accreditation) and a person employed by the National Entity for Accreditation and QA in Higher Education.

NCHE has the competence to:

- monitor the development of higher education and its compliance with European and international standards and propose higher education policy to the MoE;
- give an opinion on the enrolment policy in HEIs and procedure for adoption of regulations governing the questions related to higher education;
- propose to the Government norms and standards for the operations of HEIs, as well as material resources for their implementation, upon obtaining an opinion from the Conference of Universities of Serbia and the Conference of Academies of Applied Studies;
- establish guidelines related to the organisation, implementation of short study programmes and the issuance of an appropriate certificate;
- decide in the second instance on the complaints in the accreditation process, at the proposition of an appeals board formed for each appeal;
- establish scientific, artistic and professional areas within fields at the proposal of the Conference of Universities of Serbia and the Conference of Academies of Applied Studies;

- establish the list of professional, academic, scientific and artistic titles with an indication of the rank of the appropriate study cycle in the relevant areas and the abbreviations of professional, academic, scientific or artistic titles bilingual in Serbian and English;
- at the proposal of the National Entity for Accreditation and QA in Higher Education establish standards for initial accreditation of HEIs and study programmes, standards and procedures for accreditation of HEIs and study programmes, standards for self-evaluation and quality assessment of HEIs, and standards for external quality assessment of HEIs;
- at the proposal of the Conference of Universities of Serbia and the Conference of Academies of Applied Studies, establish minimum criteria for appointment to the rank of professor adopts the Foundations of the Code of Academic Integrity and the Conflict of Interest when Appointing to the Rank of Professor or Associate and Employing Staff in HEIs in the Republic of Serbia;
- establish a list of study programme reviewers in the accreditation process through a public call. Professors of HEIs in the Republic of Serbia and professors of the appropriate rank from HEIs outside the territory of the Republic of Serbia can be appointed reviewers. The list of reviewers is published on the NCHE's official website. The list of reviewers cannot include a person elected, appointed or named to a position in a state body, autonomous province body or local self-government body, body of a political party, a management body of a higher education institution, a member of the NCHE, the Commission for Accreditation and QA or the person employed by the National Entity for Accreditation and QA in Higher Education.

The NCHE meets with the Chamber of Commerce and Industry of Serbia at least twice a year and once a year with the National Educational Council, the Council for Vocational Education and Adult Education and other professional associations to discuss issues within its competence and determine priorities in the implementation of higher education policy.

The work of the NCHE is public and is published for a given calendar year on the website. Funds for its work and the functioning of its working bodies are provided from the budget of the Republic of Serbia. Expert, administrative-technical and IT tasks for the needs of the NCHE and its working bodies are performed by the MoE.

#### 1.1.2.3 National Entity for Accreditation and QA in Higher Education (NEAQA)

The role of performing the activities related to the accreditation, QA of HEIs and their units, evaluation of study programmes and QA in higher education in Serbia belongs to the NEAQA. It is financed by the revenues acquired through

the accreditation and QA of HEIs and their units' fees, evaluation of study programmes fees and QA in higher education fees, and other sources of income according to the law.

The executive body of the NEAQA is the director. The director is selected based on a public competition, from the rank of full-time university professor with experience in management and QA in higher education. The director is elected for five years, with the possibility of re-election. The director's competence, among others, is to appoint reviewers from the list NCHE determines at the Commission for Accreditation and QA proposal.

The NEAQA managing authority is the Managing Board. The Managing Board has seven members, appointed by the Government, considering the representation of members of both sexes. One member of the Managing Board is proposed by the Conference of Universities in Serbia among the university full-time professors, one member is proposed by the Conference of Academies of Applied Studies in Serbia among the professors of applied studies, two members are proposed by the Chamber of Commerce and Industry of Serbia, and the MoE nominates three.

The members of the Managing Board are elected for four years, with the possibility of re-election. A member of the Managing Board cannot be a person elected, appointed or named to a position in a state body, autonomous province or local self-government body, to a body of political party, in a management body of a higher education institution, or a person who is a member of the NCHE, Commission for Accreditation and QA or a person employed by the NEAQA. The competences of the Managing Board are to:

- elect and dismiss the Director of the NEAQA;
- elect and dismiss the members of the Commission for Accreditation and QA;
- adopt the annual work programme and financial plan;
- adopt the Statute and regulations;
- direct and supervise the activities of the director;
- adopt the Code of Ethics and the Code of Conduct for persons working in the NEAQA, the members of the Commission for Accreditation and QA and the reviewers;
- determine the amount of accreditation fees with the approval from the Government;
- in addition to the documents mentioned above, all other information on the organisation and operation of NEAQA are publicly available and can be found on the website;
- organisation chart of the Agency and CV of the Director, members of the Management Board and members of the Commission for Accreditation and QA;

- documents regarding the membership of Serbia in the European Association for QA in Higher Education (ENQA), including the ENQA report on the reconfirmation of membership of the Commission for Accreditation and QA in ENQA;
- accreditation outcomes of HEIs and study programmes in the Republic of Serbia, Accreditation outcomes of HEIs and study programmes in the Republic of Serbia and External quality control reports;
- list of Reviewers, Instruction Manual and Reporting Template and international activities.

#### 1.1.2.4 Commission for Accreditation and QA (CAQA)

The CAQA is an expert body of NAEQA that conducts the accreditation of HEIs and study programmes, the procedure of external QA of HEIs under the law, and prescribed procedures and standards for accreditation and external quality control.

The CAQA has 17 members selected by the Managing Board of the NAEQA at the proposal of the NCHE, considering the representation of members of both sexes, as well as the representation of educational-scientific and educational-artistic fields. The CAQA members are elected for a term of five years. CAQA member cannot be a person elected, appointed or named to a position in a state body, an autonomous province or local self-government body, a body of political party or in a management body of a higher education institution, a person who is a member of the NCHE, nor a person employed by the NEAQA. A person elected as a CAQA member and on the list of reviewers of the Conference of Universities in Serbia and the Conference of Academies of Applied Studies in Serbia cannot perform the activities of a reviewer while having the CAQA mandate.

The CAQA competences are to:

- decide on the application for accreditation and conduct the procedure of accreditation of institutions and study programmes in the field of higher education;
- prepare a report on the initial accreditation in the procedure for issuing a work permit;
- conduct the external quality control procedure;
- ensure the harmonisation of the implementation of standards and procedures in the field of accreditation within the European Higher Education Area;
- propose to the NAEQA Director reviewers from the list established by the NCHE.

#### 1.1.2.5 The Office for Dual Education and the National Qualifications Framework (ODU-NQF)

In order to ensure the performance of professional and technical tasks of common interest to the Government and several state administration bodies, the Office for Dual Education and the National Framework of Qualifications was established.

ODU-NQF plans the development and implements measures and activities in the field of dual education in accordance with the adopted strategic documents, international conventions and other acts and prepares professional bases and drafts laws and by-laws on dual education in secondary vocational education, dual study model in higher education , career guidance and counselling, as well as the National Framework of Qualifications of the Republic of Serbia. The scope of work of ODU-NQF is to improve social partnership, professional support to the work of social partners involved in dual education processes and NOKS - sector council, Council for NQFS, Qualifications Agency, educational institutions in the system of dual education and upbringing, etc.

With this, ODU-NQF provides support for development initiatives, coordinates activities and participation in the programming and implementation of domestic and international projects, and performs the role of a national coordination point for linking the NQFS with the European Qualifications Framework.

#### 1.1.2.6 Qualifications Agency of the Republic of Serbia (QARS)

QARS is a governmental, professional organisation established by the Law on the National Qualifications Framework of the Republic of Serbia, competent for developing qualification standards, recognition of foreign school and higher education documents, accreditation of organisations in the area of adult education – Publicly Recognised Organisers of Adult Education Activities. It supports the Council for the National Qualifications Framework and proposes QA measures throughout the education system. The most important QARS tasks in the implementation of the NQFS relate to reviewing initiatives for the introduction of new qualifications, providing professional support to the Sector Skills Councils and preparing proposals for qualification standards, maintaining the NQFS Register, external quality control of the PROAEA, monitoring and measuring the effects of the qualification implementation on employment and lifelong learning. The Agency submits an annual report to the Government of the Republic of Serbia and, on request, periodic reports to the MoE.

#### 1.1.2.7 Sector Skills Council

Sector Skills Council is an expert and advisory body established on the principle of social partnership, whose main role is to carry out activities relevant to concrete qualifications within a certain sector acquired in secondary, vocational,

higher education and adult education. The Government of the Republic of Serbia issued decisions on establishing 12 Sector Skills Councils covering the sectors of education and economy. Mandatory institutionally delegated members of the Sector Skills Councils are the representatives of the Chamber of Commerce and Industry and representative associations of employers (representatives of entrepreneurs), Council for Vocational Education and Adult Education, National Employment Service, Conference of Universities of Serbia and Conference of Academies of Applied Studies, associations of vocational schools, the Ministry of Education, the ministry responsible for the area of work covered by the Sector Skills Council, trade unions, Institute for the Improvement of Education. Sector Skills Council reports annually to the Qualifications Agency, the Ministry of Education, Science and Technological Development and the Government of the Republic of Serbia.

#### 1.1.2.8 Conference of Universities

The Conference of Universities was established to coordinate work, establish common policies, pursue common interests and carry out the tasks established by the law. All accredited universities are members of the Conference of Universities. The University is entitled to delegate one additional representative to the Conference of Universities for every 1,000 teachers and associates and another one for every 5,000 students. The Rector acts as the University's representative in the Conference of Universities. The competences of the Conference of Universities include:razmatra pitanja od zajedničkog interesa za unapređenje obrazovno-naučnih i obrazovno-umetničkih aktivnosti na univerzitetima, usklađuje stavove i koordinira napore univerziteta, posebno u vezi sa politikom upisa, i predlaže mere za poboljšanje finansijskog statusa univerziteta i standarda studenata;

- consider matters of mutual interest for the enhancement of educational-scientific and educational-artistic activities at universities, align viewpoints and coordinate the efforts of universities, particularly concerning enrolment policies, and propose measures to improve the financial status of universities and student standard;
- give an opinion on quality standards for educational, scientific research, artistic and professional work;
- propose candidates for members of the NCHE and the NAEQA Managing Board;
- propose a list of professional, academic, scientific or artistic titles in the relevant fields, abbreviations and a description of the qualifications of those titles.

The work of the Conference of Universities is carried out through the Assembly and the Rector's Council and is governed by its Statute. The budget of the Republic of Serbia provides the funding for the activities of the Conference of Universities.

### 1.1.2.9 Conference of Academies of Applied Studies in Serbia

The Conference of Academies of Applied Studies was established to coordinate activities, formulate common policies, promote shared interests, and fulfil tasks set by the law. The Conference is composed of accredited Colleges, Academies of Applied Studies, and Colleges of Applied Studies. Academies of Applied Studies and Colleges of Applied Studies are represented by the president or director at the Conference of Academies of Applied Studies.

The competences of the Conference of Academies of Applied Studies are:

- to discuss issues of common interest for the advancement of educational-professional and educational-artistic activities, harmonise attitudes and coordinate activities of academies of applied studies and colleges, especially in the field of enrolment policy, and propose measures to improve the material position of academies of applied studies and colleges and student standard;
- to give an opinion on quality standards of educational, research, artistic and professional work;
- to propose a list of professional titles in the relevant fields, abbreviations and a description of the qualification of those names;
- to propose candidates for members of the NCHE and the NAEQA Managing Board.

The work of the Conference of Academies of Applied Studies is carried out through the Assembly and is governed by the Statute and the Rules of Procedure of the Assembly. The budget of the Republic of Serbia provides funding for the activities of the Conference of Academies of Applied Studies.

### 1.1.2.10 Students Conferences

The Students Conference of Universities and the Students Conference of Academies of Applied Studies were founded to advocate for the common interests of students as partners in the higher education process. The Students Conference of Serbian Universities consists of representatives from the student parliaments of universities. The Students Conference of Academies of Applied Studies is made up of representatives from the student parliaments of academies of applied studies, colleges, and colleges of applied studies.

Student conferences have the right to give an opinion on the standards for self-evaluation and quality assessment of HEIs proposed by NAEQA and established by the NCHE.

The Statute regulates the organisation and operation of student conferences. Funds for the work of student conferences are provided from the budget of the Republic of Serbia.

### 1.2 Higher Education Structure

HE institutions (HEIs) in Serbia are divided into Universities, Faculties, Art academies, Colleges, and Colleges of applied studies. University, academy of applied studies, college and college of applied studies are independent HEIs. Depending on their founder, they can be state or private. Universities conduct their educational, scientific, and artistic activities through faculties and art academies, which do not have the status of an independent HE institution.

HEIs offer various types of studies, including academic and applied studies. Academic studies focus on developing students' scientific, artistic, and professional achievements, while applied studies are designed to equip students with the knowledge and skills necessary for entering the labour market.

### 1.3 Studies

Studies are divided into first, second, and third-cycle studies.

First-cycle studies include bachelor's academic studies of 3–4 years' duration (180 or 240 ECTS), bachelor's applied studies of 3 years' duration (180 ECTS), and specialised applied studies of 1 year's duration (60 ECTS).

Second-cycle studies include integrated academic studies of 5–6 years' duration (300 or 360 ECTS), master's academic studies of 1–2 years' duration (60 or 120 ECTS), master's applied studies of 2 years' duration (120 ECTS), and specialised academic studies of 1 year's duration (60 ECTS).

Third-cycle studies are doctoral academic studies of 3 years' duration (180 ECTS).

Lastly, HEIs may organise a short study programme of 30–60 ECTS credits for the professional training of individuals with at least secondary education and entry into the labour market. These programmes have a clearly defined structure, purpose, and learning outcomes, and upon completion, a certificate with the obtained competences is issued.

Studies are implemented through accredited study programmes with defined learning outcomes, ensuring students acquire the knowledge, skills, abilities, and attitudes necessary to obtain an appropriate qualification. Study programmes are conducted within one or more educational-scientific or educational-artistic fields encompassing relevant scientific, artistic, and professional areas. The NCHE determines educational fields and areas based on the proposals from the Conference of Universities and the Conference of Academies of Applied Studies in Serbia.[7]

The scope of a study programme is expressed through ECTS credits, which define the students' workload in achieving the specified learning outcomes. ECTS credits can be transferred between different study programmes within the same cycle and type of studies, with the criteria and conditions for transferring credits defined by the individual Higher Education Institution (HEI) or through agreements

7 The Rulebook on Scientific, Artistic, and Professional Areas within Educational-Scientific or Educational-Artistic Fields (RS Official Gazette, No 114/17) – http://nsvo.gov.rs/wp- content/uploads/2017/11/Pravilnik-o-naucnim-oblastima-u-okviru-naucnih-polja.pdf

between HEIs. For students participating in international mobility programmes, ECTS credits can be transferred between different study programmes across all cycles and types of studies.

For accreditation purposes, a study programme must define the name and objectives of the program, the type of study, the intended learning outcomes, enrolment requirements, mandatory and elective courses or subjects, the mode of implementation, the credit value of each course, preconditions for enrolment related to specific subjects or groups of subjects, procedures for selecting courses from other programmes, conditions for transferring from other programmes within the same or related fields, and any other relevant aspects.

### 1.4 Students

All individuals who have completed four years of secondary education are entitled to pursue higher education (HE). Upon completing a study program, they receive an appropriate professional, academic, or scientific title (qualification). Public documents issued upon completion of a study programme include the Diploma and the Diploma Supplement, which must describe the HE system in the Republic of Serbia. The Diploma and the Diploma Supplement are signed by the rector and dean of a faculty or an art academy within the university, the president of the academy of applied studies, or the director of a college and college of applied studies. For joint programmes organised between multiple HEIs, the Diploma and the Diploma Supplement are signed by authorised representatives of those institutions.

In the 2017/18 school year in the Republic of Serbia, 256,172 students were enrolled across all levels of study. Of these, 214,681 students were enrolled in state and private universities, with 86.8% attending state universities and 13.2% attending private ones. Additionally, 41,491 students were enrolled in state and private colleges, where 89.8% were in state colleges and 10.2% were in private colleges. Regarding financing, 41.0% of students were state-financed, while 59.0% were self-financing students.[8]

### 1.5 The QA system in HE

The QA system in higher education follows the European standards and guidelines for QA in the Qualification Framework of European Higher Education Area (QF-EHEA) and includes competent bodies, NCHE, NAEQA, CAQA and MoE, and procedures for ensuring the system of establishment and monitoring of quality in higher education.

Recognition of foreign higher education (HE) documents involves academic recognition for continuing education or professional recognition for employment. The ENIC/NARIC Centre, an internal unit of the Qualifications Agency, carries out the evaluation. This evaluation considers the type and level of competences achieved through the study programme or its components, the education system

8 Statistical Office of the Republic of Serbia – http://www.stat.gov.rs/vesti/20180629-upisani-studenti-u-%C5%A1kolskoj-201718-godini/?s=1104

in the country where the HE document was issued, enrolment conditions, the rights conferred by the HE document in the issuing country, and other relevant factors. The evaluation is conducted without regard to the formal characteristics and structure of the study program, which align with the principles of the Lisbon Recognition Convention.

### 1.5.1 Accreditation principles in higher education

Quality Assurance (QA) in higher education is based on comprehensive documents that cover Initial Accreditation, Accreditation of Higher Education Institutions, Accreditation of Study Programmes, External Quality Assessment of Higher Education Institutions and Study Programmes, and Self-Evaluation and Quality Assessment of Higher Education Institutions and Study Programmes. It is important to emphasise that the accreditation process is extensive and evaluates all aspects of the quality of higher education institutions, with a primary focus on material and human resources.

The adequacy and appropriateness of the teaching staff and teaching support staff should align with the specific characteristics of the course and the size of student enrolment. Therefore, they must be sufficiently numerous and dedicated to effectively fulfilling primary academic responsibilities, such as module delivery and evaluation, facilitating student-teacher contact, and managing overall training activities. Consequently, individuals must possess the requisite expertise and training that align with the goals of the training endeavour. The teaching staff should have teaching experience within the educational system and methodological training in various areas, including didactic methodology, using ICT resources in teaching, classroom management, and other relevant domains.

During the accreditation process, various factors are assessed, including the adequacy and sufficiency of material resources, compliance with minimum requirements for spaces, facilities, and equipment, as well as the determination of the necessary number and type of classrooms for effective training delivery. Additionally, the availability of appropriate furniture, material resources, machinery, and tools that facilitate the development of students' knowledge and skills is considered. Moreover, the fulfilment of official requirements imposed by the country's governing administration for educational institutions is also evaluated.

#### 1.5.1.1 Initial Accreditation

Initial Accreditation is regulated by the Standards for Initial Accreditation of Higher Education and Study Programmes, the Request for Initial Accreditation, and the Instructions for Preparing the Documentation for Initial Accreditation, as well as the relevant Tables and Attachments.

Initial accreditation assesses whether the standards for the initial accreditation of higher education institutions and study programmes are met. During the

initial accreditation process, NAEQA prepares a report on compliance with these standards for both higher education institutions and study programmes, along with a recommendation for issuing a work permit or rejecting the request for a work permit for the higher education institution.

#### 1.5.1.2 Accreditation of higher education institutions and study programmes

Accreditation of higher education institutions is governed by the Standards and Procedures for Accreditation of Higher Education Institutions, the Request for Accreditation, Instructions for Preparing Documentation, and the relevant Standards, Instructions, Tables, and Attachments.

Accreditation confirms that a higher education institution and its study programmes meet the standards defined by the NCHE and that the institution is authorised to issue public documents following the law. The accreditation process is conducted regularly every seven years or sooner upon request of the higher education institution.

Accreditation of Study Programmes is regulated by the Standards and Procedure for Accreditation of Study Programmes, together with further documents, depending on the study cycle:

**Accreditation of I and II cycle study** programmes – Request for the accreditation, Instructions for preparing documentation, Standards and instructions, Tables and attachments;

**Accreditation of Doctoral Studies in educational-scientific fields** – Request for the accreditation, Instructions for preparing the documentation, Standards and instructions, Tables and attachments;

**Accreditation of Doctoral Studies in Arts** – Request for the accreditation, Instructions for preparing the documentation, Standards and instructions, Classification of representative references, Tables and attachments.

#### 1.5.1.3 The external quality assessment of higher education institutions and study programmes

The evaluation of the fulfilment of the higher education institution's obligations regarding quality is performed in accordance with the rulebook on standards and procedures for external quality assessment.

The external quality assessment of higher education institutions is conducted regularly by the CAQA during the fourth year of the accreditation cycle. It may also be carried out extraordinarily upon request by the MoE or the NCHE. The CAQA submits the external quality assessment report to both the higher education institution and the applicant requesting extraordinary review.

External quality assessments are performed by a review commission, which includes three faculty members from higher education institutions listed by the

NCHE, one student from the student list determined by the Student Conference of Serbian Universities or the Student Conference of the Academies of Applied Studies of Serbia, and one expert from specific fields proposed by appropriate organisations, such as employers, professional or vocational associations, labour markets, or chambers.

The Rulebook on Standards and Procedures for External Quality Control of Higher Education Institutions regulates the external quality assessment of higher education institutions and study programmes.

#### 1.5.1.4 Self-evaluation and quality assessment of higher education institutions and study programmes

Self-evaluation and quality assessment of higher education institutions and study programmes are conducted in the manner and according to the procedure prescribed by the general act of a higher education institution, following the act on standards for self-evaluation and quality assessment of higher education institutions and study programmes.

The self-evaluation process also considers the students' assessment. The higher education institution conducts the self-evaluation procedure in the fourth year of accreditation of the higher education institution and study programmes for the previous three-year period and reports on the procedure and results of self-evaluation, as well as other data relevant to the quality assessment, publishes on its website and submits it to the NEAQA. The higher education institution publishes a report on the procedure and results of self-evaluation and other data relevant to the quality assessment on its website and submits it to the NEAQA within the accreditation documentation. Self-evaluation and quality assessment of higher education institutions and study programmes are regulated by the Regulation on Standards for self-evaluation and quality assessment of higher education institutions and study programmes.

### 1.6 National Qualifications Framework of Serbia

NQFS is a tool used to identify, develop, and classify qualifications in line with the demands of the labour market, lifelong learning, science, and society. The NQFS outlines the processes and institutions (bodies and organizations) responsible for defining qualifications and qualification standards, the methods and conditions for acquiring, comparing, and recognizing qualifications, and other quality assurance mechanisms.

The NQFS comprises 8 levels and 4 sublevels. Levels 6 and 7 are each divided into two sublevels, reflecting qualifications of different volumes at the same NQF level (e.g., level 6.1 corresponds to 180 ECTS, while level 6.2 corresponds to 240 ECTS). Each level is defined by the competences acquired upon completion of a particular qualification. These competences guide the allocation of qualifications across higher education, general education, vocational education, and training, with

all levels maintaining a uniform structure. The NQFS distinguishes three categories of competences: knowledge, skills, and abilities and attitudes.

| NQFS levels | | Qualifications | EQF levels |
|---|---|---|---|
| 1 | | Primary education, primary adult education, primary music education, primary ballet education | 1 |
| 2 | | Vocational training lasting up to one year, education for work lasting up to two years, informal adult education with 120–360 hours of training | 2 |
| 3 | | Secondary vocational education lasting three years, non-formal adult education with a training duration of a minimum of 960 hours | 3 |
| 4 | | Four-year secondary school education (vocational education, arts education, general education) | 4 |
| 5 | | Craftsman, i.e., specialist education lasting up to two or one year, non-formal adult education lasting a minimum of six months | 5 |
| 6 | 6.1 | Bachelor academic studies scope of at least 180 ECTS credits, bachelor applied studies scope starting from 180 ECTS credits | 6 |
| | 6.2 | Bachelor academic studies scope of at least 240 ECTS credits, specialised applied studies scope of at least 60 ECTS credits | |
| 7 | 7.1 | • Integrated academic studies scope of 300 to 360 ECTS credits<br>• Master academic studies scope of at least 60 ECTS credits, with previously achieved bachelor academic studies scope of at least 240 ECTS credits,<br>• Master academic studies scope of at least 120 ECTS credits (with previously achieved bachelor academic studies scope of 180 ECTS credits),<br>• Master applied studies scope of at least 120 ECTS credits (with previously achieved bachelor applied studies scope of 180 ECTS credits) | 7 |
| | 7.2 | Specialised academic studies scope of at least 60 ECTS credits (with previously completed master academic studies) | |
| 8 | | Doctoral studies volume of 180 ECTS credits (with previously completed integrated academic, i.e., master academic studies) | 8 |

### 1.6.1 NQFS legal basis

The main legal act governing the NQFS is the Law on the National Qualifications Framework of Serbia, adopted by Parliament in April 2018. Amendments to this law were adopted in early 2020. The Law on the Foundations of the Education System, the Law on Higher Education, and the Law on Adult Education are consistent with the NQFS.

Based on the Law on the NQFS, the following bylaws have so far been adopted by Ministers:

- Rulebook on the content and appearance of the initiative form for the development and adoption of qualification standards (Official Gazette of RS, No. 53 of April 9, 2020);
- Rulebook on standards of career guidance and counselling services (Official Gazette of RS, No. 43 of June 19, 2019);
- Rulebook on standards and manner of conducting the procedure of recognition of prior learning ("Official Gazette of RS", No. 148/2020);
- Rulebook on the methodology for the development of qualification standards ("Official Gazette of RS", No. 156/2020);
- Rulebook on the content and method of maintaining the Register of the National Qualifications Framework of the Republic of Serbia ("Official Gazette of RS", No. 159/2020);
- Rulebook on the system for classification and coding of qualifications in the National Qualifications Framework of the Republic of Serbia ("Official Gazette of RS", No. 159/2020).

Several additional bylaws are expected, including further quality assurance mechanisms and external evaluations of Publicly Recognized Organizers of Adult Education Activities (PROAEAs).

The NQFS Law defines four qualification types:

- general – basic education and secondary education;
- vocational education and adult education;
- academic – higher education;
- vocational – higher education.

Serbia is an EU candidate country. The Economic Reform Programme identifies significant challenges in the areas of labour market and employment, education and skills, social inclusion and social protection, such as:

- encouraging employment in less developed regions and development of regional and local employment policies;
- improving the quality of human capital (this includes the development of career counselling, competence development of unemployed people by es-

tablishing a system of short training programmes, plus RPL);

- institutional capacity development and expansion of active employment policy programmes.

In this context, essential documents are the Strategy for Education Development 2030 and the Digital Skills Development Strategy in the Republic of Serbia from 2020 to 2024.

### 1.6.2 Institutional Arrangements for the NQF

Based on the NQFS Law, an NQFS council, Office for Dual Education and the National Qualifications Framework, Qualifications Agency of the Republic of Serbia, and 12 sector skills councils have been established.

NQFS Council is an advisory body that gives recommendations on planning and developing human resources following public policies in lifelong learning, employment, career guidance and counselling. The NQFS Law describes the main competences of the Council as follows:

The Council:

- proposes qualification standards for all levels of the NQFS;
- proposes to the Government the establishment of sector skills councils for specific sectors of work or activities;
- monitors the work of the Sector Skills Councils and makes recommendations for the improvement of their work based on regular progress reports;
- gives opinions to the minister responsible for education on the recommendations of the Councils regarding the enrolment policy in secondary schools and higher education institutions;
- makes recommendations on the process of planning and development of human resources following the strategic documents of the Republic of Serbia;
- makes recommendations on improving links between education and labour market needs;
- gives opinions on standards for self-evaluation and external QA of PROAEAs;
- performs other duties following this Law.

Office for Dual Education and the National Qualifications Framework:

- performs administrative and technical tasks for the Council;
- monitors the situation related to the implementation of regulations and other acts governing the NQFS for the purpose of improvement, compliance, development and functioning of the NQFS, as well as the harmonization of the NOKS system with sectoral policies;
- prepares proposals for by-laws adopted by the minister responsible for education from Article 8, paragraph 3, Article 10, paragraph 2, Article 15a,

paragraph 7, Article 21, paragraph 9, Article 23, paragraph 1, point. 2), 3) and 5), Article 26, paragraph 2, Article 30, paragraph 7, Article 38, paragraph 11, Article 39, paragraph 4, and Article 40, paragraph 4 of the Law on NQFS ;

- prepares development projects, analyzes and research important for the development of qualifications;
- monitor and measure the effects of the implementation of (new) qualifications on employment and lifelong learning;
- determines the indicators for monitoring the effects from point 4) in cooperation with the Agency;
- performs the duties of the National Coordination Point;
- connects NQFS with EQF;
- implements activities to improve partnership and provide professional support to the work of competent institutions, bodies and social partners involved in NQFS, recognition of professional qualifications, professions of special interest for the Republic of Serbia and lifelong learning;
- performs other tasks in accordance with the law and the founding act.

The Qualifications Agency has been established to perform QA and professional support to the NQFS Council and other competent organisations in all aspects of the development and implementation of the NQF. The Agency has the status of a legal entity. The NQFS Law describes the main competences of the Agency as follows:

- considers initiatives for the introduction of new qualifications;
- provides expert support to the Sector Skills Councils and prepares proposals for qualification standards;
- provides administrative and technical support to the work of the Councils;
- maintains the Registry and takes care of the entry of data into the appropriate sub-registries;
- classifies and encrypts qualifications according to the National Qualifications Classification System (CLASSNQFS);
- performs procedures for recognition of foreign school documents;
- carries out the procedure for recognition of a foreign higher education document for employment (professional recognition) under this law and the law regulating higher education;
- performs the first validation of a foreign study programme in accordance with the NQFS law and the law regulating higher education;
- grants approval to organisations requesting PROAEA status;
- decides fee levels for the recognition procedures of foreign school documents and higher education documents;

- keeps records of professional recognition in accordance with the NQFS law and the law regulating higher education;
- conducts an external quality control of the PROAEAs, once every five years;
- at the request of the ministry responsible for education, issues a report on the fulfilment of requirements regarding the plan and programme of adult education activities, programme implementation and staffing;
- prepares development projects, and carries out analysis and research relevant to the development of qualifications;
- monitors and measures the effects of the implementation of (new) qualifications on employment and lifelong learning;
- proposes measures for the improvement of QA in the entire system;
- performs other duties following this Law.

Sector Skills Councils are advisory bodies established on the principle of social partnership. Their main task is defining the need for qualifications within a certain secondary, vocational, higher and adult education sector. The NQFS Law describes the competences of the sector skills councils as follows:

- analyse the existing qualifications and determine the necessary qualifications in a specific sector;
- identify the qualifications to be modernised;
- identify those qualifications that no longer meet the needs of the sector;
- recommend the development of new qualifications standards within its sector (the Qualifications Agency drafts the standard or arranges its drafting);
- give an opinion on the expected outcomes of knowledge and skills within the sector;
- promote dialogue and direct cooperation between the world of work and education;
- promote opportunities for education, training and employment within the sector;
- identify opportunities for training adults within the sector;
- consider the implications of the national qualifications framework on qualifications within the sector;
- propose lists of qualifications by levels and types that can be acquired by recognising prior learning;
- perform other duties following the NQFS Law.

### 1.6.3 Qualifications registers and databases

Registers and databases on qualifications consist of a sub-register of National Qualifications (records data on qualifications, classified by level and type, in

accordance with CLASSNQFS), a sub-register of Standards of Qualifications and a sub-register of Publicly Recognized Organizers of Adult Education Activities.

### 1.7 MSc implementation in HE

The legal framework necessary for MCs implementation in Serbian HE does not exist. Hence, one of the specific goals of MICROGUIDE is to develop Guidelines with the proposal for the best legal framework that will serve the implementation of MCs in Serbian HE, which will be presented to the national policymakers and HEIs.

# 2. HIGHER EDUCATION SYSTEM IN AUSTRIA

Austrian HEIs currently offer three types of degree programmes: diploma studies (Diplomstudien), bachelor's and master's degree programmes, and doctoral and PhD programmes. Note that the diploma studies will be discontinued.[9]

## 2.1. Legal and Institutional framework of the HE system

### 2.1.1 Relevant Higher Education Laws

**2.1.1.1 Universities Act 2002** (Universitätsgesetz 2002, BGBl. I Nr. 120/2002)

Under the Universities Act, the 21 Austrian universities have been granted full autonomy and now have the status of legal entities under public law. The state, represented by the Austrian Federal Ministry of Education, Science and Research, continues to play a statutory supervisory role and partners in performance agreements with each university. Universities are responsible for managing contracts, business transactions, and recruitment independently. The senior governing bodies of the universities will include the university council, the rectorate, and the senate.

**2.1.1.2 Private HEIs Act** (Privathochschulgesetz 2020 – PrivHG, BGBl. I Nr. 77/2020)

Based on this act, which entered into force in 2021, private institutions can obtain accreditation as a private HEI by the Agency for QA and Accreditation Austria; study programmes can be offered either in accordance with state programmes and degrees or without reference to them. This law provides general rules for the accreditation and maintenance of private HEIs (2 private university colleges and 17 private universities).

**2.1.1.3 Universities of Applied Sciences Act** (Fachhochschulgesetz, FHG, BGBl. Nr. 340/1993)

Based on the act adopted in 1993, public and private institutions can obtain accreditation as a University of Applied Sciences (UAS), known as "Fachhochschule" (FH), through the Agency for Quality Assurance and Accreditation Austria. This accreditation involves officially recognising study programmes as "Fachhochschule" programmes and conferring the designation "Fachhochschule" (Universities of Applied Sciences) for university-level study programmes. These programmes provide a solid, scientifically based education in specific fields of academic professions. The act outlines the aims and guiding principles, access requirements, academic degrees, tasks of the "Fachhochschule" Council, and the roles of the provider.

9 https://gpseducation.oecd.org/CountryProfile?primaryCountry=AUT

**2.1.1.4 Pedagogical education – Act on the Organisation of Pedagogical Education** (Organisation der Pädagogischen Hochschulen und ihre Studien – Hochschulgesetz 2005 – HG, BGBl. I Nr. 30/2006)

The mission of the universities (defined in §1 of the Federal Act on the Organization of Universities and their Studies) is to serve academic research and teaching and the advancement, appreciation, and teaching of the arts, and thereby to contribute to the personal development of the individual and the welfare of society and the environment. In their research and research-based teaching, universities are public educational institutions that are directed towards advancing knowledge and developing new approaches to the arts. Through the joint efforts of teachers and students working in an enlightened knowledge society, they assist individuals in striving for education and autonomy through science. They promote the advancement of junior academics, which goes hand in hand with acquiring scientific and artistic abilities, qualifications, and methodological skills to help society in transition to master the challenges it faces in a humane and gender-equal fashion. To enable them to respond to the constantly changing demands regarding the organisation, study laws, and employment laws, the universities and their governing bodies shall constitute themselves under conditions of the greatest possible autonomy and self-administration.

### 2.1.2 HE institutional framework

The laws relevant to QA in tertiary education are the 2011 Act on QA in HE (Hochschul- Qualitätssicherungsgesetz, HS-QSG) and the Federal Act on the External QA in HE.

**2.1.2.1 University Quality Assurance Act (HS-QSG)** (Bundesgesetz über die externe Qualitätssicherung im Hochschulwesen und die Agentur für Qualitätssicherung und Akkreditierung Austria, BGBl. I Nr. 50/2024)

The HS-QSG defines the procedures for external quality assurance, including audits and accreditations, and specifies their assessment areas. It also outlines the central framework conditions for these procedures, such as the selection of quality assurance agencies for audits, the obligation to publish the results of the procedures, and the requirement for institutions to cover all associated costs.

In addition, the HS-QSG also includes regulations regarding reporting procedures for studies at foreign educational institutions and the ombudsperson office for students (source: www.bmbwf.gv.at/Themen/HS-Uni/Hochschulsystem/Gesetzliche-Grundlagen/Qualitätssicherung.html).

Provisions defined by HS-QSG are:

- za cross-sectoral law on external QA
- establishment of the Austrian Quality and Accreditation Agency (AQ Austria), integrating into the former agencies (AQA, FH Council, Accreditation Council) in 2012;

- framework for QA procedures across sectors (e.g. obligation to publish the outcome of procedures, possibility of certification or accreditation, etc.);
- QA procedures for audit or accreditation;
- establishing a student ombudsperson office as an information and service centre for all students at HEIs and notification procedures for degree programmes provided by foreign HEIs in Austria.

#### 2.1.2.2 Federal Act on the External QA in HE

According to the Federal Act on External QA in HE, public universities and universities of applied sciences must be evaluated through external audits by an agency listed in the European QA Register for HE (EQAR) or another internationally recognised and independent QA agency. Private HEIs have to be accredited by AQ Austria.

#### 2.1.2.3 Austrian Quality and Accreditation Agency

In 2012, AQ Austria was established as an agency for QA for Austrian HEIs based on the HSQSG Act).

AQ Austria is responsible for the following:

- developing and carrying out external QA procedures, as a minimum, audit and accreditation procedures, according to national and international standards;
- accrediting HEIs and degree programmes;
- continuously supervising accredited HEIs and degree programmes regarding accreditation requirements;
- reporting to the NCHE and publishing reports on the outcomes of the QA procedures;
- fulfilling the tasks according to the statutory provisions of the University of Applied Sciences Studies Act (FHG) and the Private Universities Studies Act (PrivHG);
- issuing certificates for educational institutions upon an audit;
- conducting studies and system analyses, performing reviews, and carrying out projects;
- providing information and advice in matters related to QA and quality improvement;
- notification of foreign degree programmes;
- international cooperation in the field of QA;

The HEIs bear the main responsibility for their activities' quality and QA and improvement.

AQ Austria views its procedures as supplementary to an HEI's internal quality assurance (QA). It operates independently and is not bound by any external instructions. Decisions in QA procedures are made exclusively based on quality criteria. These procedures are modelled on international best practice standards,

particularly the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). Cooperation with HEIs and other interested parties forms the basis for developing procedural rules, standards, and criteria

### 2.2 Higher Education Structure

There are 22 public universities, 21 universities of applied sciences, 16 private higher education institutions, 14 pedagogical universities, and 3 private teacher training programmes.

Universities offer degree programmes in humanities, engineering, and artistic studies and programmes leading to qualified teaching credentials for upper secondary schools. They also provide medical, natural science, legal, social, economic, and theological studies, organized as diploma studies, bachelor's and master's degree programmes, and doctoral and PhD programmes.10

According to the Universities Act 2002, which entered into force on 1 January 2004, the main tasks of Universities are (source: https://eurydice.eacea.ec.europa.eu/national-education-systems/austria/types-higher-education-institutions):

- to develop and impart the sciences and/or the arts;
- to provide basic training for scientific and/or artistic occupations and the qualifications for professional activities which require the application of scientific and/or artistic findings;
- to train the next generation of scientists and/or artists;
- to offer further training, especially to graduates;
- to support national and international cooperation in the field of scientific research and teaching and/or the exercise of the arts and their teaching;
- to support the use and application of university research results and/or the practical accessibility of the arts.

Universities of applied sciences offer scientifically based vocational education and training with a strong focus on occupational orientation and application-oriented research. These universities' degree programmes cover fields such as engineering, IT, economics, health sciences, social sciences, sciences, design/arts, and military/security sciences. Both bachelor's and master's degree programmes provide practice-oriented education at the university level, with bachelor's programmes leading to the awarding of a bachelor's degree (Bachelor of...). Master's programmes build upon bachelor's programmes and, depending on the field, lead to a master's degree (Master of...).

Since 1994/95, applied sciences universities have offered degree programmes to equip students with vocational qualifications. There are bachelor's and master's degree programmes, which include practical training and are offered as full-time or part-time courses. The main goals of universities of applied sciences are:

10 ttps://eurydice.eacea.ec.europa.eu/national-education-systems/austria/higher-education

- to ensure practice-oriented training at the university level;
- to communicate the skills needed for the respective occupational field;
- to promote the permeability of the education system and the flexibility of graduates.

Federal authorities or other legal entities provide universities of applied sciences degree programmes under both public and private law. A system of mixed funding based on standard costs is in place. The Federal Government covers the costs per study place, while the providers – typically the governments of federal provinces, regional and supra-regional territorial authorities, or other public and private institutions – are responsible for the costs associated with buildings, investments, and other related expenses (source: https://eurydice.eacea.ec.europa.eu/national-education-systems/austria/types-higher-education institutions).

Pedagogical university colleges of teacher education and former pedagogical academies are now under the authority of Universities (see: 2.1.1.4 Pedagogical education). The following study programmes must be offered as part of initial teacher training: bachelor's and master's degree programmes to obtain teaching credentials for the primary sector, bachelor's and master's degree programmes to obtain teaching credentials for the secondary sector (general education as well as vocational education and training), and continuing training programmes for all occupational fields related to pedagogy.

University colleges of teacher education are legal entities under public law with restricted autonomy.

The following study programmes have to be offered and provided at university colleges of teacher education as part of initial teacher training:

- bachelor's and master's degree programmes to obtain teaching credentials for the primary sector;
- bachelor's and master's degree programmes to obtain teaching credentials for the secondary sector (general education as well as vocational education and training);
- continuing training programmes must be offered for all pedagogy-related occupational fields.

The budget for public university colleges of teacher education is allocated by the Federal Ministry of Education, Science and Research (source: https://eurydice.eacea.ec.europa.eu/national-education-systems/austria/types-higher-education-institutions).

### 2.3 Studies

Bachelor's and master's degree programmes typically last 3–4 years (180 or 240 ECTS) and 1–2 years (60 or 120 ECTS), respectively (**Figure** 1). Diploma

studies last 8–12 semesters and consist of two or three study sections, each concluding with a degree examination. Successful completion of these programmes awards a degree, such as a master's degree in engineering (Diplom-Ingenieur/in), a diploma in medical studies (Doktor/in der gesamten Heilkunde), or a Doctor of Dentistry (Doktor/in der Zahnheilkunde).

Doctoral programmes and PhD programmes (Doctor of Philosophy) build upon diploma and master's degree programmes from universities or universities of applied sciences. They primarily focus on further developing a student's ability to conduct independent research (**Appendix 2**).

The number of ECTS credits is determined by the workload of an average student, including both attendance hours and other course-related work. 180 or 240 ECTS credits are required for bachelor's degree programmes, while master's degree programmes require a minimum of 60 credits. Diploma programmes can have 240–360 ECTS credits, and doctoral studies typically last three years but do not allocate ECTS credits..

| | full time | full time | full time | full time | part time | part time | college |
|---|---|---|---|---|---|---|---|
| Type of program / characteristics | general Dual/coop study program | Austrian Dual study program of PTO | healt sciences | regular university program | workfriendly/ enabeling (berufs-ermöglichend) | work accompaning (berufs-begleitend) | higher vocational education |
| EQF level Bachelor / Master / College | 6/7 | 6/7 | 6/- | 6/7 | 6/7 | 6/7 | 5 |
| Type of programm\ (HE, HVET) | HE | HE | HE | HE | HE | HE | HVET (=college) |
| Duration (semesters) | 6/4, 7/3, 8/2 | 6/4 | 6 | 6/4 | 6/4 | 6/4 | 4 to 6 |
| Balance between education in university and company | 60-70% University, different models 3 months, 1/2 week | 50% university + 50% company (4x12 week a 40 h) | short placements e.g. in hospitals, ambulances, ... | often 1 intership between 4th and 6th semester | working: part time, studying: work friendly organized | working: full time, studying: evening, weekend or blocked at univeristy | traditional school system |
| work-based WBL work-integrated curriculum intergrated, work-related | work - / practice - integrated | work-based learning work - / practice - integrated | work - / practice - integrated | curriculum integrated | curriculum integrated | curriculum integrated | (curriculum integrated) |
| formal contract | employment contract (+educational part) | employment contract (+educational part), payment | placement without payment (?) insurance (?) | (if internship=> contract) | (employment contract) | (employment contract) | (if applicable practice contract) |

**Figure 1. Types of Bachelor and Master programmes in Austria (source: H. Hochrinner, characterisation of study programmes in Austria (EQF 5–7), 16 June 2024)**

## 2.4 Students

For many subjects on offer at public universities, students may be enrolled without an admission examination during the general admission period – which they can find out from the university of their choice. However, admission criteria

are different for non-EU and non-EEA citizens; these will be shown on the individual university's website. Normally, admission procedures are in place at universities of applied sciences and private universities (source: https://www.bmbwf.gv.at/en/Topics/Higher-education---universities/Studying/Admission-to-university.html).

There are also options for what is known as the second path of education. The university entrance qualification test provides an opportunity for admission to a specific field of study or group of fields without having taken the school leaving examination ("Studying without Matura"). As it is not an Austrian school leaving examination, the university entrance qualification test alone does not generally offer immediate career advancement opportunities.

To take this test, candidates must be at least 20 years old, be citizens of an EEA member state, and provide proof of relevant professional or non-professional training related to the desired course of study. However, obtaining the school-leaving certificate through external examinations in the second educational path is possible. The vocational maturity test is a fully-fledged Austrian school leaving certificate and allows unrestricted access to universities, technical colleges, teacher training colleges, and colleges (source: https://www.bmbwf.gv.at/Themen/HS-Uni/Anerkennung/Universit%C3%A4tsreife.html).

| | students | | |
|---|---|---|---|
| Typ of HE Institution | all | male | female |
| **Public universities** | | | |
| regular students | 263.375 | 120.981 | 142.394 |
| course students | 16.479 | 7.481 | 8.998 |
| **Private universities** | | | |
| regular students | 16.001 | 6.508 | 9.493 |
| course students | 4.037 | 1.293 | 2.744 |
| **University of applied studies** | | | |
| regular students | 58.726 | 27.968 | 30.758 |
| course students | 11.869 | 5.837 | 6.032 |
| **Pedagocial universities** | | | |
| regular students | 20.920 | 4.992 | 15.928 |
| course students | 16.985 | 3.845 | 13.140 |
| **Theological universities** | | | |
| regular students | 233 | 181 | 52 |
| course students | 15 | 6 | 9 |
| **sum up** (only single counted) | **393.234** | **173.480** | **219.754** |

source: STATISTIK AUSTRIA, Hochschulstatistik 2023

**Figure 2. Students at Austrian Higher Education Institutions, winter semester 2022/23, sorted by gender**

### 2.5 Quality Assurance (QA) System in HE

Public universities and universities of applied sciences must be evaluated through external audits by an agency listed in the European QA Register for Higher Education (EQAR) or another internationally recognised and independent QA agency.

Private HEIs must be accredited by AQ Austria, which was established in 2012 as an agency for QA for Austrian HEIs. AQ Austria is responsible for developing and carrying out external QA procedures, accrediting HEIs and degree programmes, supervising accredited HEIs and degree programmes regarding accreditation requirements, reporting to the NCHE and publishing reports on the outcomes of the QA procedures.

HEIs are primarily responsible for the quality of their activities and QA and improvement. AQ Austria is independent in its actions and not bound by any instructions. Decisions in QA procedures are made exclusively in accordance with quality criteria, and cooperation with HEIs and other interested parties is the basis for developing procedure rules and standards or criteria.

#### 2.5.1 Accreditation

Accrediting degree programmes is a crucial aspect of quality assurance (QA) in higher education. In Austria, the Accreditation Council is responsible for accrediting degree programmes. However, concerns have been raised about the transparency and consistency of the accreditation process.

QA in higher education helps universities achieve their goals by ensuring greater transparency and increasing trust in the relevance and quality of higher education institutions. The Higher Education Quality Assurance Act (HS-QSG) is the legal foundation for external QA of public universities, universities of applied sciences, and private universities.

AQ Austria is the independent body responsible for external QA in the higher education sector. It conducts accreditation procedures and audits across Austria, overseeing the entire higher education sector to ensure academic standards. AQ Austria is also tasked with setting and maintaining these academic standards, which is a critical component of QA in higher education.

#### 2.5.2 Internationalisation

Internationalisation is an important aspect of higher education in Austria. However, there have been concerns that the focus on internationalisation may come at the expense of quality. For example, there have been concerns about the quality of English-language degree programmes and the potential for an overreliance on international students to generate revenue.

### 2.5.3 Student evaluation

Student evaluation is an essential aspect of QA in higher education. In Austria, student evaluations are used to provide instructor feedback and inform decisions about the quality of degree programmes. However, there have been concerns that student evaluations may not be reliable or may be influenced by factors such as instructor popularity.

### 2.5.4. European reference framework

ESGs provide the international reference framework for Austria's higher education QA system. The standards and guidelines formulated in this document form the common reference point for QA for higher education institutions and QA agencies in the QF-EHEA. As they are a set of standards and guidelines for internal and external QA in higher education, they provide guidance and are considered in a broader context that includes qualifications frameworks, ECTS, diploma supplements, and MCs.

## 2.6 NQF

According to Austria's Agency for Education and Internationalisation (OEAD), the aim of the National Qualifications Framework (NQF) is *"to create a translation tool between the different qualifications systems and their levels for all areas of education in Austria."* The recording and classification of the qualifications into eight levels is oriented upon learning results and is based on the European Qualifications Framework for Lifelong Learning (EQF). Various studies on the implicit levels of the Austrian education system and NQF pilot projects have considered this number of levels appropriate and have received clear support from stakeholders' responses to the national consultation on the EQF (**Appendix 3**).

The coordination point for the NQF, which has been established at the OeAD-GmbH, offers information about NQR / EQF on its website, www.qualifikationsregister.at/en/. The NQF descriptors are based on the EQF descriptors and describe learning outcomes in three dimensions (knowledge, skills, and competence). To support qualification providers in referencing their qualifications to an NQF level, the NQF manual provides more detailed specifications that put the EQF descriptors into a more practical and national context.

At levels one to five, qualifications of all education sectors are referenced based on the NQF descriptors. At levels six to eight, two sets of descriptors apply – the NQF and Dublin descriptors. Whereas qualifications of the Bologna architecture acquired at HE institutions (bachelor, master, PhD, diploma studies) are referenced according to the Dublin descriptors, referencing of all other qualifications is carried out based on the NQF descriptors (**Figure 3**).

| NQF levels | Reference qualifications | | EQF level |
|---|---|---|---|
| 8 | Doctoral degree<br>*Doktorgrade* | | 8 |
| 7 | Master degree<br>*Master-bzw. Diplomgrade* | Master builders<br>*Baumeister*<br><br>Civil engineers<br>*Zivil Ingenieur* | 7 |
| 6 | Bachelor degree<br>*Bachelorgrade* | Master craftsperson qualification<br>*Meister* | 6 |

**Figure 3. HE qualifications reference to NQF**

### 2.7 MSc implementation in HE

The Ministry of Education, Science and Research (BMBWF) in Austria has expressed a positive view of European developments MCs, particularly in the context of lifelong learning. It sees MCs as an opportunity for universities to broaden their educational offerings, reach new target groups, and enhance cooperation with non-university partner institutions. The Austrian national approach began with a working group that included representatives from all four higher education sectors, AQ Austria, and the BMBWF.

Key points from the Position paper include the definition of MCs being as general, reasonable, and precise as possible, focusing on lifelong learning, training, reskilling, and upskilling as part of further education. The main component of the design of MCs is the common agreement on MC setup and possible parameters such as ECTS, title, description, target groups, examination/assessment, QA, etc. The QA of MCs in the HE sector is based on national QA mechanisms and ESG principles and must be ensured by the university's internal Quality Management System. According to the position paper, *the MCs should not be assigned to the NQF due to the low workload.*

#### 2.7.1 MCs legal framework

The special legal framework regarding MCs implementation in Austria HE currently does not exist. However, MCs can be provided by a variety of organizations, including universities, colleges, vocational schools, professional associations, industry organizations, and online learning platforms. In recent years, many educational technology companies have also started offering MCs as part of their services. Some examples of MCs providers include:

- Universities and Colleges: Many universities and colleges now offer MCs to provide targeted training and education to learners. These institutions often offer MCs in fields such as business, technology, healthcare...;

- Vocational Schools: Vocational schools and trade associations may offer MCs in specific trades or occupations, such as welding, plumbing, or electrician work;
- Professional Associations: Many professional associations offer MCs to their members to demonstrate mastery of specific skills or competences. These MCs may be industry-specific and focused on a particular job role;
- Industry Organizations: Industry organizations may offer MCs to employees in a particular industry or sector. These MCs may be focused on specific skills or competences that are in high demand within the industry;
- Online Learning Platforms: Many online learning platforms offer MCs to provide targeted training and education to learners. These platforms often offer MCs in a variety of fields and topics and may be accessible to learners all over the world.

### 2.7.2 Micro-credentials' certification

The range of MC providers is diverse, and learners may have many options for finding the right MC programme to meet their needs. Therefore, a common format is necessary for providers to document the MCs and their value. The mandatory elements for MCs, according to the council recommendation, are the following:

- Identification of the learner;
- Title of the MCs;
- Country(ies)/region(s) of the issuer;
- Awarding body(ies);
- Date of issuing;
- Learning outcomes;
- National workload needed to achieve the learning outcomes (in European Credit Transfer and Accumulation System – ECTS, wherever possible);
- Level (and cycle, if applicable) of the learning experience leading to the MCs (European Qualifications Framework, Qualifications Frameworks in the European Higher Education Area), if applicable;
- Type of assessment;
- Form of participation in the learning activity;
- Type of QA used to underpin the MCs.

Additionally, FH JOANNEUM suggests other elements should be integrated to ensure MC quality, too. The constitutive elements for MCs are the following (including the mandatory elements mentioned above):

- Identification of the learner (name, surname, date of birth);
- Identification of the provider (company/institution name, address, incl. status of the provider, e.g., public institution, private provider…);
- Accreditation status of the provider (institutional accreditation, curriculum

acc., course acc., no acc.);

- Title of the MCs;
- Type of MC (part of accredited curricula, further education…);
- Country/region of the issuer;
- Awarding body or institution;
- Date of issuing;
- Information on the learning experience:
  - ➢ workload to achieve learning outcomes in ECTS-CP (tertiary level);
  - ➢ hours (further education, industry recognition);
- Course description;
- Language of instruction;
- Learning outcomes;
- Achieved competences/qualifications;
- Level (and cycle, if applicable) of the learning experience leading to the MCs (information on the QF level: NQF level (when possible), QF-EHEA and EQF level (if self-certified/ referenced), ISCED level & subject area code, (if needed);
- Form of modality of the learning activity (online, onsite, blended, work experience, voluntary);
- Prerequisites:
  - ➢ admission requirements;
  - ➢ prior knowledge
  - ➢ prior experience;
- Size of group intended number of participants;
- Type of assessment (testing, application of a skill, portfolio, recognition of prior learning, etc.);
- Description of the grading scheme (Is there a European standard, or shall we develop such?);
- Supervision and identity verification during assessment (unsupervised with no identity verification, supervised with no identity verification, supervised online or onsite with identity verification);
- Monitoring and re-evaluation (evaluation, validation, re-accreditation…);
- Costs.

### 2.7.3 Principles for MC credit system

In Austria, the MCs credit system follows the Council Recommendation (Annex V, 2017), expressing HE workload in ECTS (The European Credit Transfer and Accumulation System). The ECTS Users' Guide defines the ECTS credits as "the

learning volume based on the defined learning outcomes and their associated workload". Hence, MCs must follow the same principles.

Additionally, providers should take care of the MCs transparency, meaning that learning outcomes, workload, and, if it is applicable, credit value should be coherent with Annex V to the EQF Recommendation, which states that:

- credit systems should support flexible learning pathways for the benefit of individual learners;
- when designing and developing "qualifications", the learning outcomes approach should be systematically used to facilitate the transfer of (components of) qualifications and progression in learning;
- credit systems should facilitate the transfer of learning outcomes and progression of learners across institutional and national borders;
- explicit and transparent QA should underpin credit systems;
- the credit earned by an individual should be documented, including the acquired learning outcomes, the name of the credit-awarding institution, and, where relevant, the associated credit value;
- systems for credit transfer and accumulation should align with arrangements for the validation of prior learning, working together to facilitate and promote transfer and progression;
- credit systems should be developed and improved through cooperation between stakeholders at the appropriate national and Union levels.

### 2.7.4 Quality Assurance (QA) and Micro-credentials (MCS)

The QA of MCs in the higher education sector is based on the national QA mechanisms and the ESGs. The QA of MCs includes national QA systems, and the university's internal QM system must ensure recognised international regulations (e.g., ISO standards, EFQM...).

According to the EU Council Recommendation, a minimum mandatory element to describe MCs is also a type of QA underpinning the MCs. Processes within the QA must be "fit-for-purpose, clearly documented and accessible and meet the needs and expectations of learners and stakeholders."

External QA is based "primarily on the assessment of providers (rather than individual courses) and the effectiveness of their internal QA procedures." Internal and external quality procedures must be assured and processed by MC providers. External QA should be based on the Council EU recommendation (2017) and should:

- address the design of MCs as well as the application of the learning outcomes approach;
- involve feedback mechanisms, procedures for continuous improvement, aligned evaluation methods, and regular self-assessment;
- involve relevant external stakeholders;

- be an essential part of the internal management;
- assure electronic access to evaluation results.

Internal QA should, according to the Council recommendation 2022, cover the following segments:

- the overall quality of the MCs themselves;
- the quality of the course, where applicable, leading to the MCs;
- learner feedback on the learning experience leading to the MCs and;
- peer feedback, including that of other providers and stakeholders, on the learning experience leading to the MCs.

ESG are fundamental guidelines and principles allowing higher education institutions to customise their study programmes. Furthermore, they emphasise the importance of assessing learning outcomes, which is also one of the key elements in developing MCs.

According to the Austrian Ministry of Education, Science and Research, the recommendation of the national Bologna follow-up group is planned to be published within the academic year 2023/24.

### 2.7.5 MCs and NQF

There is no connection between NQF and MCs in Austria (see also 2.7.1.). The acceptance of MC from other institutions or providers is still subject to the head of the respective study programme.

# 3. HIGHER EDUCATION SYSTEM IN GERMANY

Germany has one of the highest numbers of Higher Education Institutions (HEIs) globally, with 422 HE schools in 2020/2021. These institutions consist of universities, 6 of the top 100 and 18 of the top 200 universities worldwide. The German HE landscape is characterized by many actors, different forms of organization, and numerous provision formats. Crediting and certification of these formats are regulated at the level of each federal state, with no nationwide legislation.

## 3.1. Legal and Institutional framework of the HE system

In the Federal Republic of Germany, responsibility for the education system is determined by the federal structure of the state.

Under the Basic Law (Grundgesetz – R1), the exercise of governmental powers and the fulfilment of governmental responsibility is incumbent upon the individual federal state (Länder), as far as the Basic Law does not provide for or allow for any other arrangement.

The Basic Law contains several provisions for fundamental education, culture, and science. It guarantees, for example, the freedom of art and scholarship, research, and teaching (Art. 5, Paragraph 3), the freedom of faith and creed (Art. 4), the free choice of profession and place of training (Art. 12, Paragraph 1), equality before the law (Art. 3, Paragraph 1), and the rights of parents (Art. 6, Paragraph 2). The entire school system is under state supervision (Art. 7, Paragraph 1). Therefore, unless the Basic Law (Grundgesetz – R1) allocates legislative powers to the Federation, the Länder has the authority to legislate.

The Grundgesetz applies to the school sector, higher education (HE), adult education, and continuing education within the education system. The administration of these areas is predominantly the responsibility of the Länder. Detailed regulations are set out in the constitutions of the Länder and in specific laws concerning early childhood education, the school system, HE, adult education, and continuing education. Responsibility for the remuneration and pensions of civil servants, such as teachers, professors, and junior professors, also falls to the Länder (**Appendix 4**).

The scope of the Federal Government's responsibilities in the field of education is defined in the Basic Law, according to which the Federation bears responsibility, particularly for the regulations governing the following domains of education, science and research:

- In-company vocational training and vocational further education;
- Admission to HE institutions and HE degrees (here, the Länder may enact laws at variance with the legislation of the Federation);
- Financial assistance for pupils and students;

- Promotion of scientific and academic research and technological development;
- Child and youth welfare (in particular early childhood education and care in day-care centres and child-minding services);
- Legal protection of participants of correspondence courses;
- Regulations on entry to the legal profession;
- Regulations on entry to medical and paramedical professions;
- Employment promotion measures as well as occupational and labour market research.

Additionally, the Federation holds legislative authority over the status-related rights and duties of civil servants and foreign affairs. Beyond the division of responsibilities mentioned earlier, the Basic Law provides for specific forms of cooperation between the Federation and the Länder through so-called joint tasks (Gemeinschaftsaufgaben). According to Article 91b, Paragraph 1 of the Basic Law, the Federation and the Länder may agree to cooperate on supra-regional importance in promoting science, research, and teaching. Furthermore, Article 91b, Paragraph 2 allows them to collaborate on assessing the performance of educational systems in international comparisons and in preparing relevant reports and recommendations. Additionally, Article 91c permits cooperation between the Federation and the Länder in planning, constructing, and operating information technology systems necessary for fulfilling their responsibilities.

### 3.1.1 Relevant Higher Education Laws

The HE Framework Act (Hochschulrahmengesetz – R123, HRG) is a framework law on higher education enacted to regulate higher education in the Federal Republic of Germany. Since cultural and scientific sovereignty in Germany lies with the federal states and the corresponding details are regulated in the state higher education laws, the federal government was only allowed to exercise its framework legislative competence according to Art. 75 Para. 1 No. 1a of the old version of the Basic Law until September 1, 2006. The law continues to apply as the previous federal framework law (Art. 125a and Art. 125b of the Basic Law). Future amendments can only repeal it (even partially).

Under concurrent legislation (Article 72 of the Basic Law – R1), the federal government handles university admissions and degrees, although the Länder (states) can create their own regulations. The Higher Education Acts of the Länder outline the overall goals of higher education institutions and the general principles underlying the higher education system, including aspects of study, teaching, research, admissions, membership, participation, and staffing. These regulations apply to all higher education institutions, including private institutions, ensuring a cohesive framework. The HRG and the Länder laws governing higher education (Hochschulgesetze – R129–144) stipulate the minimum requirements that must

be satisfied for non-public institutions to be recognized as higher education institutions by the state. The Länder alone is responsible for awarding recognition to non-public institutions. The Federation and the Länder have agreed that non-public institutions are to be accredited by the Science Council (Wissenschaftsrat). Official recognition by the respective federal state depends on proof that the non-public higher education institution is of equivalent status (not identical in form) to state higher education institutions. Therefore, there is a comprehensive list of criteria the non-public institution must meet to demonstrate that it satisfies a comparable state institution's demands, standards, and performance.

Training at Berufsakademien (vocational academies) is governed by the Berufsakademie laws (R148–153) specific to each state, as well as by the training and examination regulations issued by the respective Ministry of Science or the Berufsakademie itself. Colleges of Art and Music are regulated by Länder laws (R145–147). Continuing vocational education at Fachschulen (technical schools) is based on the education laws (R85–102).

### 3.1.2 HE institutional framework

The institutional framework of universities varies from state to state due to institutional autonomy. Nonetheless, the Conference of the Ministers of Education and Cultural Affairs (KMK) facilitates harmonising education policies between federal states.

Universities enjoy high autonomy and can independently award academic degrees within federal guidelines. However, final graduation examinations in professional fields such as medicine or law are conducted by government authorities of the individual states. This is also generally true for vocational education, where final examinations are often conducted by government-authorized private industry associations, such as regional Chambers of Industry and Commerce (Industrie und Handelskammern).

Traditionally, research and teaching have been the core focuses of German higher education. However, in recent years, there has been significant growth in "third mission" activities, which aim to enhance the interaction between universities and civil society. Many universities have established coordination offices dedicated to fostering and designing these relationships. The German Research Foundation (Deutsche Forschungsgemeinschaft – DFG) is the most important institution promoting research in higher education. It promotes research projects by, for example, providing individuals, institutions or collaborations with financial assistance. The Federation and the Länder annually supply around Euro 3 billion for institutional research funding (including programme allowances) through the DFG. Higher education institutions also receive funds from companies if the companies commission them with certain research and development work.[11]

11 https://eurydice.eacea.ec.europa.eu/national-education-systems/germany/higher-education-funding#:~:text=The%20Federation%20and%20the%20L%C3%A4nder%20annually%20supply%20funds%20of%20around,certain%20research%20and%20development%20work.

The development of study programmes within various higher education institutions (HEIs) is managed by the respective universities, universities of applied sciences, and colleges, adhering to the framework specifications set by the KMK and the accreditation regulations applicable to all higher education institutions.

Admission to German universities often requires a secondary school leaving certificate known as the Abitur or equivalent qualifications. Universities of Applied Sciences may have additional admission requirements based on practical experience or internships. Public universities in Germany typically charge no tuition fees, but students are expected to pay modest semester fees to cover administrative costs and student services.

Through targeted internationalisation and integrating international and intercultural dimensions into studying, teaching, and research, universities in Germany prepare students to face the complex challenges of a globalised world. German universities have recently intensified efforts to recruit international students, with many courses now offered in English. Support programmes and international student offices have been established to assist applicants and students throughout their studies. German higher education institutions also participate in various international exchange programmes, such as Erasmus+, which promote student and staff mobility across Europe and beyond.

### 3.2 HE Structure

In the 2022/23 winter semester, Germany had a total of 423 higher education institutions, consisting of 108 universities, 211 universities of applied sciences, 52 colleges of art and music, 30 colleges of public administration, 16 theological universities, and 6 colleges of education[12]. Additionally, there are specialized HEIs, such as those for the Federal Armed Forces and the Berufsakademien, which operate in seven Länder and are part of the tertiary sector[13].

Higher Education Institutions in Germany are either state-run or state-recognized. Their operations, including the organization of studies and the awarding of degrees, are governed by higher education legislation. Funding models for these institutions vary. Approximately 60 per cent of these are funded by the federal government and states. Around 30 per cent are state-approved but privately operated. Churches run another 10 per cent, are state-approved, and often admit students of other denominations, typically focusing on fields like theology, philosophy, social work, or education.

Universities in Germany primarily focus on theoretical knowledge and research, offering a broad range of subjects. Some universities specialise in specific areas and are designated as technical universities (Technische Universität) or colleges of education (Pädagogische Hochschule, PH). Certain institutions, such as Han-

12 https://www.daad.de/en/studying-in-germany/universities/universities/
13 https://ris.utwente.nl/ws/portalfiles/portal/5153236/Huisman03higher.pdf

nover Medical School or German Sport University Cologne, concentrate exclusively on a single discipline. Universities have the authority to confer doctoral degrees and play a crucial role in training future academics.

UUniversities of applied sciences adopt a practice-oriented approach, emphasising professional application over theory. They offer programmes in specific fields such as technology, economics, social work, or media and include practical components such as work placements, project phases, or practical semesters, often in collaboration with businesses.

Colleges of art and music prepare young artists, including musicians, architects, fine artists, and designers. Admission to these institutions typically requires demonstrating specific talent through an entrance examination.

Universities of cooperative education offer dual study programmes that combine academic studies with vocational training or practical experience in companies, catering to those who prefer practical learning and wish to start their careers quickly.


**Figure 4. German HEIs structure**

### 3.3 Studies

Germany adheres to the Bologna Process directives and offers three levels of higher education qualifications: Bachelor's, Master's, and Doctorate. A bachelor's degree programme in Germany typically lasts 6 semesters or 3 full academic years. After graduation, students can either start their professional careers or apply for a Master's programme, which lasts 1 to 2 years. Many postgraduate programmes in Germany are offered in English. There is no standard length for a Doctorate in Germany, as it involves in-depth and individual research. The most important prerequisite for admission to doctoral studies is a master's degree.

### 3.4 Students

In the 2022/23 winter semester, there were 2.87 million students in Germany. This total includes approximately 1.7 million at universities, about 1.1 million at universities of applied sciences, 36,716 at colleges of art, 26,235 at colleges of

education, 2,546 at colleges of theology, and 59,639 at colleges of public administration. Additionally, there were 458,210 international students.[14]

Among higher education institutions, universities have the highest student population, with over 1.6 million students. Of the international students in Germany, 90,632 are resident international students. The top countries of origin for international students in Germany are India (42,578) and China (39,137).

Female students constitute 50.8% of the total student population in Germany, while male students make up 48.9%. The average age of students enrolled in higher education institutions (HEIs) in Germany is 23.6 years. Most German students are enrolled at the Bachelor's level, whereas most international students pursue studies at the Master's level.

The Legal, Economic, and Social Sciences field has the highest number of students, with over 1.1 million enrolled. For international students, Engineering is the most popular field, with 43.1% of all international students in Germany studying in this area.

According to a survey conducted by DAAD under the BintHo project, which included 14,000 international students, 61% of respondents indicated they had some intention to stay in Germany upon completion of their studies.[15]

### 3.5 The QA system

In Germany, oversight of higher education institutions falls under the respective federal state Ministry of Science and Research. Regional evaluation agencies conduct external evaluations at the Länder level or through networks and associations of higher education institutions across all Länder. The Science Council (Wissenschaftsrat) manages institutional accreditation for non-state universities. For accrediting Bachelor's and Master's programmes, the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder (KMK) established the Foundation for the Accreditation of Study Programmes in Germany (Stiftung zur Akkreditierung von Studiengängen in Deutschland). This Foundation, which includes the German Accreditation Council (GAC), the Executive Board, and the Foundation Council, is a collaborative institution of the Länder dedicated to maintaining accreditation and ensuring quality in German higher education.

The Federal Constitutional Court affirmed the importance of external quality assurance through accreditation in February 2016 but identified legal implementation issues. The Standing Conference established a new legal framework for the accreditation system through the State Treaty on the Accreditation of Studies (R128), effective in 2018. The Interstate Treaty, which took place on January 1st 2018, transfers the decision-making power for accreditation from

14 https://www.daad.de/en/studying-in-germany/universities/universities/

15 https://www.studying-in-germany.org/higher-education-in-germany-key-trends-statistics/#:~:text=Numbers%3A%20State%20Distribution-,The%20total%20number%20of%20students%20in%20higher%20education%20institutions%20in,as%20of%202023%2F2024%20statistics.

agencies to the Foundation Accreditation Council based on agency reports and recommendations. Additionally, the treaty modifies the personnel composition of the Accreditation Council, now including eight professors, a German Rectors' Conference representative, four Länder representatives, five professional practitioners, two students, two international accreditation experts, and an advisory representative from the accreditation agencies[16].

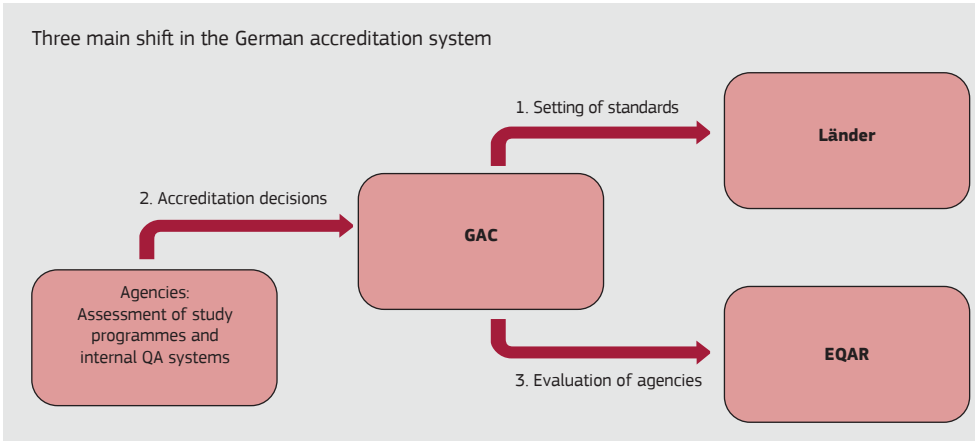
According to the State Treaty on the Accreditation of Studies (Studienakkreditierungsstaatsvertrag), the Accreditation Council Foundation serves the fulfilment of the following tasks in detail:

- To accredit and re-accredit study programmes and internal quality assurance systems of higher education institutions and other quality assurance procedures by awarding the foundation's seal.
- To define the conditions for recognising accreditations by foreign institutions, considering developments in Europe.
- To promote international cooperation in the field of accreditation and quality assurance.
- To regularly report to the Länder on developing the consecutive system of study and quality development within the accreditation framework.
- To admit the agencies for assessing and preparing an expert opinion with decision and evaluation recommendations.
- To support the Länder in further developing the German quality assurance system[17].

In the current system, the standards for accrediting HEIs are no longer set by the GAC but are defined by the Länder (state). The authority to make formal decisions in all accreditation processes lies with the GAC, which is currently involved in implementing alternative procedures for accreditations. This will be discussed shortly. The evaluation of agencies, which the GAC previously handled, has been transferred to the European Quality Assurance Register for Higher Education (EQAR). It is important to mention that, in performing its functions, the GAC follows the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG).

The Accreditation Council authorizes agencies that meet certain criteria to perform external QA for HEIs. The agency must informally submit proof of their entry in the European QA Register for Higher Education to apply for authorisation. The authorization is valid indefinitely, but the agency must renew its registration with EQAR as necessary. The authorisation can be revoked if the agency fails to provide evidence of EQAR listing or violates its obligations.

16 https://eurydice.eacea.ec.europa.eu/national-education-systems/germany/quality-assurance-higher-education
17 https://www.enqa.eu/wp-content/uploads/GAC-external-review-report.pdf




### 3.5.1. Internal QA system

Internal quality assurance ensures that the work undertaken by higher educational institutions is relevant to and recognized by the external QA processes they undergo. The following ESG standards serve as a guiding document for institutions of higher education for their internal QA processes (Ganseuer and Pistor, 2017)[18].

- **Policy for quality assurance:** Institutions should have a policy for quality assurance that is made public and forms part of their strategic management. Internal stakeholders should develop and implement this policy through appropriate structures and processes involving external stakeholders. How the policy is implemented, monitored and revised is the institution's decision.
- **Design and approval of programmes:** Institutions should have processes to design and approve their programmes. The programmes should be designed to meet their objectives, including the intended learning outcomes. The qualification resulting from a programme should be specified and communicated and refer to the correct level of the national qualifications framework for higher education and, consequently, to the Framework for Qualifications of the European Higher Education Area.
- **Student-centred learning, teaching, and assessment**: Institutions should ensure that programmes are delivered in a way that encourages students to take an active role in the learning process and that the assessment of students reflects this approach.
- **Student admission, progression, recognition, and certification:** Institutions should consistently apply pre-defined and published regulations covering all phases of the student "life cycle", including admission, progression, recognition, and certification.
- **Teaching staff:** Institutions should ensure the competence of their teaching staff. They should implement fair and transparent processes for recruitment and staff development.

18 https://www.enqa.eu/wp-content/uploads/2015/11/ESG_2015.pdf

- **Learning resources and student support:** Institutions should secure appropriate funding for learning and teaching activities and ensure that adequate and readily accessible learning resources and student support are provided.
- **Information management:** Institutions should collect, analyse, and use relevant information to manage their programmes and other activities effectively.
- **Public information:** Institutions should publish information about their activities, including programmes which are clear, accurate, objective, up-to-date, and readily accessible.
- **Ongoing monitoring and periodic review of programmes:** Institutions should monitor and review their programmes periodically to ensure that they meet their objectives and address the needs of students and society. These reviews should lead to continuous improvement of the programmes, and any actions planned or taken as a result should be communicated to all those concerned.
- **Cyclical external quality assurance:** Institutions should undergo external quality assurance in line with the ESG on a cyclical basis.

### 3.5.2. External QA system

The Interstate Treaty establishes three basic types of external QA procedures – programme accreditation, system accreditation, and alternative procedures[19].

#### 3.5.2.1. Programme accreditation

The subject of programme accreditation includes Bachelor's and Master's programmes offered by state or state-recognised higher education institutions. Successful accreditation by the German Accreditation Council can be granted with a quality seal for a specified period or without conditions. Programmes with similar subject matter can be accredited together through a cluster procedure, but each programme receives its own accreditation decision.

The accreditation review process involves multiple stages and is based on peer review. When a higher education institution selects an agency approved by the German Accreditation Council for the assessment, the agency forms a review panel. This panel includes at least two professors in the relevant field, a professional with subject-related experience, and a subject-related student. The selection of the panel follows procedures established by the German Rectors' Conference, and professors hold the majority of votes.

The agency evaluates the formal criteria from the specimen decree and documents the findings in a formal report for the experts. The academic assessment by the review panel is based on the criteria in the specimen decree and typically

19 https://www.akkreditierungsrat.de/en/accreditation-system/accreditation-system

involves a site visit. The experts then create a report with their accreditation recommendations. The Accreditation Council decides on accreditation based on the agency's formal report and the experts' academic assessment. If the Accreditation Council plans to diverge significantly from the experts' recommendation, the institution can comment before the final decision. If accredited, the programme receives the Accreditation Council's quality seal, and the decision, along with the expert report and expert names, is published in the central database of accredited programmes and universities. Accreditation is valid for eight years.

Depending on the subject, accrediting a single degree programme can cost a university between 8,000 and 15,000 EUR. Re-accreditation is cheaper. However, considering that a medium-sized German university (with around 15,000 to 30,000 students) may offer 60 to 100 degree programmes, cost-saving measures include "cluster accreditations." This involves accrediting all programmes within a department or faculty simultaneously during one site visit, often with a slightly larger review team[20].

#### 3.5.2.2. System accreditation

System accreditation focuses on the internal quality assurance system of state or state-recognized higher education institutions in Germany. This process allows an institution to grant the Accreditation Council's seal to its self-evaluated study programmes. An institution must systematically implement the formal and academic criteria specified in the specimen decree to achieve system accreditation. This includes a quality management system that regularly evaluates study programmes and performance areas related to teaching and learning. These evaluations must involve internal and external students, external academic experts, industry representatives, and graduates. A successful system accreditation indicates that the institution's quality management system ensures that its study programmes meet the qualification goals and quality standards. The institution is then authorized to use the Accreditation Council's quality seal.

The system accreditation review, decision, and the right-to-appeal process are similar to programme accreditation. The formal report of the agency must confirm that at least one study programme has undergone the quality management system during the initial system accreditation application. For re-accreditation, it must be shown that all Bachelor's and Master's programmes have been evaluated by the institution's internal quality management system at least once. A favourable accreditation decision means that the institution's internal quality management system is awarded the quality seal of the Accreditation Council, and the institution can grant this seal to its self-assessed study programmes. System accreditation is valid for eight years.

20 https://www.rivisteweb.it/download/article/10.12828/74733

### 3.5.2.3. Alternative procedures

The Interstate Study Accreditation Treaty allows HEIs to select between programme accreditation, system accreditation, and alternative procedures. These alternative procedures, independently developed by institutions and meeting the same quality standards as standard accreditation processes, aim to explore different external quality assurance methods. Alternative procedures must be accredited to replace traditional accreditation. The accreditation focuses on the alternative procedure itself. Once accredited, HEIs gain self-accreditation rights for programmes assessed through the alternative procedure. HEIs must show they meet formal and academic criteria to accredit an alternative procedure. These procedures can be applied to both programmes and systems. Successful accreditation confirms that the alternative procedure ensures the achievement of qualification objectives and quality standards for study programmes. The accreditation process involves a multi-stage peer review regulated by the Rules of Procedure for Alternative Accreditation Procedures21. Approval from the responsible scientific authority and the Accreditation Council is required before implementing an alternative procedure. HEIs must apply, and upon approval, an agreement outlines the evaluation and implementation details. The institution submits a self-evaluation report to the Accreditation Council. The evaluation involves external experts, including academic and professional experts and students. The Accreditation Council, or a delegated third party, conducts the evaluation, resulting in an expert's report with recommendations.

The Accreditation Council grants accreditation by determining the alternative procedure's equivalence to standard accreditation. The application includes the self-evaluation report, experts' report, and potentially a statement from the institution submitted via the competent science authority. Upon accreditation, the Accreditation Council awards its seal to the alternative procedure. This grants the institution the right to award the seal to its programmes that pass the accredited assessment procedure. Two years before the accreditation period ends, an independent scientific institution evaluates the alternative procedure and reports to the Accreditation Council. Based on this evaluation and monitoring results, the Council recommends continuing the procedure.

## 3.6 NQF

German National Qualification Framework, generally known as Deutscher Qualifikationsrahmen (DQR), is a comprehensive system that provides a structured framework for the recognition, assessment, and certification of qualifications across various education and training sectors. It was officially launched in May 2013 by the joint resolution of the Standing Conference of the Ministers for Education and Cultural Affairs of the Länder, the Federal Ministry of Education and Research (BMBF), the Conference of Ministers for Economics of the Länder, and the Federal Ministry of Economics and Technology.

21 https://www.akkreditierungsrat.de/de/media/158

The DQR was the first framework to consider all qualifications of the German education system across all educational sectors (Eurydice, 2023). The framework is an alignment instrument for facilitating the orientation of qualifications in the German educational system and the comparability of German qualifications in Europe (BIBB, 2015). It seeks to aid lifelong learning, the development of a skilled workforce, and the validation of non-formal and informal learning by serving as a guiding tool in identifying and evaluating skills during the validation process (UNESCO-UNEVOC, 2022).

More specifically, the DQR aims to:

- enhance transparency in German qualifications and aid their recognition all over Europe;
- facilitate the mobility of learners and workers between Germany and other European countries, as well as within Germany;
- promote the clarity and comparability of qualifications to facilitate their recognition and mobility;
- foster trustworthiness, facilitate transferability, and ensure QA;
- increase the focus on skill development in qualifications;
- strengthen the focus on learning outcomes in the qualification process;
- enhance validation and recognition opportunities for non-formal and informal learning pathways;
- improve lifelong learning by facilitating access and increasing participation (Cedefop, 2021).

DQR provides a framework for describing professional and personal competences across eight levels. Each level is defined by the competences that a learner should have acquired upon completing a particular qualification. These competences guide the allocation of qualifications obtained in higher education, general education, vocational education and training, and all levels have a uniform structure. DQR distinguishes between two categories of competence: professional competence, subdivided into knowledge and skills, and personal competence, which is divided into social competence and autonomy. The concept of competence embodies the core aim of all areas of the German education system: to enable learners to develop a comprehensive ability to act ("Umfassende Handlungskompetenz") within an academic field or job-related activity. The emphasis is not solely on possessing knowledge and skills in isolation but on the capacity and preparedness to apply that knowledge and act responsibly within a particular field of expertise (BMBF, 2019).

DQR has been developed and implemented through a gradual, bottom-up process among stakeholders in the DQR working group (Arbeitskreis DQR) comprising education providers from higher education, vocational education and training (VET), general education, ministries, social partners, public institutions, and the la-

bour market, as well as researchers and practitioners. The agency responsible for implementing the DQR is the coordination point for the DQR (Bund-Länder-Koordinierungsstelle DQR), which was formed in a joint initiative of the federal government and the Länder.

DQR aims to make the German educational system transparent by assigning general education, higher education, and VET qualifications to eight competence levels based on learning outcomes. VET qualifications, including preparatory programmes, are allocated levels 1 to 7, while higher DQR levels are open to qualifications from different sectors. For example, the master craftsman qualification is placed at DQR level 6, which is comparable to a bachelor's degree. Similarly, the upper secondary general education school leaving certificate (Allgemeine Hochschulreife) and dual VET courses (3 years and 3,5 years) are allocated to DQR level 4.

It is worth mentioning that the DQR levels have been linked to specific types of qualifications in formal education. However, informal and non-formal/non-regulated education qualifications have not yet been included in the framework (UNESCO-UNEVOC, 2022). The DQR is regarded as the German response to the European education policy agenda, and it is based on the European Qualifications Framework (EQF), which provides a common reference framework for the recognition of qualifications across Europe.

### 3.7 MCs implementation in HE

Micro-credentials are increasingly being seen as a useful measure for internationalization and short-term mobility in the EU, as they can be used to enhance educational pathways in a highly technology-oriented and complex work environment. The Boston Consulting Group (BCG) suggests that labour markets in the USA, Germany, and Australia have similar trends, including a shortage of skilled workers in STEM professions and high demand for health and care professions due to ageing. BCG suggests governments in these countries, including Germany, should develop a new MC approach. In the next three years, smaller learning formats will be of central importance in German-speaking countries, with 77% of respondents seeing MCs as an attractive opportunity for self-determined and informal learning.

According to the German Academic Exchange Service (DAAD – Deutscher Akademischer Austauschdienst), individual HEIs are already intensively addressing the potentials and challenges of implementing these small learning units – both in the context of lifelong learning and in the context of internationalisation. In December and January 2022, DAAD and European University Networks conducted and presented the results of two surveys, which reflect the trends in the development and spread of MCs in the German educational system (Figure 5). Among 160 German universities that took part in the first survey by the National Agency for Erasmus + University Cooperation in the DAAD (NA DAAD), 20 per cent are

already using MCs, another 23 per cent are discussing a possible introduction, and 37 per cent have not yet been an issue. The second survey gathered information from 34 German universities involved in the EU initiative "European University Networks". Around 25 per cent of them already use MCs, and 65 per cent of the universities surveyed plan to use them as part of European alliances. In both surveys, the universities see the most important application area for the small learning units – mostly for which there is a fee – as scientific further education and lifelong learning. At the same time, MCs are also becoming more important for internationalization and mobility. In the NA DAAD survey, most universities surveyed rated MCs as a useful accompanying instrument for internationalization.

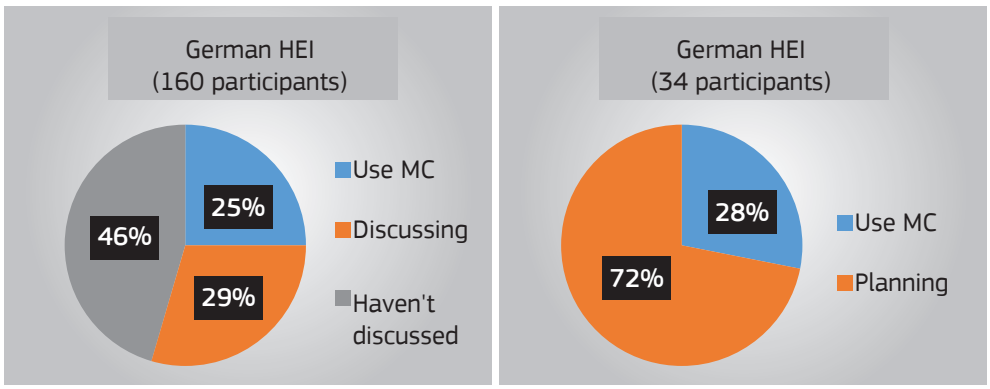



**Figure 5. DAAD surveys results**

However, the Federal Government in Germany is sceptical about micro-credentials as they could represent a disproportionate administrative or financial burden for Member States, as they could overlap with other existing structures. Furthermore, there is a general danger that the value of qualifications in all educational sectors will be diluted. Despite this, MCs have the potential to develop within Germany's education system, as the German Council of Science and Humanities emphasizes that they can supplement holistic study programmes, similar to certificate studies and modularized offers within the framework of continuing education HEIs (**Appendix 5**).

The German Rectors' Conference (HRK) recommends that HEIs address the issue of MCs and badges to anticipate innovative teaching developments and remain competitive. However, the application of MCs is limited, and they are primarily used in student orientation courses, staff training, and special extracurricular offers for high-potentials. The German Rectors' Conference also fears modularization of degrees, fragmentation of knowledge, and commercial use of micro-parts of conventional degree programmes. The Federal Council and four committees agree that MCs and micro-degrees should not weaken or replace initial education, vocational education and training, or traditional qualifications. The accumulation of small learning units should not replace the principle of holism and structure. Vocational education and training stakeholders argue that

vocational competence cannot be acquired through small-scale learning offers or accumulation. Due to the structural peculiarities of the German vocational education and training system, caution is advised when attempting to derive unrestricted scenarios for the German education market based on international developments.

### 3.7.1 MCs legal framework

The special legal framework regarding MC implementation in Germany HE currently does not exist. Although the Higher Education Framework Act (HRG) in Germany does not explicitly address micro-credentials, section 2, sub-section 13 on distance learning and multimedia implies that their implementation in higher education institutions is permitted within the scope of universities: "In reforming studies and teaching and in providing courses, the possibilities offered by distance learning and information and communication technology should be used. The Federal Government, the state and universities promote this development within the scope of their responsibilities."[22]

Corroborating this view, the regulations guiding the general study and examination procedures at the Technical University of Berlin states that establishing certificate programmes (at least 12 to 30 credit points) can be applied for by faculties, institutes, or university lecturers. The application is made in writing and contains information about the person responsible for the programme and explanations of the content, objective, duration, and any associated costs. The application is then approved by the Executive Board of the university.[23]

The German education market is dominated by academic providers which consistently use micro-degrees to increase permeability within their educational pathways and attractiveness. For example, RWTH Aachen University's cooperation with edX allows for stacking micro-degrees to form a complete micro-master's degree in "Managing Technology & Innovation: How to deal with disruptive change". The Technical University of Munich also offers "Professional Certificates" in the use of the Sigma management system. Private German universities also actively pursue academic MCs and micro-degrees, targeting affluent employees and lifelong learners. Wilhelm-Büchner-Hochschule in Darmstadt offers Nano-credentials covering IT security, app development, e-mobility, and entrepreneurship. Course content is taken from accredited Bachelor's or Master's degree programmes, ensuring commercially exploitable synergy effects. Private German educational institutions and tech companies are increasingly entering the micro-learning market, offering courses on "Digital Transformation" and "Nano-Degree". AKAD University, a Stuttgart-based university, offers an online "Digital Transformation" course called a "Nano-Degree" with digital access for up to six months. Passing the voluntary exam results in a digital certificate, which can be credited towards a Bachelor's degree or more compre-

22 https://www.gesetze-im-internet.de/hrg/BJNR001850976.html#BJNR001850976BJNG000302310
23 https://www.static.tu.berlin/fileadmin/www/10002457/K3-AMBl/AMBl_2021/AMBl._Nr._19_vom_11.08.2021.pdf

hensive further education. Euro FH offers three micro-courses on human resources and political topics, each with a university-owned certificate. Bertelsmann University, in cooperation with Udacity, has been offering a scholarship programme since 2019 to strengthen technology skills such as cloud computing, data, and artificial intelligence. The university plans to invest several million euros over three years to award up to 50,000 tech scholarships on the platform. Nearly 10% of the 15,000 technology scholarship holders receive a scholarship for a full Udacity Nano-Degree programme in their chosen subject. Three major DC projects with direct government involvement are underway in Germany: The Platform for International Student Mobility and XHochschule, and the Netzwerk Digitale Nachweise.

### 3.7.2 MCs certification

For full qualifications offered by German HEIs, a diploma supplement provides additional information about an individual's academic qualifications. The elements included in a diploma supplement may vary slightly between higher education institutions. However, the overall purpose is to provide comprehensive and transparent information about the awarded degree and the student's academic achievements.

The summary of the elements typically included in diploma supplement practice in Germany are as follows:

- **Holder of the qualification:** the diploma supplement typically begins with personal information, including the name of the student, student number, date of birth, and contact details;
- **Qualification:** the name of the qualification, main field(s) of study, institution awarding the qualification, language(s) of instruction;
- **Level of the qualification:** level, official length of programme, access requirements;
- **Contents and results gained:** mode of study, programme requirements/ qualification profile of the graduate, programme details, grading scheme, overall classification;
- **Function of the classification:** access to further study, professional status;
- **Additional information:** further information;
- **Certification:** the diploma supplement is certified by the HE institution, ensuring its authenticity and reliability;
- **National higher education system:** the diploma supplement may also provide information about the German HE system, including its structure, QA mechanisms, and recognition of qualifications.

Regarding MC certification practice in Germany, it is still an emerging field and may not be as widespread as in some other countries. However, the concept of MCs is gaining attention and being explored in the German HE system. While there may not be a standardized practice in place yet, here are some elements that can be associated with MC certificate practice in Germany:

- **Targeted Skill Development:** Micro-credentials (MCs) in Germany typically focus on specific skills or areas of knowledge that are in demand in the job market or specific industries. These credentials aim to provide learners with targeted and practical skills relevant to their professional development.
- **Short Duration and Focused Content:** MCs are characterized by their shorter duration compared to traditional degree programmes. They often consist of focused and intensive learning experiences, allowing learners to gain specialized knowledge and skills quickly.
- **Flexible Delivery Modes:** MCs in Germany may be delivered through a variety of flexible formats, including online courses, blended learning, or in-person workshops. This flexibility enables learners to fit their studies around their existing commitments and personalize their learning experience.
- **Industry Collaboration and Recognition:** MCs may involve collaboration between higher education institutions and industry partners to ensure the relevance and applicability of the content. Industry recognition and endorsement of MCs can enhance their value and credibility in the job market.
- **Stackable Credentials:** MCs in Germany may be designed to be stackable, allowing learners to accumulate multiple MCs over time to build a more comprehensive skill set or progress toward a larger qualification. This approach allows learners to tailor their learning pathways according to their specific needs and career goals.

The EU MOOC Consortium (EMC) has proposed EU standards for the fundamental components of micro-credentials (MCs) to foster trust and consistency among MCs, given their wide range of diversity. While a diploma supplement provides essential details for the international recognition of higher education degrees, there is currently no uniform method for explaining MCs. This inconsistency in information creates challenges for learners, employers, higher education institutions, and quality assurance agencies in understanding the value and substance of MCs and in making comparisons among them. According to the EMC, an MC should provide the following critical information, as outlined in the EU standards for the constitutive elements of MCs.

- Identification of the learner;
- Title of the MCs;
- Country/region of the issuer;
- Awarding body;
- Date of issuing;
- Notional workload needed to achieve the learning outcomes (in ECTS, wherever possible);
- Level (and cycle, if applicable) of the learning experience leading to the MCs

(EQF and/or national qualifications framework; Overarching Framework of Qualifications of the European Education Area);

- Learning outcomes;
- Form of participation in the learning activity (online, onsite or blended, volunteering, work experience);
- Prerequisites needed to enrol in the learning activity;
- Type of assessment (testing, application of a skill, portfolio, recognition of prior learning, etc.);
- Supervision and identity verification during assessment (unsupervised with no identity verification, supervised with no identity verification, supervised online or onsite with identity verification);
- QA of the credential and, where relevant, of the learning content;
- Grade achieved;
- Integration/stackability options (standalone, independent MCs / integrated, stackable towards another credential);
- Further information: Given that MCs may be interdisciplinary, it was suggested that MCs highlight relevant thematic areas using the International Standard Classification of Education level F (ISCED-F) or similar (European Commission, 2020).

### 3.7.3 Principles for MC credit system

MCs may be offered either entirely independently (as stand-alone credentials) or integrated into another qualification (as stackable components), including formal higher education qualifications. The three models of integration are discussed below.

- Embedded model: in this model, the integration of MCs into another qualification programme is intentionally designed, wherein the course content and assessments of the MCs replace locally created content and assessments.
- Recognition of Prior Learning Model: In recognising prior learning and academic credits for qualification programmes, qualification-awarding bodies can consider MCs retrospectively. For instance, Kiron, a German NGO, offers refugees a study programme incorporating MOOCs. Students who enrol in Kiron's partner universities can be awarded up to 60 ECTS credits, equivalent to the workload of a full-time academic year.
- Modular model: learners have the option to pursue MCs in the form of modules, which can function as stand-alone qualifications. Upon successful completion of the multiple MCs, learners receive another qualification. For instance, some HEIs divide specific sections of a master's degree programme into modules, making them available through online learning platforms such as MicroMasters from edX and MasterTrack Certificates from Coursera (Kato et al., 2020).

The German Rectors' Conference recommends that higher education institutions "proactively address the issue of MCs and badges, especially to anticipate innovative developments in the teaching field and remain competitive." In principle, awarding ECTS to MCs can facilitate their recognition. Although not all offerings meet this criterion, many large digital learning platforms, such as edX, FutureLearn, and Coursera, offer MCs or micro-degrees for which cooperating universities award ECTS. These credits can then be used, for example, to complete MBA programmes or Master's programmes. For instance, under its cooperation with edX, RWTH Aachen University allows several micro-degrees to be stacked to form a complete micro master's degree. Additionally, AKAD University credits a successfully completed nano-degree in "Digital Transformation" as a module towards a bachelor's degree or one of its more comprehensive continuing education programmes.

Private German universities are already notably more active in this field, seemingly aiming to tap into an additional market for academic MCs and micro-degrees, often targeting affluent employees and lifelong learners. For example, the private Wilhelm-Büchner-Hochschule in Darmstadt has been offering nano-credentials for a good year, covering topics such as IT security, app development, e-mobility and entrepreneurship. As is usually the case on the international market, the course content is taken from accredited Bachelor's or Master's degree programmes, thus ensuring its ECTS award.

In addition to the few university providers, private German educational institutions and tech companies are increasingly entering the micro-learning market. Google, for example, offers an internal qualification in the form of new certificates ("Google Career Certificates"), which it claims are comparable to university degrees: within six months, Google employees qualify interested colleagues as UX designers or data analysts.

To summarize, the principles for the MCs credit system in Germany are very different, ranging from the statement that "MCs do not necessarily have to be credit-bearing" to the recommendation by some universities that a total workload of 100 to 150 hours should be awarded 1 ECTS.

### 3.7.4 QA and MCs

The following section explores two viewpoints on the quality assurance of micro-credentials in universities. First, it outlines the perspective of a university that offers micro-credentials. This is followed by the position of universities in their role as a recognizing authority.

#### 3.7.4.1. University as a provider of micro-credentials

Micro-credentials are a form of provision widespread in the higher education sector for several years in the context of lifelong learning and continuing aca-

demic education. The "Empfehlungen zu hochschulischer Weiterbildung als Teil des lebenslangen Lernens" of the German Council of Science and Humanities, the "Empfehlungen zur wissenschaftlichen Weiterbildung" of the HRK and the recommendations of the Round Table on "Qualitätssicherung von Zertifikatsangeboten in der hochschul- schen Weiterbildung" published by the Institute for Innovation and Technology recommend the systematic inclusion of continuing education courses in university quality assurance. The German Council of Science and Humanities sees "continuing higher education as part of teaching" and recommends that corresponding study programmes "be included in the existing quality assurance for teaching, considering their special requirements." In this context, reference can be made to the "Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)"[24], which apply to all higher education, including courses without a formal degree.

Micro-credentials that originate from accredited Bachelor's or Master's degree programmes are accredited through the programme accreditation of the degree programme or the system accreditation of the university. However, for formats that are not part of degree programmes, there were previously no standards for description until the recommendation of the Council of the European Union.

#### 3.7.4.2. University as a recognizing body

As universities increasingly receive applications for recognition and crediting of micro-credentials, they independently decide on the quality assurance measures for these processes. Although the quality assurance for recognition and accreditation at German universities is comprehensively regulated (cf. HRK 2022b), specific considerations must be made for micro-credentials. In this context, a distinction is made between higher education and non-higher education courses. Micro-credentials awarded within the framework of higher education formats are classified under-recognition, while those from non-university education providers fall under credit transfer, also known as recognition of prior learning, in the German HE system. The quality assurance of micro-credentials acquired at universities is the responsibility of the awarding universities, and the principles of recognition with the assessment criterion of substantial difference apply here.

Credit transfer, on the other hand, pertains to evidence of competences acquired outside the university in formal, non-formal, and informal contexts, including micro-credentials offered by non-university providers such as commercial entities or NGOs. The recognition resolutions of the KMK from 2002 and 2008 provide the orientation framework, with the higher education laws of the federal states being crucial for legal implementation.

Continuing education courses from franchise models or cooperation between higher education and non-university providers cannot simply be assigned to either

24 https://www.hrk.de/uploads/media/ESG_German_and_English_2015.pdf

recognition or credit transfer. The assignment depends on the quality assurance of the learning offer. If the higher education institution is responsible for quality assurance and higher education standards apply, these cases are classified as recognition. Conversely, if quality assurance is not clearly the responsibility of the higher education institution, the credit transfer standards apply[25].

It is also important to mention that continuing education courses at universities can receive a seal of quality from professional associations and external agencies. For instance, the Technical University of Berlin's "Teaching for University's Best" introductory course is accredited by the German Association for Educational and Academic Staff Development in Higher Education. Similarly, certificate courses at the Euro University of Applied Sciences are state-approved by the State Central Office for Distance Learning in Cologne[26].

### 3.7.5 MCs and NQF

Currently, MCs have not been linked to the DQR. Nevertheless, there is growing evidence that the alignment of MCs to the DQR will ensure they are understood and recognised by employers, educational establishments across sectors, geographic areas and the wider society.

In autumn 2020, MICROBOL, a project funded by the Erasmus+ programme, disseminated a survey among the Bologna Follow-up Group as well as nominated representatives of the MICROBOL working group to examine the possibility of integrating MCs into existing national qualification frameworks. The results reveal that most countries do not reference MCs to NQFs. However, it was widely agreed that any reference to MCs in the NQF would support the international transparency and recognition of MCs (Lantero, 2021). The survey provides insights into how various countries have integrated MCs into national qualification frameworks. The findings of the survey, which comprised 35 countries, reveal that:

- two countries have MCs referenced from levels 1 to 7 of the EQF;
- one country from level 2 to 8;
- one country from level 2 to 7;
- one country from level 5 to 8;
- one country at higher education level (Finocchietti, 2021).

Following the recommendation of the European Approach to MCs (European Union, 2020), MCs that formal education institutions issue could be aligned with the EQF (through NQFs) and ECTS. Therefore, the proposed alignment of MCs to the DQR builds upon the Common MCs Framework (CMF), which applies to professional training, MOOCs, short learning programmes, and short higher education programmes for continuous education/professional development. The CMF was

25 https://www.hrk-modus.de/media/redaktion/Downloads/Publikationen/MODUS/English/EN_Micro-Credentials_at_HEIs_web.pdf
26 https://www.euro-fh.de/ueber-uns/qualitaetssiegel-auszeichnungen/

developed by the European MOOC consortium, which consists of the main European MOOC platforms: FutureLearn, OpenupEd. FUN, MiriadaX and EduOpen. These partners represent most of the MOOC development work in Europe in terms of learners and number of MOOCs, offering over 2000 MOOCs and representing a large network of 250 universities, colleges, and companies. The CMF is based on similar criteria used in the Bologna Process and the European Higher Education Area (EHEA). According to the CMF, MCs design should:

- have 4–6 ECTS/100 to 150 hours of study time;
- be placed in levels 6–8 in the EQF (bachelor, master, and third cycle level), with options for level 6 (in combination with ECTS);
- provide summative assessment that awards academic credit upon successful completion of the MCs or through recognition of prior learning upon enrolment on a university's course of study;
- provide an MC supplement highlighting the learning outcomes, total study hours needed, EQF level, and number of credit points gained (Antonaci, 2021).

In Australia, an Expert Panel suggested that the country's formal qualifications framework (NQF) should include MCs and shorter qualifications in 2019. This recommendation aligns with approaches taken in New Zealand and Europe, where MCs are integrated (stacked) into formal qualifications. However, "stacking" MCs does not imply that the provider would pursue non-credit or non-formal training and competency validation; instead, it means combining them with formal credentials based on consistent credit qualifications criteria. MCs are seen as building on existing qualifications frameworks and systems for training and competency-based learning. While not all MCs will have the same criteria, aligning and stacking them with formal credit-bearing qualifications will be easier to realize in some HEIs in Europe, New Zealand, Australia and South Africa (McGreal & Olcott, 2022).

The following conditions need to be met to potentially link MCs to the DQR.

- ECTS should be used for MCs provided by HEIs to support compatibility with other institutional academic entry requirements and the possibility of integrating MCs into existing qualification programmes.
- MCs are increasingly provided by a broad range of non-university institutions, including commercial firms and NGOs "who are not necessarily trusted yet," posing threats to the credibility of such MCs (UNESCO, 2022). Besides, non-university MC providers might face issues in ensuring the correct allocation of ECTS; therefore, it is recommended the providers have some kind of collaboration or agreement with HEIs who are more experienced with verifying learning outcomes and MCs workload. For example, Northeastern University and IBM have a partnership that allows IBM-MC holders to receive graduate credit from the university (Leaser et al., 2020).

- Higher education institutions are autonomous, each with its own policy regarding MCs' crediting, recognition and stackability. Against this backdrop, it is believed that a coalition of all HEIs in Germany is designing a repository of partnership expectations which could potentially provide necessary guidelines to other formal educational institutions or non-formal and informal education systems that might be interested in collaborating with an HEI, could be beneficial.
- The design of MCs follows agreed standards, such as the European Common MCs Framework.
- HEIs need to discuss the recognition of competences developed through university-provided MCs and crediting of competences via non-university organisations since HEIs may have different legal frameworks and examination criteria (HRK, 2020).
- MCs would be subject to regular QA reviews by appropriate regulatory bodies to ensure they continue to meet intended needs.
- Stacking MCs into existing formal qualifications appears to be the most viable way of linking MCs to DQR. Therefore, the design of MCs needs to align with formal qualification outcomes and strategic purposes.

Based on the above, there are several weaknesses or challenges in linking MCs with DQR:

- Perhaps the most critical issue for MCs is that there are few existing national frameworks they already fit into (OECD, 2021), DQR inclusive. If a learner undertakes a university degree course, that will clearly fit into the German national qualification framework, but this is not the case with MCs (Cowie & Sakui, 2022).
- Ensuring the validity of MCs and fostering their linkage to DQR is complicated as they vary in terms of course providers. Take, for example, MCs that formal education institutions and non-formal education providers (private providers of labour market-relevant training) could issue.
- MCs vary in terms of learning outcomes, duration, costs, modes of assessment, whether they can lead to further qualifications or not, and whether they are credit-bearing or not. Therefore, linking MCs to DQR may require an individual-based approach rather than a uniform standardized method.
- There are concerns from the German government that the potential alignment of MCs to the DQR (and hence also the EQF) might undermine the credibility of and trust in the respective qualification frameworks (Hippach-Schneider & Mouillour 2022).

# 4. HIGHER EDUCATION SYSTEM IN SPAIN

Higher Education in Spain includes university education, higher artistic education, Higher-Level professional training, professional education in plastic arts and design, and Higher-Grade sports education. The Spanish Constitution recognises the right of parents to choose their children's education freely and to ensure they receive moral and religious education in line with their beliefs and convictions (**Appendix 6 and 7**).

## 4.1 Legal and Institutional framework of the HE system

### 4.1.1 Relevant Higher Education Laws

#### 4.1.1.1 Organic Laws

University education is regulated by Organic Law 2/2023 of the University System.

The Organic law of universities establishes the general framework that regulates universities' mission, organization and government. It is organized into the following chapters, which give an overview of the scope of the law:

- Functions and autonomy of the Universities;
- Creation and recognition of universities and system quality; Organisation of teaching; Research, transfer, and exchange of knowledge and innovation; Cooperation, coordination, and participation in the university system; University, society, and culture; Internationalisation of the university system; The student in the university system; Legal framework and structure of public universities; Governance of public universities;
- Economic and financial regime of public universities;
- Teaching and research staff of public universities;
- Technical, management and administration staff and services of public universities;
- Specific regime for private universities.

This Organic law is complemented by other laws, royal decrees (RDs), and regulations that elaborate on the various aspects it addresses. The law explicitly mentions micro-credentials in the following article concerning university degrees and lifelong learning:

*Article 7. University degrees*

*5. Lifelong learning may be developed through different teaching modalities, including micro-credentials, micro-modules or other short-term programmes.*

There is another implicit reference to MC in the law that is as important as this one:

*Article 9. Structure of official education*

*8. Concerning the curricular structures in official university education, universities, in the exercise of their autonomy, may develop specific teaching innovation strategies, such as official* ***degrees with an open pathway****, dual mention, double degrees or other modalities, in the form in which they are developed by regulation.*

Indeed, open pathway degrees require micro-credentials to be developed to make them possible.

#### 4.1.1.2 Royal Decrees

**The Royal Decree 822/2021** establishes the organization of university education and the QA procedure. This Royal Decree (RD) substituted the RD 1393/2007 that established the organization of university studies within the framework of the EHEA.

The main novelties introduced in HE by the RD 822/2021 are:

- **Common provisions for BSc and MSc programmes** – Three study modalities are introduced: face-to-face (without non-face-to-face credits), hybrid or blended (between 40% and 60% non-face-to-face credits), and virtual or non-face-to-face (more than 80% non-face-to-face credits). Therefore, the provision does not consider plans where the percentage of non-face-to-face credits is below 40% or **strictly between 60% and 80%**;
- **The possibility of increasing the percentage of recognised credits is open.** Generally, as in the system currently in force, the number of credits recognised for professional and work experience, as well as credits completed within university studies or other official higher education, may not exceed 15% of the total credits in the study plan, except in cases where credits are from expired non-official qualifications, in which case recognition may reach 100%. However, through an agreement between a university and a higher-level vocational training centre, the proportion of recognisable credits, relative to the total credits in the study plan, may reach 25%;
- **Specific curricular structures.** They may be incorporated into the study plans at the discretion of each university and will be reflected in the European Title Supplement;
- **Methodological strategies for specific and differentiated teaching innovation that contribute to the overall quality of a university degree** – Comprehensive proposals for teaching innovation may be included in the European Diploma Supplement and recognised by students through a certificate or similar document. These proposals may include flipped

classroom teaching, project-based learning or practical case studies, the development of collaborative and cooperative work, problem-solving skills, multilingual competence, structured teaching involving intensive use of digital information and communication technologies, and other initiatives promoted by the university or centre;

- **Dual mention** – This mention involves a common training project that is developed in a complementary manner in the university centre and in a collaborating entity, which may be a company, a social or union organization, an institution or an administration, under the supervision and training leadership of the university centre. The percentage of credits that are developed in the collaborating entity could be between 20 and 40 ECTS in BSc and between 25 and 50 ECTS in MSc. These percentages must include the final BSc thesis (TFG, as known in Spain) or the final Master thesis (TFM, as known in Spain). The training activity will be carried out dually at the university, and the collaborating entity will alternate with a paid work activity through a contract for dual university training, in the terms established in article 11.3 of the consolidated text of the Statute Law of Workers, approved by Royal Legislative Decree 2/2015, of October 23, and in its implementing regulations, as well as in the rest of the labour regulations that apply to it. If appropriate, the student who has chosen to take the Dual Mention within a BSc or MSc may abandon it and return to the general itinerary if half of the credits defined for obtaining the Dual Mention are not exceeded.

### 4.1.2 HE institutional framework

The educational competences in Spain are shared between the General State Administration (the Ministry for Higher Education) and the authorities of the Autonomous Communities (departments for education). The central education administration executes the government's general education policy guidelines and regulates the system's basic elements or aspects. In contrast, the regional education authorities develop state regulations and have executive and administrative authority to manage the education system in their own territory.

The Spanish university system was regulated by the State Organic Act 4/2007 (LOMLOU), amending Organic Act 6/2001 (LOU) on Universities until March 2023. From this date, it is regulated by the Organic Law for the University System, Law 2/2023. The Spanish government is responsible for ensuring the consistency and uniformity of the education system. A series of royal decrees set out more detailed aspects of the responsibilities of the national Administration.

The Catalan autonomous community has the authority to create, modify, and eliminate programmes in both public and private universities and for the core funding of public universities. These aspects are regulated by the Catalan Law on Universities (Law 1/2003, LUC). This law will require some changes soon to adapt to the new state law.

According to State regulations, Catalonia is responsible for funding HEIs, and the Agency for QA in the Catalan University System (AQU Catalunya) is responsible for QA of Higher Education in Catalonia, including verification/accreditation. The body in charge of assuring this functional coordination at the higher education level is the Conferencia General de Política Universitaria (General Conference for Higher Education Policy), made up of the autonomous communities' ministers for education and the minister of education of the central government.

### 4.2 HE Structure

HE comprises university, art and professional studies. University education is provided in universities. Art studies and advanced vocational training are provided in the same institutions as those offering intermediate vocational training (secondary studies).

#### 4.2.1 University education

The adaptation of the structure of Spanish university education to the EHEA was completed in 2010 (2001 Act on Universities and several Royal Decrees, especially RD 1393/2007 and RD 99/2011).

Each university designs the organization of the academic year and includes it in its bylaws. The workload in a full-time academic year of formal education is 60 ECTS. As a general rule, the university academic year has 220 teaching days and is divided into two semesters (30 ECTS each).

- First semester: it runs from the beginning of the academic year, mid-September, to the end of January or the beginning of February, when students sit the final examinations for the subjects taken during the first semester and the partial examinations for annual subjects.
- Second semester: it extends from the beginning of February to the end of May. The examinations for this semester and final examinations for annual subjects are set in June.

#### 4.2.2 Art education

Advanced Artistic Education includes Music, Dance, Performing Arts, Preservation and Restoration of Cultural Heritage, and Plastic Arts and Design. They are considered specialist education. Both public and private non-university institutions deliver these study programmes.

| PROVISION | NAME | ADVANCED STUDIES DELIVERED |
|---|---|---|
| Artistic Education | Higher conservatories or higher schools of Music and Dance | Music and Dance Education |
| | Higher Schools of Performing Arts | Performing Arts Education |
| | Higher Schools for the Preservation and Restoration of Cultural Assets | Preservation and Restoration of Cultural Assets Education |
| | Higher Schools of Design | Design Education |
| | Higher Schools of Plastic Arts | Plastic Arts and Design Education |

### 4.2.3 Advanced Vocational Training

Advanced Vocational Training is organized in training cycles, which have a modular structure. It includes a vocational module, which requires the preparation of a project during the last stage of the training cycle. The different training cycles are related to any of the 26 professional families established in the National Catalogue for Professional Qualifications.

Vocational training is provided in public and private education institutions authorized by the Catalan Government. Students having completed advanced vocational training are awarded an **Advanced Technician** professional qualification within **EQF level 5** (Short cycle in QF-EHEA). The same award applies to Sport and Plastic Arts and Design Education (considered specialist education; see the Arts Education section).

The most significant professions in Spain are organised by professional families and levels as established by Royal Decree 1128/2003. The National Catalogue for Professional Qualifications (CNCP) describes the structure and subjects of professional qualifications that are subject to recognition and accreditation. The catalogue is the responsibility of the National Institute for Qualifications (INCUAL), which was set up by Royal Decree 375/1999. This institute supports the General Council for Professional Training and has the mission of defining, preparing, and maintaining the CNCP in Spain. Due to shared areas of power in Spain, there is a homologous body in Catalonia, the Catalan Institute for Professional Qualifications.

The set of instruments and actions needed to promote and develop the integration of the professional training offer through the National Catalogue for Professional Qualifications make up the National System of Qualifications and Vocational Training (SNCFP). The whole system seeks to promote and develop the appraisal and accreditation of the respective professional competencies to favour professional and social development and fulfil the needs of the productive system.

### 4.3 Studies

University education is organized into three cycles: Bachelor (level 2), Master (level 3) and Doctorate (level 4). The university school year typically consists of 130–150 school days, excluding exam periods, organized in two semesters. Extraordinary examinations can be held at the university's discretion.

**BSc Degrees** – until now, BSc could have any number of credits in the range 180–240. Since the publication of RD 822/2021, BSc has a duration of 240 credits, except for those subject to specific legislation or European Union Law regulations, which require them to have 300 or 360 credits. The sequential structure is set at 60 credits per year and degree. International joint degrees arising within the European Commission's European University Programme and those covered by the sixth Additional Provision of Royal Decree 822/2021 are exempt from this consideration. Official university degree programmes with 180 ECTS credits have 2 years to apply for a modification of their syllabus to adapt it to 240 credits. These programmes are assigned to one of the thirty-two fields listed in Annex I of RD 822/2021.

A BSc in 240 ETCS must include a minimum of 60 ECTS basic training credits. Credits may be recognized for participation in cooperation, solidarity, cultural, sports and student representation activities, which together will be equivalent to at least 6 credits. These credits, together with those that can be recognized for teaching activities organized by the university, may not exceed 10% of the total (this limit did not exist previously). The credits for curricular external practices cannot exceed 25% of the total, except for EU regulations and degrees with a dual mention. The number of ECTS of the TFG could be between 6 and 10% of the total (until now, the maximum was 12.5%).

A new BSc has a curricular intensification or specific itinerary around a certain formative aspect of the set of knowledge, skills and abilities with at least 20% of the total credits. This definition replaces RD 1393/2007, which requires BSc to incorporate references to itineraries or curricular intensifications.

**BSc Degrees with open itinerary** – RD 822/2021 introduced this type of degree. They may have between 60 and 120 ECTS, which is typical for two or more BScs. The universities will regulate them without the need for external verification or accreditation. The offer of places is limited to 10% of the lowest of the offers of the studies involved.

**MSc Degrees** – MSc now must have 60, 90 or 120 ECTS (until now, any value between 60 and 120 ECTS was eligible). MCs can still include specialisations in the degree curriculum. However, the RD 822/2021 includes the novelty of limiting the number of credits that make up the specialisations to 50% of the total. The credits corresponding to external curricular internships cannot exceed one-third of the total (until now, no limit was specified).

Access requirements are also relaxed. Universities can now approve specific regulations so that undergraduate students with a maximum of 9 ECTS remaining to defend the TFG can access a university master's degree.

In the case of academic programmes with successive courses in Engineering and Architecture, Universities may offer "pilot teaching experience" programmes that link a BSc and an MSc oriented towards professional specialization, maintaining their differentiation and structural independence. Universities may establish a procedure for access to these MSc programmes without previously having passed the linked BSc.

**PhD Degrees** – PhD education is organized through programmes determined by university statutes and criteria established in RD 99/2011. These programmes correspond to various fields of scientific, technological, humanistic, and artistic knowledge and an interdisciplinary approach.

**Own titles** – The RD 822/2021 establishes for the first time a basic regulation of the own titles in the field of LLL. This type of teaching may be taught by permanent training centres or institutes, university foundations, faculties or schools, whether owned or affiliated, and research institutes.

For all LLL courses, there must be at least one professor from the university in which they are taught as responsible for the field and may have co-directors from other universities, professionals of recognized prestige, staff from social and business organizations or entities, or members of other administrations.

The university will guarantee the quality and academic and scientific rigour of the permanent training, being the responsibility of the internal QA system. Specifically, in the case of the MSc permanent training, prior to its approval by the governing bodies, it must have a favourable report from the university's internal QA system.

### 4.4 Students

#### 4.4.1 Advanced Technician Degree

To access the qualification of Advanced Vocational Training (level 2), students must:

- Hold the Bachillerato/Batxillerat certificate (upper secondary education certificate, EQF4) or
- Hold a technician diploma (intermediate vocational training certificate, EQF4) and have completed a preparatory course of 700 hours or
- Have passed an entrance examination to Advanced Vocational Training Cycles or a university entrance examination for students over 25 or
- Hold a university degree or equivalent (at least EQF6, QF-EHEA first cycle).

Bearing in mind that there are different admission paths, the Catalan Government allocate places according to the following criteria:

- Between 60% and 70% of places are set aside for students with a Bachillerato/Batxillerat certificate;

- Between 20% and 30% of places are reserved for students who have passed the preparatory course;
- Between 10% and 20% of places are reserved for students applying for admission through other paths.

### 4.4.2 Bachelor's Degree/Higher Degree in Arts

Students holding any of the following certificates may have access to official Bachelor programmes:

- Bachillerato/Batxillerat certificate or equivalent certificate (EQF4);
- European Baccalaureate Certificate, International Baccalaureate Diploma, or Bachillerato/Batxillerat certificates, diplomas or studies from the education systems of the Member States of the European Union (EU) or from other States that have signed international agreements with Spain that are applicable in this regard based on reciprocity. In this case, students have to meet the academic requirements established in their countries of origin to have access to their universities;
- Advanced Technician certificate (level 1, EQF5; QF-EHEA short cycle) in any specialization, Plastic Arts and Design Advanced Technician certificate, or Sports Advanced Technician certificate or equivalent certificates;
- Certificates, diplomas, or studies equivalent to the Bachillerato/Batxillerat certificate from the education systems of the Member States of the EU or from other States that have signed international agreements with Spain are applicable based on reciprocity. In this case, students do not meet the academic requirements established in their countries of origin to have access to their universities;
- Certificates, diplomas or studies recognized or equivalent to the Bachillerato/Batxillerat certificate of the Spanish education system, obtained or completed in States that are not members of the EU and that have not signed international agreements for the recognition of the Bachillerato/Batxillerat certificate based on reciprocity;
- Official Bachelor (level 2, EQF6; QF-EHEA first cycle) or Master's Degree (level 3, EQF7; QF-EHEA second cycle) or equivalent degree;
- Official Graduate, Technical Architect, Technical Engineer, Bachelor, Architect, Engineer Degrees, corresponding to the previous organization of university education or equivalent degree;
- Students with partial university studies followed in Spain or abroad, or students whose foreign degrees have not been recognized or declared equivalent in Spain but who want to continue studying in a Spanish university (in this case, students have to secure recognition of at least 30 ECTS credits from the relevant university);

- Students who were in a position to have access to university according to the organization of the Spanish education system before the 2013 Act on the Quality Improvement of Education;
- Certificates, diplomas, or qualifications other than those equivalent to the Bachillerato/Batxillerat certificate, the Vocational Training Advanced Technician certificate, the Plastic Arts and Design Advanced Technician certificate, or the Sports Advanced Technician certificate of the Spanish education system, obtained or completed in the EU Member States or in other states that have signed international agreements with Spain that are applicable in this regard based on reciprocity. In such cases, students must meet the academic requirements established in their countries of origin to gain access to their universities;
- People aged over 25, 40 and 45 who do not hold any qualification to gain access to university education by other means.

The Spanish Ministry for Higher Education has regulated the recognition of studies among the different study programmes, establishing the relations between the different higher education diplomas and for the validation of ECTS credits, including Bachelor's Degrees and the Advanced Technician of Advanced Vocational Training.

### 4.4.3 Bachelor's Degree/Bachelor's in Arts

Universities are responsible for the recognition of official studies accrediting the Advanced Technician of Advanced Vocational Training, with the effects of allowing students into study programmes leading to university Bachelor's Degrees:

- A minimum of 30 ECTS and a maximum of 60% of the total Bachelor ECTS will be recognised for students holding an Advanced Technician Degree (level 1) or having completed part of those studies.
- A minimum of 36 ECTS and a maximum of 60% of the total Bachelor ECTS will be recognised for students holding a Higher Degree in Arts (level 2) or having completed part of those studies.
- A minimum of 36 ECTS and a maximum of 60% of the total Higher Degree in Arts ECTS will be recognised for students holding a Bachelor's Degree (level 2) or having completed part of those studies.

The university can recognise unlimited credits for students holding another Bachelor's Degree or having followed part of another study programme, though under no circumstances can the Bachelor's Degree final-year project (6–30 ECTS) be recognised. Moreover, 15% of the total Bachelor's Degree credits can be recognised by accrediting prior professional activity.

### 4.4.4 Master's Degree/Master's Degree in Arts

To apply for admission to Master's programmes, candidates must hold an official university degree or Higher Degree in Arts (EQF6, QF-EHEA first cycle) issued by a Spanish university or by a higher education institution within the European Higher Education Area (EHEA), which qualifies for admission at this level.

The education institutions can recognise unlimited credits for students holding another Master's Degree or having followed part of such studies, though under no circumstances can the Master's thesis (6–30 ECTS) be recognised. Moreover, 15% of the total Master's Degree credits can be recognised by accrediting prior professional activity.

### 4.4.5 PhD programmes

Candidates must hold a Bachelor's Degree or equivalent, plus a Master's Degree or equivalent, provided they have completed at least 300 ECTS credits in the two types of programmes as a whole. Candidates with a previous PhD may also apply.

## 4.5 The QA system

Joining the European Higher Education Area (EHEA) implied various commitments on the part of the university system in Spain, one of which was applying a robust internal and external QA system to provide all higher education courses. The system is based on the revised ESGs adopted by the Ministers responsible for higher education in the European Higher Education Area in May 2015.

### 4.5.1 Catalan Framework for the validation (ex-ante assessment), monitoring, modification and accreditation of recognised degrees (VSMA Framework)

The VSMA applies to all higher educational programmes, degree or master's, and is based on four main aspects:

- **Certification of QA systems:** The development of procedures for certifying QA systems that institutions are implementing needs to become the cornerstone for streamlining procedures associated with the VSMA. This means ongoing progress towards QA at the institutional level needs to be made in line with international-level developments. The aim here is for all universities and higher education institutions in Catalonia to enter the category of self-accrediting institutions.
- **Improvements in process-related document management:** In line with practice in other administration authorities and agencies, the intention is for the new VSMA Framework to use currently available information systems to generate all required reports for QA automatically. Participating stakeholders, such as the university and external experts, can formulate planning (discussion and analysis, enhancements, etc.) by validating or confirming

the indicators included in these reports without the need to produce them themselves.

- **Focus on accreditation:** A new model will undoubtedly need to underpin the role of accreditation within the VSMA framework as it is the procedure that gives the most benefit to institutions and, at the international level, is one of the main tasks being developed by QA agencies in higher education.
- **Cluster benchmarking for use in the design of study programmes:** Benchmarks currently exist according to discipline. At national and international levels, they provide relevant information on the learning outcomes expected of higher education courses that form part of the same cluster. Even though a significant disparity of courses complicates benchmarking, the use of benchmarks can help redefine the present map with coordinates that facilitate the design and position of higher education courses within a qualifications framework that is clear and well-known to users.

The VSMA Framework links together the QA processes (ex-ante assessment, monitoring, modification and accreditation) that take place throughout the life-cycle of a degree course, the aim being to establish coherent links between all of them and promote greater efficiency in process management.

#### 4.5.1.1 Validation

To validate proposals for new recognized degree programmes made by higher education institutions in Catalonia, AQU Catalunya constitutes the subject-specific committees (CEA) that come under the Agency's Institutional and Programme Review Commission (CAIP) and are made up of recognized academics, EHEA experts, professionals and students.

The university itself must request implementation of the principles of mutual trust between institutions, following which the Institutional and Programme Review Commission (CAIP), having established the position of each proposal within the corresponding cluster, endorses the use of this pathway. To make this decision, it will need the following information:

- The name to be given to the programme;
- The cluster or benchmark it will be assigned to;
- The workload in ECTS and courses;
- The institution (faculty/school/institute, or "faculty") responsible for the proposal;
- The rector recommends that, where appropriate, the QA of the programme can be managed directly by the university.

#### 4.5.1.2 Monitoring

The monitoring of recognized degree programmes must enable the institution to evaluate programme delivery, using as evidence, among other things, the

levels of academic performance and other necessary indicators (employment outcomes, resource availability, the satisfaction of students, teaching staff and employers, etc.) in their diagnosis and to draw up enhancement proposals to correct any deviations detected between the programme design and actual delivery.

Each university will, therefore, need to have its own system for monitoring each programme following the guidelines of AQU Catalunya and as stipulated in its own internal QA system, which is the main evidence for the subsequent accreditation of the programme.

#### 4.5.1.3 Modification.

Proposals to modify degree programmes can only be made because of the monitoring process and are to be considered a natural result of this process.

Possible changes to higher education degree courses can be classified according to type:

- **Non-substantial modifications:** minor changes that are improvements to the degree that the university can make because of monitoring. Changes of this type are set out in the monitoring reports and are included in the programme specification when any modification is made.
- **Substantial modifications:** changes to a validated degree that imply alterations to its structure, nature, general objectives or competences. These are classified according to two types:
- **Authorized:** changes that affect the structure of the degree but not its nature, general objectives or competences. Changes of this type can be requested by way of modification;
- **Unauthorized:** substantial changes that affect the nature, general objectives or competences of a validated degree and cannot be requested through programme modification. Such changes can only be made by applying for the validation of a new degree course and discontinuing the degree course that is running.

### 4.5.2 Accreditation of full study programmes

#### 4.5.2.1 Pathway 1

There are different pathways for accreditation of study programmes in Spain. The accreditation of each individual degree programme is known as Pathway 1, and it has been the most used one.

AQU Catalunya is responsible for programme accreditation as the corresponding external QA body. The most used pathway for accreditation is to do it for each individual programme.

AQU Catalunya will exclusively manage this pathway according to the following:

- To streamline and make viable the accreditation procedures, AQU Catalunya will, wherever possible, simultaneously carry out external reviews of all the degree programmes being run in a faculty, with the aim being to:
  - Integrate programme review with institutional review;
  - Promote coherence between degree programmes;
  - Facilitate an overview and strengthen the strategic vision of each faculty;
  - Simplify the external QA process;
  - Bring about economies of scale that reduce the expense of external review.
- Programme review should be as closely aligned as possible with the review of each faculty's internal quality assurance system (IQAS). It should be noted that the faculty becomes the unit of assessment in the external review, with the IQAS integrating the preparation and analysis of monitoring reports for individual degree programmes, which will serve as essential evidence in the external review.
- The external review panels may include international experts. The presence of international experts provides an essential point of reference for comparing programme delivery with experience in other universities in Europe and the rest of the world. This approach will call for all relevant information for external review to be in English.
- Wherever possible, a system for the periodic review and QA of all programmes belonging to the same cluster is to be set up. Reviews will be based on the performance of the indicators for each course and operational aspects of the IQAS. This process of cluster review should facilitate cross-cluster analysis and the improvement and enhancement of all programmes in a given cluster.
- Reviews will be based on the same dimensions and criteria in the current accreditation procedure, following the ESG, with a more in-depth evaluation and assessment of the design of programmes that have joined each cluster (current accreditation dimension 1: "Programme quality").
- The focus will be placed on programmes and/or dimensions that, during the prior analysis of the indicators associated with monitoring, show the need for particular attention (for example, courses with low indicator values)
- In the case of joint international programmes where the coordinator is from a university in Catalonia, priority will be given to external review managed by AQU Catalunya itself.

#### 4.5.2.2 Pathway 2

Pathway 2 enables an institution to accredit certain programmes through accreditation at the international level managed by AQU Catalunya or another agency registered with EQAR.

AQU Catalunya will recognise a favourable review/accreditation if the programme's QA criteria are based on the ESG.

#### 4.5.2.3 Pathway 3

Pathway 3, which offers the possibility of accreditation under the current regulations in Spain, is the pathway that will probably be the most used in the medium term. Its purpose is to reduce the extent of QA by focusing on the IQAS and just several of the programmes run by the faculty.

A faculty can apply for institutional accreditation, which will be valid for 5 years, following the accreditation of at least 50% of its programmes through any of the abovementioned pathways and certification of its IQAS. From now onwards, all of the faculty's courses will be automatically accredited for 5 years.

The renewal of institutional accreditation will no longer be carried out based on each degree but at an institutional level and in terms of the fitness for the purpose of the QA procedures used with the programmes run in the faculty and the programme outcomes. AQU will develop the corresponding methodology for accreditation when the regulatory framework governing this has been definitively set in place (pending endorsement by the Spanish Ministry of Education of the QA protocol).

### 4.6. NQF

The Spanish Qualification Framework for Higher Education is published in the Royal Decree RD 1027/2011, and it is of mandatory compliance (Appendix 8). The RD 96/2014 introduces some modifications due to some changes in the legislative framework for higher education in Spain. This framework in Spain is known as MECES (Marco Español de Calificaciones para la Educación Superior).

It has 4 levels based on the Dublin Descriptors, developed by the Joint Quality Initiative (an informal network of Ministries and QA Agencies from Austria, Belgium, Denmark, Germany, Ireland, Italy, The Netherlands, Norway, Spain, Sweden, Switzerland and the United Kingdom). They consist of the cycle descriptors (or "level descriptors") presented in 2003 and adopted in 2005 as the European Higher Education Area Qualifications Framework.

MECES refers to ECTS expectations and is focused on learning outcomes and competence levels.

| LEVELS | | QUALIFICATIONS |
|---|---|---|
| **1** | **Advanced Technician** | - Advanced Technician in Vocational Training<br>- Advanced Technician in Plastic Arts and Design<br>- Advanced Technician in Sports Education |

| | | |
|---|---|---|
| **2** | **Bachelor's Degree** | - University Bachelor's Degree<br>- Bachelor's Degree in Arts |
| **3** | **Master's Degree** | - University Master's Degree<br>- Master's Degree in Arts<br>- Bachelor's Degree of at least 300 ECTS credits, including at least 60 ECTS credits at the Master's level |
| **4** | **Doctoral Degree** | - Doctoral Degree (PhD) |

Specifications for each level are as follows:

**Level 1 (Advanced Technician)** of the Spanish Qualifications Framework for Higher Education corresponds to level 5 of the European Qualifications Framework (EQF) and to the short cycle level in the Qualifications Framework of the European Higher Education Area (QF-EHEA).

| **CHE-QF LEVEL 1 CRITERIA FROM MECES (REORGANISED)** | |
|---|---|
| **Aim** | **Graduates at this level will have broad knowledge and skills for highly skilled work and/or further learning.** |
| **Knowledge** | Graduates at this level will:<br>- have demonstrated expertise in a professional or study area with a critical understanding of the integration and transfer of knowledge as well as the development of creativity, initiative and entrepreneurship. |
| **Skills** | Graduates at this level will:<br>- possess the ability to analyse information needed to evaluate and respond to expected and unexpected situations by seeking informed, creative and innovative solutions within a field of study or profession;<br>- be able to communicate their knowledge, ideas, skills, and activities in professional contexts to peers, supervisors, clients, and persons responsible for them. |
| **Competences** | Graduates at this level will:<br>- implement and integrate their artistic, technological or sports knowledge in the definition and development of working procedures in the artistic or other workplace, independently and with responsibility for coordinating and supervising technical work;<br>- possess the strategies necessary to advance their training independently with the maturity to innovate in implementation and progress in learning and training to higher levels. |

**Level 2 (Bachelor's Degree)** of the Spanish Qualifications Framework for Higher Education corresponds to level 6 of the European Qualifications Framework (EQF) and to the first cycle level in the Qualifications Framework of the European Higher Education Area (QF-EHEA).

| CHE-QF LEVEL 2 CRITERIA FROM MECES (REORGANISED) | |
|---|---|
| **Aim** | **Graduates at this level will have broad knowledge and skills for highly skilled work and/or further learning.** |
| **Knowledge** | Graduates at this level will:<br>- have acquired advanced knowledge and demonstrated an understanding of the theoretical and practical aspects and methodology of work in their field of study with a depth that reaches the forefront of knowledge. |
| **Skills** | Graduates at this level will:<br>- be able, through developed arguments or procedures and supported by them, to apply their knowledge, understanding and skills in the troubleshooting of complex or professional and specialist work environments that require the use of creative and innovative ideas;<br>- have the ability to gather and interpret data and information on which to base their conclusions, including, where necessary and appropriate, the reflection on social, scientific or ethical issues within their field of study;<br>- be able to cope with complex situations or those that require developing new solutions in both the academic and occupational or professional aspects of their field of study. |
| **Competences** | Graduates at this level will:<br>- have the ability to communicate to all audiences (specialist or not) clearly and precisely: knowledge, methodologies, ideas, problems and solutions in the area of their field of study;<br>- be able to identify their own training needs in their field of study and work or professional environment and to organize their own learning with a high degree of autonomy in all kinds of contexts (structured or not). |

**Level 3 (Master's Degree)** of the Spanish Qualifications Framework for Higher Education corresponds to level 7 of the European Qualifications Framework (EQF) and to the second cycle level in the Qualifications Framework of the European Higher Education Area (QF-EHEA).

| CHE-QF LEVEL 3 CRITERIA FROM MECES (REORGANISED) | |
|---|---|
| **Aim** | **Graduates at this level will have specialist knowledge and skills for research and/or professional practice and/or further learning.** |
| **Knowledge** | Graduates at this level will have acquired advanced knowledge and demonstrated, in the context of scientific and technological research or a highly specialist field, a detailed and informed understanding of the theoretical and practical aspects of the methodology and work in one or more fields of study. |
| **Skills** | Graduates at this level will:<br>- be able to apply and integrate their knowledge and understanding of this with sound science and problem-solving abilities in new and imprecisely defined environments, including multidisciplinary contexts for both researchers and highly skilled professionals;<br>- be able to evaluate and select appropriate scientific theory and the precise methodology from their fields of study to formulate judgements with incomplete or limited information, including, where necessary and appropriate, a reflection on the social and ethical responsibilities linked to the solution proposed in each case;<br>- be able to predict and control the evolution of complex situations by developing new and innovative working methodologies tailored to a specific scientific, technological or professional research field, usually multidisciplinary, in which the activity occurs. |
| **Competences** | Graduates at this level will:<br>- know how to clearly and unambiguously convey to a specialist or non-specialist audience results from science and technology or the scope of advanced innovation research and the most important results that are based on fundamentals;<br>- have developed enough autonomy to participate in research projects and scientific and technological collaborations within their scope, in interdisciplinary contexts and, where appropriate, with a high component of knowledge transfer;<br>- be able to take responsibility for their professional development and specialization in one or more fields of study. |

**Level 4 (Doctoral Degree)** of the Spanish Qualifications Framework for Higher Education corresponds to **level 8** of the European Qualifications Framework (EQF) and to the **third cycle level** in the Qualifications Framework of the European Higher Education Area (QF-EHEA).

| CHE-QF LEVEL 4 CRITERIA FROM MECES (REORGANISED) | |
|---|---|
| **Aim** | **Graduates at this level will have a systematic and critical understanding of a complex field of learning and specialist research skills to advance learning and/or professional practice.** |
| **Knowledge** | Graduates at this level will:<br>- have acquired advanced knowledge in the frontiers of information and, in the context of internationally recognized scientific research, have demonstrated a thorough, detailed understanding based on the theoretical and practical aspects of scientific methodology in one or more research areas. |
| **Skills** | Graduates at this level will:<br>- have shown that they can design a research project with which to carry out a critical analysis and evaluation of imprecise situations where they apply their contributions, knowledge and methodology in a synthesis of new and complex ideas that produce a deeper understanding of the research context in which they work;<br>- have made an original and significant contribution to scientific research in their field of knowledge, and this contribution has been recognized as such by the international scientific community;<br>- have demonstrated in their specific scientific context that they can make progress in cultural, social, and technological aspects and encourage innovation in all areas of a knowledge-based society. |
| **Competences** | Graduates at this level will:<br>- have shown that they can develop their research activities with social responsibility and scientific integrity;<br>- have developed sufficient autonomy to manage and lead teams and innovative research projects and scientific, national or international collaborations within their scope, in multidisciplinary contexts and, where appropriate, with a high component of knowledge transfer;<br>- have justified their ability to participate in scientific discussions that take place internationally in the field of knowledge and to disseminate the results of their research to all kinds of audiences. |

### 4.7 MCs implementation in HE

The implementation of MCs in Spain is moving very slowly. There is a common agreement on the importance of development, and there have been some documents reflecting on the challenges for its implementation, but there has hardly been any experience. The lack of a clear definition and framework for the development of MCs in Spain is one of the main reasons for this slow progress in the country.

Short Learning Programmes (SLPs) are one of the most effective responses to these challenges. SLPs play a crucial role in bridging the gap between education and occupational training, and they promote lifelong learning. SLPs should be linked to micro-credentials (MCs), an assessment of a student's learning outcomes following an SLP. In September 2020, the Spanish National Agency for Quality Assessment and Accreditation (ANECA) published a Statement on SLPs and their recognition to provide quality assurance (QA) advice and support to Spanish universities. The Statement addresses all types of higher education delivery, including face-to-face, blended, or fully online, and QA procedures irrespective of the institution or programme focus. It emphasises the need for flexible QA tools to ensure the effectiveness of the course and the quality of academic resources and teaching staff. The Statement also underscores the importance of QA agencies in setting guidelines to assist universities in maintaining the quality of SLPs. It addresses the recognition of credentials associated with SLPs. The management of Student Exchange Programmes (SEPs) within the International Qualifications System (IQAS) of Higher Education Institutions (HEIs) provides an immediate framework for quality management at the institutional level. This includes compliance with internal QA mechanisms, delivery of content by qualified academic staff, technical and communication support, fair assessment systems, secure identification of students, allocation of ECTS credits, clear assignment of SEPs to specific levels within the National Qualifications Framework (NQF), identification of the awarding body for the credential, and the nature and location of the register or archive where the credential and student data are kept.

The concept of MCs among the universities that are currently offering them varies enormously from one to another. Both in the terminology used (micro-title, challenge and micro-module, own title, etc.), as well as in the MECES level in which they are framed (Degree, Master), in the dedication they imply (formulated in terms of minimum and maximum number of ECTS that integrates it) or in the methods of evaluation of the learning results (systems specific to the official titles in which they are integrated, or specific modalities such as carrying out projects, reality evaluation or design methodologies thinking). ANECA has recently published a Study on QA in the Alliances of European Universities, European Degrees and MCs in the Spanish University System. The study is based on the received responses to a survey sent to all the universities in Spain. Responses from 39 universities were received. Of these 39, only 12 % declare that they offer MCs. The main problem with this result is that each university refers to MCs as

different things, which makes the results very untrustworthy to the authors of this report. Responses were collected from 39 universities (47% of the total), 30 from public universities (60% of the group) and 9 from private universities (27% of the group). 69% of the universities that responded to the question agreed with the definition of MC given in the Report. However, 28% consider that it is a too broad definition, which should include more data about the dedication (measured in hours or, where appropriate, in credits), its reference to the qualification's framework, its format, etc. Of special interest to ANECA was knowing the degree of MC implementation in the Spanish university system. In this sense, only 12% affirm that they currently grant MCs, distributing an equal percentage of those that grant them concerning modules of official title subjects (6%) and those that grant MCs made up of their own and independent training experiences (6% ). For their part, 69% of the universities that responded to the questionnaire stated that they do not currently offer MCs but are working on designing a strategy in anticipation of its implementation. Only 19% of the universities participating in the study state that they currently do not offer MCs and do not plan to implement them. In general, it can be seen that currently, the MCs offered are aimed primarily at Bachelor's and Master's students, requiring the same access requirements as for admission to an official Spanish degree.

### 4.7.1 MCs legal framework

The main reference to MCs appears in the RD 822/2021 (Article 37: Permanent formation), in the part that develops permanent training as the form of life-long learning (LLL): *"Likewise, universities may provide their own courses of less than 15 ECTS that require or do not require a previous university degree, in the form of MCs or micro-modules, which allow certifying learning results linked to short-term training activities".* These teachings cannot be confused with the qualifications offered by the Vocational Training centres at the Intermediate Level or Higher Level. A new Organic Law for the HE was published in March 2023 in the Art. 7.1 the MCs as a lifelong learning modality: *"Lifelong learning may be developed through different teaching modalities, including MCs, micro-modules or other short-term programmes".*

### 4.7.2 MCs certification

Within the framework of the Conference of Rectors of Spanish Universities (CRUE) it was agreed that the certification of micro-credentials in Spain will be carried out through EuroPASS. The sections that are expected to be incorporated into EuroPASS in relation to the certification of micro- credentials are:

- Naming of the micro-credential;
- University that teaches the university micro-credential;
- Theoretical workload in ECTS and hours;

- Practical workload in ECTS and hours;
- Start and end date of the training activity;
- Teaching modality (face-to-face, virtual, hybrid);
- Level of learning experience: qualifications frameworks: according to the European Qualifications Framework (EQF) or its equivalents with the Spanish Qualifications Framework for Lifelong Learning (CEFR) and the Spanish Qualifications Framework for Higher Education (CEFR);
- Learning outcomes and type of achievement (a learning achievement describes the acquisition of one or more learning outcomes): knowledge, skills and competences;
- Assessment (type of assessment tests that validate learning outcomes: application of a skill, presentation of a video, portfolio);
- University issuing the certification: university name, mandatory legal identifier and country or region of dispatch;
- Date of issue;
- Identification of the person receiving the certification.

### 4.7.3 Principles for the MCs credit system

The publication of RD 822/2021 established a maximum of 15 ECTS for MCs, limiting what the AQU Catalunya guide had established before.

### 4.7.4 QA and MCs

The only complete experience for implementing MCs in Spain has been done in Catalonia, conducted in collaboration with the Autonomous Government of Catalonia, the Catalan University QA Agency (AQU Catalunya), and the 12 universities (public and private) in the Catalan university system. This experience was developed before the RD 822/2021 publication and the Organic Law 2/2023 for the HE.

The Government of Catalonia participated in the project through the Secretariat for Universities and Research, the Catalan Public Employment Service, and the Catalan Continuous Training Consortium. Consequently, all government actors responsible for HEIs, the promotion of work, and LLL were involved in pioneering ways in the region.

In this Project, SLPs have been defined according to the following key features:

- Provider: universities
- At level 6 or 7 under the European Qualifications Framework
- Credit load: between 4 and 30 ECTS
- ECTS credits earned are recognisable in accredited programmes
- They meet labour market needs
- Target public: non-traditional students

Since legislation in Spain does not provide SLPs within institutional accreditation, a methodology for programme-by-programme accreditation has been developed. To prepare for this ex-ante evaluation process, the main references considered are the ESGs and the Guide to ex-ante accreditation of official university degrees. Alignment with the ESGs ensures the future recognition of programmes accredited by the various European HEIs and the possibility that they will later be registered in the Database of External QA Results (DEQAR) compiled by the European QA Register for Higher Education (EQAR). With these conditions, a guide was designed for (ex-ante) accreditation of SLPs and was later approved by the Institutional and Programme Assessment Committee (CAIP, from its acronym in Catalan) of AQU Catalunya.

In particular, the dimensions to be added for SPL certification were as follows:

- **Description of the programme (linked to ESG 1.2.: "Design and approval of programmes").** The following must be provided: the details of the applicant institution, the name of the SLP, the link of the programme to the vocational speciality (professional group and sphere according to a regulatory classification), the total duration of the programme in ECTS, and the teaching format (face-to-face, blended, or distance learning).
- **Justification (linked to ESG 1.2.: "Design and approval of programmes").** Only programmes that are needed by the labour market are accepted. It is necessary to describe the identified training needs, the target population justifying the need, the analysis carried out, and the expected short- and medium-term employment prospects for the students trained.
- **Aim and learning outcomes (linked to ESG 1.2.: "Design and approval of programmes").** The proposal must include the correctly defined training goal according to the National Qualifications Framework linked to the European Qualifications Framework.
- **Student access, admission, and student support (linked to ESG 1.4.).** "Student admission, progression, recognition and certification"):
- **Access pathways are determined according to the NQF level applicable to the training activity.** To access any degree-level training study programmes, students must hold an official BSc degree (EQF 6), an MSc degree (EQF 7), or an advanced technician diploma (EQF 5) or equivalent. To access MSc-level training study programmes, candidates must hold an official BSc degree (EQF 6) or a university MSc degree (EQF 7) or equivalent.
- **Planning (linked to ESG 1.3.: "Student-centred learning, teaching and assessment").** The institution must define the structure of the programme curriculum. The scheduling and distribution of the programme modules in relation to the ECTS involved must enable students to achieve the training goal set.

- **Teaching and support staff (linked to ESG 1.5.: "Teaching staff").** The study programme must have sufficient and appropriate teaching and support staff in line with the nature of the study programme and the number of students. They must have the experience and training needed to achieve the goals of the training activity and be sufficient in the number and time dedicated to covering the main academic tasks of module delivery and assessment, student-teacher interaction, management of the training activity, etc.
- **Material resources and services (linked to ESG 1.6.: "Learning resources and student support").** The material resources and services available for the training activity must be suitable for the training goals and the teaching/learning methods envisaged. The following must be specified: the training positions available on each module, the equipment for each training area, and the resources for the distance or blended format, if necessary. The infrastructure available at the training centre and business premises must ensure universal accessibility for people with disabilities and consider the gender perspective.
- **Internal QA system (linked to ESG 1.1.: "Policy for QA").** Consistent with the trust placed by society in the autonomous management of institutions and transparency demanded within the framework of the EHEA, institutions must ensure their actions are appropriately steered to achieve the objectives associated with the programmes and courses they deliver. Institutions consequently need policies and internal QA systems that have a formal status and are publicly available.

The initial assumptions of the pilot were as follows:

- SLPs are a type of courses (units, modules, etc.) in a specific subject that focus on specific needs of society and that can form part of larger degrees;
- An MC is proof of the learning outcomes that a student has acquired after completing an SLP;
- SLPs promote continuous professional development and lifelong learning.
- SLPs should belong to the Catalan Framework of Qualifications for Higher Education (levels 2 and 3) and the National Catalogue of Professional Qualifications (levels 4 and 5);
- SLP teaching load should be between 4 and 30 ECTS;
- SLPs must be recognised by ECTS in official qualifications;
- SLP suppliers are Catalan universities;
- SLPs must respond to the needs of the labour market;
- SLPs' target audience are non-traditional students.
- When designing these programmes, the following must be considered:
- The description of the programme;
- The justification for its creation;

- The internal QA system (IQAS);
- The objective and learning outcomes;
- Student access and admission, and student support;
- Planning;
- Teaching and support staff;
- Material resources and services;
- Expected outcomes.

The assessment process consisted of a prior evaluation by an *ad hoc* committee, which submits a proposal report to the specific evaluation commissions. After having analysed the allegations made, the evaluation commissions issue the final report in terms of a favourable or unfavourable *ex-ante* assessment. The university may lodge an appeal against this decision before the AQU Catalunya Appeals Committee within one month of its notification. Both ad hoc and evaluation commissions are created by AQU Catalunya.

All members of the *ad hoc* evaluation committee for SLP proposals are appointed by the president of the Institutional and Programme Evaluation Commission (CAIP). As a general rule, the *ad hoc* evaluation committee for SLP proposals has the following composition:

- The president, preferably a professor, is appointed from among people with recognized academic merit;
- At least one academic member or an academic member of the knowledge branch of the programme;
- At least two people of recognized professional merit;
- At least one student from the SLP field of knowledge;
- A methodologist with a voice but without a vote, preferably appointed from among the technical staff of AQU Catalunya.

To verify bachelor's and master's degrees, CAIP already established five specific evaluation commissions (CEA) of a permanent nature corresponding to the five branches of knowledge: Arts and Humanities, Social and Legal Sciences, Sciences, Health Sciences, and Engineering and Architecture. The CEAs are responsible for evaluating programmes and institutions within the VSMA Framework and, therefore, are responsible for the verification, monitoring, modification and accreditation process. Its main function is to assess the suitability and adequacy of the new degree proposal made by the university institutions so that the Universities Council can verify them.

The Appeals Committee is responsible for resolving the appeals presented in the evaluation processes. To resolve appeals, the Commission must have reports from experts in the area or areas of the PCDs that bring the appeal, preferably from outside the Catalan university system.

All assessment reports were published on the AQU Catalunya portal (http://estudis.aqu.cat/informes) and later in the Database on External QA Results (DEQAR). When the assessed training activity obtains a favourable ex-ante accreditation report, AQU Catalunya will issue a quality label with a unique number that is valid for six years. Once the programme has been accredited, it must be reviewed at least every six years according to the same dimensions. Follow-up is mandatory but is an internal process for the institution.

The entire process proposed by the guidelines was validated in 2020 by assessing different programmes. All evaluated programmes were focused on the digital sector. Collaborators in the assessment were the Secretariat for Universities and Research, the Catalan Public Employment Service (SOC) and the Consortium for Lifelong Learning in Catalonia. It also received support from the Barcelona Digital Talent Alliance, which includes, among others, Mobile World Capital, Barcelona.

The project assessed seven SLPs linked to the field of information and communication technologies taught in different Catalan universities:

- Android mobile developer;
- Cloud Deployer;
- CRM consultant;
- Data Scientist;
- Frontal developer;
- Java back-end web developer;
- Open-source back-end web developer.

Nine universities belonging to the Catalan university system participated in this pilot. Each programme in different institutions was the same in terms of contents but could be different in implementation, and all were evaluated separately. This gave a total of 34 evaluated programmes (**Figure 6**).

| *Short learning programme* | Universities | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | UAB | UdG | UdL | UOC | UPC | UPF | URL | URV | UVic |
| Java Back End Web Developer | ● | | | | | ● | ● | | |
| Open Source Back End Web Developer | ● | | | | | | ● | | ● |
| Front End Developer | ● | | ● | ● | ● | ● | ● | ● | ● |
| Android Mobile Developer | ● | | ● | ● | ● | | ● | ● | ● |
| Consultor CRM | ● | ● | | | ● | | | | |
| Cloud Deployer | ● | | | ● | ● | ● | ● | | |
| Data Scientist | ● | ● | | ● | | ● | ● | | |
| TOTAL | 7 | 2 | 2 | 4 | 4 | 4 | 6 | 2 | 3 |

**Figure 6. List of SLPs in the field of ICTs assessed during 2020 (UAB: Universitat Autònoma de Barcelona; UdG: Universitat de Girona, UdL: Universitat de Lleida, UOC: Universitat Oberta de Catalunya, UPC: Universitat Politècnica de Catalunya, UPF: Universitat Pompeu Fabra; URV Universitat Rovira i Virgili; UVIC-UCC: Universitat de Vic).**

According to Marti Casadesus, Esther Huertas and Carme Edo[27], who analysed the results of the experience, the main conclusions of the 2020 assessment were:

**Pros:**

- SLPs are a very good tool for improving training with a very close link to a particular professional sector;
- Cooperation between professional bodies and universities is a crucial strength;
- Other sectors are showing interest in the model proposed;
- All participants considered it very useful to accredit the SLPs through an agency registered at the EQAR;
- The proposed dimensions are well seen, especially the third, "Objective and learning outcomes";
- There is full alignment with international standards.

**Cons:**

- The excessive bureaucracy involved in an individual programme accreditation procedure;
- The method of access to SLPs is detected as a source of conflict. If, according to the standards designed, students are required to meet the lower level of education (for example, they cannot access an EQF level 7 or Master's level programme if they do not have EQF level 6), this is a constraint that hinders access by professionals in the sector in need of reskilling and who do not hold prior university degrees;
- There are also discrepancies about standard 6, "Teaching and supporting staff", specifically in the definition of the academic-professional balance in the study programmes provided. Thus, while universities have organised programmes with a strong academic emphasis, taught mainly by full-time university doctor lecturers and researchers, the professional sector calls for greater involvement from professionals in the sector.

### 4.7.5 MCs and NQF

The information on the corresponding level in the NQF for an MC is compulsory information that the provider of the MC should detail in the MC description..

27 Casadesus, M., Huertas, E., & Edo, C. (2023). A European perspective on accrediting short learning programs: First experiences are out. Industry and Higher Education, 37(3), 433–442. https://doi.org/10.1177/09504222221132129

# 5. GUIDELINES FOR THE MCs IMPLEMENTATION IN HE

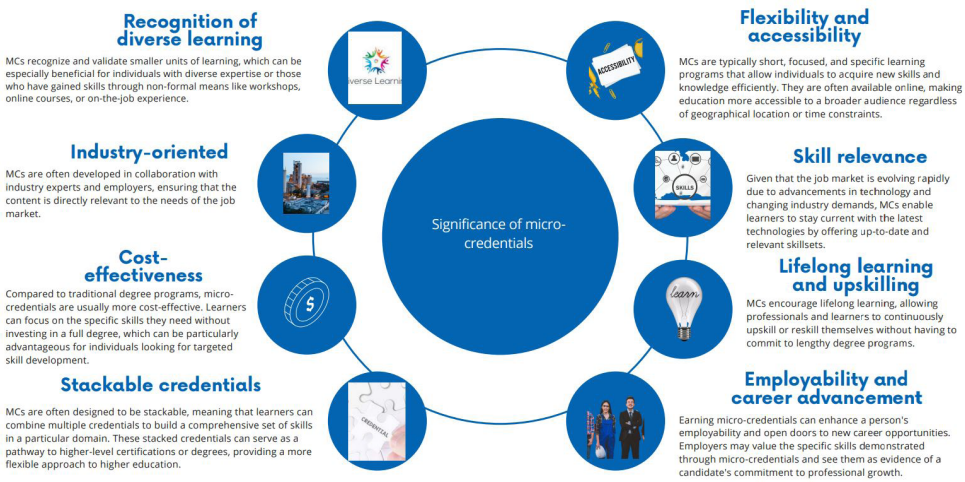
## Micro-credentials: what, why, how?

There are numerous definitions of MCs; however, these Guidelines rely specifically on the definition proposed by the European Commission, along with the ministries and network involved in the MICROBOL project:

"MCs means the record of the learning outcomes that a learner has acquired following a small volume of learning. These learning outcomes have been assessed against transparent and clearly defined standards. Courses leading to MCs are designed to provide the learner with specific knowledge, skills, and competences that respond to societal, personal, cultural, or labour market needs. MCs are owned by the learner, can be shared and are portable. They may be standalone or combined into larger credentials. They are underpinned by QA following agreed standards in the relevant sector or area of activity[28]."

The other definition focuses on MCs as a course or programme in HE and on the application of Bologna tools to foster integration in the EHEA.

"An MC is a small volume of learning certified by a credential. In the EHEA context, it can be offered by HEIs or recognized by them using recognition procedures in line with the Lisbon Recognition Convention or recognition of prior learning, where applicable. An MC is designed to provide the learner with specific knowledge, skills or competences that respond to societal, personal, cultural, or labour market needs. MCs have explicitly defined learning outcomes at a QF-EHEA/NQF level, an indication of associated workload in ECTS credits, assessment methods and criteria, and are subject to QA in line with the ESG[29]."




28 European Commission (2021). Proposal for a council recommendation on a European approach to micro-credentials for lifelong learning and employability. European Commission, Brussels. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0770

29 Lantero, L., Finocchietti, C., & Petrucci, E. (2021). Micro-credentials and Bologna key commitments: State of play in the European higher education area. https://microcredentials.eu/wp-content/uploads/sites/20/2021/02/Microbol_State-of-play-of-MCs-in-the-EHEA.pdf

MCs are important for several reasons, as they offer unique advantages in the modern education and workforce landscape:

MCs are typically offered by educational institutions, training providers, and organizations, and they are organized and offered in various ways. Here are some key remarks on how MCs are organised and delivered.

- **Online platforms:** many MCs are offered through online learning platforms, which collaborate with HEIs or subject matter experts to design and deliver MC programmes. Learners can access the courses, complete the required assessments or projects, and earn the MCs entirely online.
- **Higher education institutions:** universities, colleges, and vocational schools may offer MCs as part of their continuing education or professional development programmes. These MCs could be offered online, onsite, or hybrid, depending on the MC provider. These institutions design short courses or workshops that focus on specific skills or competences and award MCs upon successful completion.
- **Employers and organizations:** some companies create their MCs to address specific skill gaps within their workforce. These in-house MCs are tailored to the organization's needs and can be earned by employees through training and assessments.
- **Industry associations:** professional or industry associations may develop MCs to meet the needs of their members. These credentials often focus on specialized skills or knowledge relevant to the particular industry and are intended to enhance professionals' expertise.
- **Collaborative models:** organizations can collaborate with HEIs to design and offer micro-credentials. For example, a tech company might team up with a university to create MCs in software development.
- **Stackable credentials:** MCs are sometimes designed to be stackable, meaning learners can earn multiple MCs that can later be combined to form a larger certification or degree, providing a flexible and customizable learning pathway.
- **Competency-based assessment:** MCs often emphasize competency-based assessment rather than traditional exams. Learners may need to complete projects, practical demonstrations, or real-world tasks to showcase their abilities.
- **Digital badges or certificates**: MCs are typically represented by digital badges or certificates that learners can display on their resumes, LinkedIn profiles, or other online platforms to demonstrate their achievements.
- **Self-paced learning:** many MCs are offered in a self-paced format, allowing learners to start and complete the courses at their convenience..

### 5.1 Building upon lessons from Serbia, Germany, Austria, and Spain

Before discussing the guidelines, it is important to set the stage by highlighting the roles of each of the stakeholders involved in the implementation of MCs:

| | | |
|---|---|---|
| 1 | **Higher educational institutions** | The administration makes decisions about the adoption of MCs, allocates resources, and sets policies.<br>Faculty designs, develops, and delivers MC programmes. |
| 2 | **Students** | Provide feedback for the successful implementation of MC programmes as end-users of MCs. |
| 3 | **Industry and employers** | Industry associations representing specific industries participate in shaping the content and requirements of MCs to meet industry needs. |
| 4 | **Accreditation bodies** | Responsible for evaluating and endorsing micro-credentials. Their endorsement can enhance the credibility of micro-credentials. |
| 5 | **Technology providers** | EdTech companies provide platforms and tools for designing, delivering, and managing micro-credentials. |
| 6 | **Government and policy makers** | Regulatory bodies and policy formulation |

*5.1. Analysis of the MCs implementation practice in Project partner countries, making a list of examples of good practice*

As the higher education landscape continues to evolve, MCs have emerged as a dynamic and innovative approach to learning, offering new opportunities for learners and workers to enhance their skills and knowledge in specific areas. In this rapidly changing educational environment, HEIs need to embrace the concept of MCs and effectively implement them. These guidelines would serve as a roadmap for implementing MCs in HEIs, empowering them to navigate the intricacies of MC implementation, leverage their potential, and adapt to the evolving demands of modern education. Taking lessons from the partner countries, the guidelines build upon the EU principles for the design and issuance of MCs, namely: (i) QA, (ii) transparency, (iii) relevance, (iv) valid assessment, (v) learning pathways, (vi) recognition, (vii) portability, (viii) learner-redness, (ix) authenticity, and (x) information and guidance (EC-JRC, 2020).

It is not surprising that all Partner countries share many similarities regarding their HE structure and organisation – after all, they all belong to the QF-EHEA and share the same ESG principles. However, there are some differences regard-

ing MC implantation in HE. First, Serbia is the only one among the four partner countries that hasn't yet developed MCs. Second, even if MCs exist in Austria, Germany, and Spain, their HE implementation significantly differs. For example, it seems that in Catalonia, but not in Spain, the MCs QA system has made the most progress because of the efforts of the Catalan University QA Agency. In Austria, the MCs QA system is under development and, so far, defined only in the form of the Ministry of Education Position paper, and the statements of the Austrian working group on MCs. It is interesting to note that according to the working group, MCs should not be assigned to the NQF due to their low workload, which directly collides with the European Commission's position regarding this issue. Finally, the German HE market is still quite reserved in this field, at least in the domain of public universities. Even if the German Rectors' Conference generally recommends that HEIs proactively address the issue of MCs, their possible fields of application are still very limited. In addition, the German Rectors' Conference does not see any added value in the integration of micro-degrees into the regular academic programmes, while the Federal Council took a stand that the MCs and micro-degrees should not lead to weakening or replacing initial education, HE, vocational education and training or traditional qualifications. Therefore, except for Catalonia, it could be said that MCs implementation practices in Partner countries in general share similar weaknesses, such as lack of appropriate legal framework, lack of MCs initiative in public HE as compared to the private HEIs, or lack of MCs final assessment, with many questions still to be unanswered, such as the matter on the QA bodies and procedures, the logic behind the ECTS assignment, or link to the NQFs. The list of MC examples of good practices in **Partner countries is given in Appendix 9**..

*5.2. Analysis of the legal framework in Project partner countries, making a proposal for the best legislative model*

| **Legal, regulatoy and institutional framework** | | | | |
|---|---|---|---|---|
| **Elements** | **Serbia** | **Austria** | **Spain** | **Germany** |
| Legal framework specific to MCs | Unavailable | Regulated by HE laws | Integrated in LLL education | Integrated in HE laws& continuing education |
| HE laws | ✓ | ✓ | ✓ | ✓ |
| HE Institutional frameworks | ✓ | ✓ | ✓ | ✓ |
| HE Quality assurance and accreditation bodies | ✓ | ✓ | ✓ | ✓ |
| Professional agencies or national councils relevant to HE | ✓ | ✓ | ✓ | ✓ |

There are various national laws governing higher education programmes within the EU. Examples include the Law on Higher Education (Serbia), Universities Act 2002 (Austria), Länder laws (Germany), Organic Law of Universities (Spain):

While these laws serve as regulatory frameworks for higher education programmes, they appear silent on how MCs can be incorporated into higher education. This report recommends policy improvement and funding incentives as potential ways to integrate MCs into HE laws in the EU.

**Guidelines for the best MC legislative model**

Policymakers and decision-makers should consult with all relevant stakeholders to develop enabling frameworks, regulations or legislation to integrate MCs into existing HE systems. Key criteria include:

- A-fit-for-purpose national or system-level policy initiative to create a commonly agreed definition of MCs, standard elements for describing a micro-credential, and principles for designing and issuing micro-credentials. For example, the European Common MCs Framework.
- A review of the EQF/NQF to accommodate MCs.
- A-fit-for-purpose country or system-level policy initiative enabling the recognition of prior learning, including leaner's right to request the validation and/or credit-rating of previously acquired formal or non-formal learning for recognition to access employment or further education (ETF, 2022).

The policy basis for incorporating MCs into HE laws could be tied to the special funding opportunities. Given that funding is a key motivation. HEIs, national governments, and the European Commission could incorporate MCs in HE laws by incentivising universities to offer MCs provided stipulated funder policies and conditions are adhered to. For example, in 2019, the New Zealand Tertiary Education Commission introduced a public funding system for MCs, meaning that all New Zealand HEIs are eligible to apply for MC funding to help them deliver MC programmes (Beirne et al., 2020). Funding agencies will need to consider deploying appropriate resources to facilitate MC implementation. The funding agencies will need to lead in promoting the implementation of MCs in HE through funding mechanisms.

Finally, taking a cue from the new Organic Law for the University System in Spain, which recognizes MCs as a modality of developing life-long learning, MCs could be integrated within the lifelong learning framework..

*5.3. Analysis of the MCs certification and credit evaluation practice in Project partner countries, proposing the best model of certification and credit evaluation*

Within the EU, the Implementation of MCs in higher education institutions has become a focal point of discussion, prompting policymakers, educators, and stakeholders to explore the legal and institutional frameworks necessary for their

seamless implementation. The European Union's commitment to fostering innovation, collaboration, and excellence in higher education has laid the foundation for a comprehensive framework designed to ensure the quality, credibility, and recognition of these emerging educational credentials. The frameworks ensure quality, credibility, and consistency while safeguarding the interests of learners and promoting the recognition and value of MCs in HEIs and the labour market.

**Guidelines for the best model of MC certification**

MCs certificate and certificate supplement must contain at least the following elements:identifikacija učenika;

- Identification of the learner;
- Title of the micro-credential;
- Type of MC (part of accredited curricula, further education, ...);
- Identification of the provider (company/institution name, address, ..., incl. status of the provider, e.g., public institution, private provider, ...);
- Accreditation status of the provider (institutional accreditation, curriculum acc., course acc., no acc.);
- Date of issuing;
- Workload expressed in ECTS;
- EQF and/or NQFs level (and study cycle, if applicable) of the learning experience;
- Learning outcomes;
- Prerequisites needed to enrol in the learning activity;
- Form of participation in the learning activity (online, onsite or blended, volunteering, work experience);
- Type of assessment and grading system (testing, application of a skill, portfolio, recognition of prior learning, etc.);
- Integration/stackability options (standalone, independent micro-credential/ integrated, stackable towards another credential);
- Further information.

**Guidelines for the best model of MCs credit evaluation**

There is a consensus that the ECTS number helps to facilitate the recognition of micro-credentials, especially when the learning outcomes might be used as prerequisites to access higher education. In line with the European Approach to Micro-credentials, the MICROGUIDE project recommends that MCs should be measured in ECTS irrespective of the training provider for recognition.

The ECTS Users' Guide defines ECTS as "the volume of learning based on the defined learning outcomes and their associated workload." For illustration, 60 ECTS

credits are assigned to the learning outcomes and associated workload of a full-time academic year or its equivalent, and, following this analogy, one credit corresponds to 25 to 30 hours of work. The concept of notional hours could be used to estimate credits. For context, notional hours represent the estimated amount of time an average student is expected to dedicate to various learning activities to achieve the learning outcomes of a particular course.

Currently, there is no unified position on the ECTS range of MCs: the range of 1–30 ECTS is most often mentioned in reports and literature. The results of MicroGuide strongly suggest that the suitable ECTS allocation for MCs should range from 1 to 15 ECTS credits on the basis of the following key points:

**Relation to MCs realisation**

MCs are typically designed for employed individuals who cannot attend classes daily for extended periods. For example, if 1 ECTS corresponds to 30 hours of work, then 15 ECTS corresponds to a total of 450 hours. This total work includes both teaching and self-study (e.g., exam preparation). Assuming a teaching-to-learning ratio of 70:30 (commonly used in practice), the teaching component of such MCs would amount to 315 hours. This equates to approximately 8 weeks of classes, with 8 hours of instruction daily from Monday to Friday, reflecting a 40-hour workweek.

A person who is employed cannot fulfil these requirements – it is rational that on weekdays, they will be able to set aside no more than 2 hours for online teaching, and on weekends, no more than 4–6 hours of online/onsite teaching daily, which weekly makes no more of about 20 hours. In practice, the teaching part of some 15 ECTS MCs accounts for about 16 weeks (i.e., 4 months). According to the same logic, if another 7 weeks of self-study are added, it would take about 6 months to complete such MCs successfully. Moreover, the calculation given here is an idealized case that does not consider holidays, vacations, possible illnesses, etc., which increases the actual time to at least 8 months a year.

First, due to their flexible nature, individuals often pursue micro-credentials balancing professional or educational commitments. Consequently, it is reasonable that the credit value assigned to micro-credentials (MCs) should not exceed fifty per cent of the credits required for a full-time academic year. The minimum credit threshold is set at 1 ECTS to allow universities the flexibility to determine an appropriate minimum credit allocation based on the learning outcomes of the MCs.

**Relation to students/teacher's free time**

The preceding calculation did not consider that MCs are primarily intended for skill acquisition, which necessitates substantial in-person instruction. Consequently, there will be many weeks of lessons held at higher education institutions. This poses challenges related to the time constraints of both students and teachers. Students need to arrange for time off from their employers, while teachers must

find sufficient time away from their regular teaching, research responsibilities, and other commitments. These factors limit the maximum number of ECTS credits that can be allocated to MCs.

**Relation to study programme's courses**

It has been previously noted that in some countries, MCs can be offered as regular courses within established study programmes at one higher education institution (HEI), and students from other HEIs can include these MCs in their own study programmes. Therefore, the credit allocation for MCs should closely resemble that of courses within study programmes, which typically range from 6 to 8 ECTS credits on average.

**Relation to stackability**

The stackability of MCs can be realized in two ways. One is for individual MCs to be offered in the form of basic and advanced forms of learning when, for each of the MCs, an individual certificate is obtained from which you can see the level of expertise: for example, the Basic Python Programming Course and the Advanced Python Programming Course.

Another way is to obtain a joint certificate after two or more MCs, which describes the level of expertise achieved through all MCs together.

In both cases, stackability makes acquiring the necessary expertise in a specific area possible through a far greater number of ECTS compared to the individual limit of 15 ECTS.

*4. Analysis of the MCs QA practice in Project partner countries, proposing the best model of MCs accreditation*

There are many elements which must be considered regarding MCs' QA practice improvement, such as:

**1. The design of MCs in HEIs across the EU should comply with the features of the European Common MCs Framework:** Relevant professional bodies should be involved in the design and delivery of mire-credential education, wherever appropriate, to ensure that HEIs adequately meet the evolving needs of industries and the labour market. Examples of professional bodies may include representatives from the Chamber of Commerce and Industry, the Association of Employers, the Council for Vocational Education and Adult Education, the National Employment Service, and other agencies associated with industry and employment. The nomenclature of these professional bodies may vary across different countries within the EU;

**2. Ways of providing/delivering MCs:** There are different ways to provide/deliver MCs to the learner. The following table (source: Dragan/Hochrinner, project MicrocredX) shows the various modalities of scheduling (asynchronous, synchronous, blocked), mobilities (learner, teacher), group character, supervision necessity, and assessment on the one hand and characteristics of presentation on the other.

| Modality | Asyn-chronous | Syn-chronous | blocked to a period/semester | student mobility | teacher mobility | individual /group | supervised | Assessment |
|---|---|---|---|---|---|---|---|---|
| 1. MOOC | √ | n/a | n/a | n/a | n/a | individual / group | no | possible |
| 2. Self-paced | √ | n/a | n/a | n/a | n/a | individual | possible | possible |
| 3. Face-to-face | no | √ | √ | possible | possible | individual / group | √ | possible |
| 4. Hybrid | possible | √ | √ | possible | possible | individual / group | possible | possible |
| 5. Hybrid mix 3./4. | asynchr./ synch. mix | | v | possible | possible | individual / group | possible | possible |
| 6. Challenge- / problem-based | √ | √ | possible | possible | possible | individual / group | possible | possible |
| 7. Laboratory work | √ | √ | √ | possible | possible | individual / group | √ | possible |
| 8. Internship | no | √ | possible | possible | n/a | individual | √ | possible |
| 9. online self-paced | √ | no | possible | n/a | n/a | individual | no | possible |

| Legend: | |
|---|---|
| √ | ... mean of the choice |
| possible | ... can be but not necessarily |
| n/a | ... not applicable |
| no | ... not possible |
| individual | ... anyway individual |
| indiv./group | ... both possible |

**3. A clear definition in line with the European Commission proposal:** An MC is proof of the learning outcomes that a learner has acquired following a short learning experience. MC learning outcomes must be framed as clear, student-centred statements highlighting industry-relevant knowledge, skills and behaviour a learner should develop upon completing the micro-credential. The learning experiences leading to MCs must align with defined criteria and contribute to lifelong learning and employability. It is crucial to emphasize that the learning outcomes of MCs need to be continuously assessed to ensure that their content remains current and aligned with evolving industry needs.

**4. Learning outcomes must be assessed against transparent standards, in the first place, by the EU Standard of constitutive elements of micro-credentials**[30]: The key differentiator in the EU's definition of micro-credentials is that "micro-credential learning outcomes must be assessed against transparent and clearly defined criteria." The assessment of micro-credentials needs to adopt a learner-centred approach and may take any form that is appropriate to the learner's needs and course requirements while adhering to ESG standards. Assessment methods may include quizzes, numerical exercises, self-assessments, written or oral exams, peer reviews, or project-based learning. The instructor can grade assessments automatically or manually, depending on the method used. Given the industry-oriented nature of many micro-credentials, workplace-based projects may also be particularly suitable. Ensuring that learners

30 https://data.consilium.europa.eu/doc/document/ST-9237-2022-INIT/en/pdf

are aware of and adhere to academic honesty is crucial in the assessment of micro-credentials. Higher Education Institutions (HEIs) need assurance regarding the authenticity of the submitted work and the individual's identity, especially when micro-credential delivery and evaluation are conducted online. Some critical remarks on the assessment of micro-credentials include the following:

- Non-assessed credentials such as a certificate of attendance are not considered MCs per the EU definition.
- In order to enhance confidence in the acceptance of MCs and streamline its recognition process, all providers of MCs must ensure the thorough documentation and QA of their assessment criteria and approaches.
- The suitability of assessment methods defined in the MCs should be decided in consultation with relevant stakeholders and tested to evaluate their effectiveness and practicality.
- MC providers should adopt on-site assessment with ID verification, which is the most effective method against cheating.
- For MCs organised entirely online, the project "An Adaptive Trust-based e-assessment System for Learning" (TeSLA) suggests using facial verification, voice recognition or keystroke dynamics, among other methods, to ensure the learner's identity and authorship.
- Leaner's rights to privacy must be assured in line with appropriate state or regional regulations, such as the EU General Data Protection Regulation.
- Students should be provided with information and guidance on how the assessment system deals with data privacy and security.
- Other universities recognizing MCs might be interested in determining if the assessment criteria and techniques were suitable for gauging the desired learning achievements. Therefore, MC providers should make the assessment criteria, procedures, methods, and grading systems public, for example, in the MC supplement.

**5. Since the learner owns MCs, they can be shared and portable. They may be combined into larger credentials or qualifications:** 'Stackability' is defined as the possibility of combining MCs to achieve larger qualifications or modules of learning. Adopting a modular design will make the stacking of MCs possible in most cases. Simply put, regular study programmes offered by HEIs can be broken down into stand-alone, stacked units. For example, in the Flemish Community of Belgium, a degree can be completed in full, or students can decide to take specific courses and obtain a certificate. Another example is the DelftX MicroMaster Programme in Solar Energy Engineering, a standalone certification programme offered by DelftX. The credential entails four intensive online courses and final exams, and it is linked with two programmes at TU Delft: MSc

Sustainable Energy Technology and MSc Electrical Engineering (track: Electrical Power Engineering). Regular admission procedures are required for these MSc programmes, but students who wish to be exempted from any courses must send a formal waiver request. Campus courses that can be waived (up to 16-18 credits and depending on students' Individual Exam Programme) are courses that are equivalent to the solar energy courses of the MSc programme in question. In order to stack micro-credentials, recognition of the learning outcomes is key. MCs that follow the Bologna standards can be recognized and consequently stacked in line with the Lisbon Recognition Convention. The procedure for stacking MCs requires a case-by-case approach, and an MC learning outcome assessment may vary across study programmes (ECA, 2022).

**Guidelines for the best model of MCs accreditation**

The QA of MCs in HEIs across the EU shall be based on the national QA mechanisms and the ESG principles. This implies that the university offering the MC incorporates external and internal QA measures and national QA standards. Therefore, the accreditation of universities and their programmes inherently extends to encompass the accreditation of MC offerings in HEIs. Thus, depending on the country and/or HEIs, MC accreditation may encompass both internal and/or external procedures. In any case, some elements must be taken into account:

- **Course design and review:** Universities should design their MC offerings according to the EU standard constituents for MC design and periodically review and update their content to ensure that it remains current, industry-relevant, and aligned with the latest developments in the given field.
- **Teachers:** Universities should have relevant, continuous professional development for faculty members, which is crucial for maintaining and improving the quality of MCs. Examples include industry-oriented workshops, seminars, training and mobility programmes.
- **Teaching and learning methods:** HEIs should implement relevant learner-centred teaching and learning methods to engage learners and enhance their learning experiences.
- **Student feedback:** MC providers should provide an opportunity for learners to submit feedback, and the course providers utilise the feedback to improve learner experience (i.e. through surveys, focus groups, and one-on-one interactions).
- **External reviewers:** The external reviewers involved in the QA process of MCs could include scholars from other universities, industry experts, labour/employer unions, student union representatives, and national QA bodies. These reviewers ensure alignment of the MC with stated learning outcomes.

*5. Analysis of the linking MCs to the National Qualification Framework in Project partner countries, proposing the best model of linking*

When it comes to linking micro-credentials to NQFs, in the case of higher education the "MICROGUIDE" project recommends a content-based approach: *if the majority of some MC content belongs to the content held at the HEI at the bachelor or master study programmes, then that MCs could be linked by content and not as the full qualification to the EQF level 6 or 7 (and accordingly appropriate NQFs levels).*

In the case of MCs provided by non-university institutions, directly linking such MCs to the NQFs is not recommended because HEIs and non-university institutions may have different regulatory and legal frameworks. Therefore, non-university providers could partner with accredited HEIs to seek endorsement of and ensure compliance with higher education QA processes.

Recognition of MCs refers to the formal acknowledgement and validation of the skills, knowledge, and achievements acquired through the completion of MCs. MCs can be recognised if they hold relevance within the context of a particular academic program. In line with the Lisbon Recognition Convention, the academic recognition of MCs that follow the Bologna Standards is easier to recognize and validate.

The **MicroEvaluator tool**[31] developed as part of the STACQ project funded by the European Commission is an excellent resource for academic recognition MCs using seven criteria: quality, level, learning outcomes, workload, verification, testing, and identification.

### 5.2 Guidelines for the MCs implementation in HE of Serbia

Considering that MCs do not exist in Serbian HE, one of the specific goals of MICROGUIDE is to develop Guidelines for their implementation in Serbian HE.

#### 1. Legal framework

The specific legal framework regarding MCs implementation in Serbian HE does not exist. However, similarly to Spain, a legal framework regarding LLL can also be used for the MCs. In particular, there is Article 111 in the Low on Higher Education states that:

- A HEI, within the framework of its activity, can implement LLL programmes outside of the study programmes for which it has received a work permit.
- The conditions, methods and procedures for implementing LLL programmes are regulated by the HEI general act.
- The HEI issues a certificate to a person who has mastered the LLL programme.
- A person enrolled in the LLL programme does not have the status of a student according to this Law.

In this way, LLL programmes are positioned outside three formal study cycles, allowing them to be equally delivered to persons with secondary and tertiary education.

31 https://www.nuffic.nl/en/subjects/recognition-projects/the-micro-evaluator

**Introducing a new Article in the Low on Higher Education**

The MicroGuide project recommends introducing a new Article in Law on Higher Education after Article 111, which will specifically define MCs as a type of LLL programme.

The possible content of the new Article could be:

*Article 111A:*

*A higher education institution can implement programmes from Article 111 of this Law in the form of micro-credentials – small learning programmes intended for persons with any previous level of education whose goal is primarily the needs of the labour market.*

*Following the above, HEIs are recommended to consult the labour market in developing micro-credentials and to include its representatives, if appropriate, in their implementation.*

*Micro-credentials must have:*

- *ECTS value defined in the range of 1–15 ECTS;*
- *Accreditation by the appropriate HEI body;*
- *Clear and transparent assessment process;*
- *Certificate and Certificate Supplement containing at least the following elements:*
- *Identification of the learner;*
- *Title of the micro-credential;*
- *Type of MC (part of accredited curricula, further education…);*
- *Identification of the provider (company/institution name, address, …, incl. status of the provider, e.g., public institution, private provider…);*
- *Accreditation status of the provider (institutional accreditation, curriculum acc., course acc., no acc.);*
- *Date of issuing;*
- *Workload expressed in ECTS;*
- *EQF and/or NQFs level. The link of micro-credentials to the NQF levels is done according to the principle of content - if the majority of some micro-credential content belongs to the content held at the HEI at the bachelor or master study programmes, then that micro-credential could be linked by content, and not as the full qualification, to the appropriate NQFs level;*
- *Scientific, artistic or professional field to which the micro-credential belongs (from the Rulebook on scientific, artistic, or professional fields within educational-scientific, or educational-artistic fields" ("Official Gazette of RS", no. 114/17 and 24/20));*
- *Learning outcomes;*

- *Prerequisites needed to enrol in the learning activity;*
- *Form of participation in the learning activity (online, onsite or blended, volunteering, work experience);*
- *Type of assessment and grading system (testing, application of a skill, portfolio, recognition of prior learning, etc.);*
- *Integration/stackability options (standalone, independent micro-credential/ integrated, stackable towards another credential);*
- *Further information.*

*The conditions, method and procedure for implementing MC programmes are regulated by the HEI general act.*

*A person enrolled in the MCs programme does not have the status of a student according to this Law.*

The advantage of this proposal is the regulation at the level of the Law – according to the legal practice in Serbia, the articles of the Law are copied into the HEIs Statutes, which ensures harmonization at the level of the entire higher education..

**Alternative approaches**

In case the amendment of the Law is not possible, there are two alternative approaches.

One is introducing the above-proposed Article in the Statute of independent HEIs (and accordingly into Statutes of non-independent HEIs). Another approach is introducing the above-proposed Article in the Statute of non-independent HEIs only.

**Recognition of foreign MCs**

To start professional recognition of foreign MCs, they must be embedded in the Law on Higher Education (so far, the MicroGuide results do not imply that it is necessary to change the Law on the NQFS).

The ENIC/NARIC Centre carries out professional recognition as an organizational part of the QARS. According to the Law on the NQFS, for an MC to be recognised

- HEI offering MCs must be accredited;
- MCs must be accredited;
- MCs content must be linked to the EQF;
- MCs workload must be expressed in ECTS.

In addition, MCs must have a certificate (and, if appropriate, a Certificate Supplement) containing the MC name, type (if in the issuing country there is a division into academic and professional studies), degree and duration, as well as the scientific, artistic, or professional area within which the study programme was completed.

# PILOT MICRO-CREDENTIAL 1 – SERBIA

**Name of the micro-credential:**

The elevator expert

**Provider**

University of Belgrade, Faculty of Mechanical Engineering, Belgrade, Serbia

**Programme level:**

Suitable for students of higher education, bachelor or master studies in mechanical engineering.

**Link to the EQF:**

Level EQF-6, equivalent to MECES-2

**Duration:**

120 h

**Modality:**

100% face-to-face

**ECTS:**

12

**Justification**

There are over 25,000 lifts in residential buildings in Serbia, of which as many as 15,000 urgently need replacement, requiring around €450 million, according to data collected by the Chamber of Commerce of Serbia. Half of these lifts are located in Belgrade, the capital of Serbia. In Belgrade alone, approximately 7,000 lifts are due for complete replacement. A significant issue is their age, with lifts in the country averaging 44 years old, even though the typical service life of a lift is 25 years. Additionally, there is a shortage of professional staff, as Serbia lacks sufficient servicemen, lift installers, and engineers specialised in lift systems. Many of those currently working in the profession are nearing retirement, with a shortage of younger workers entering the field. It is a specialised area requiring knowledge of mechanics, mechanical engineering, electrical engineering, and automation. In Belgrade, 1.6 million people use lifts daily, which exceeds the capacity of public transport vehicles.

Technical legislation in the field of lifts is aligned with EU regulations through the adoption of technical requirements for placing new lifts on the market, as well as for lifts already in use. The construction of multi-storey buildings is on the rise, and these increasingly feature more modern and technically complex lifts. Given these developments, there is a need for more precise regulation in this area to enable easier and more efficient monitoring of all activities and improve connectivity and communication between business and educational entities in the field. Unfortunately, there is no data regarding lift maintenance professionals' numbers, qualifications, or personnel structure.

According to available data, the current age structure of personnel/engineers holding BSc or MSc degrees is 50-60 with BSc and 60+ with MSc, having more than 20 years of working experience in the lift industry and related jobs.

Following the collected data from the Serbian Business Register Agency, 186 business entities in the lift sector were identified, of which 117 entrepreneurs and 69 companies, mostly limited liability companies.

Based on the collected data, it can be concluded that the field of lift installation and maintenance is highly relevant, with increasingly complex demands placed on all economic entities involved in the installation and upkeep of lifts. An analysis of the current situation regarding the number of businesses engaged in placing lifts on the Serbian market, inspecting lifts, and maintaining those in use reveals a need for further improvement of all activities in this area, including through:

- Increase in the number of employees considering the increase in the number of lifts,
- Employment of young people to transfer knowledge as soon and as successfully as possible,
- Organization of training and professional workshops,
- Acquaintance with the content of regulations and standards,
- Organizing knowledge tests.

**The objective of the training**

The purpose of the micro-credential is to acquaint participants with the basic principles of lift operation, their classification, the main parts of lifts (shaft, guide rails, cabin frame, cabin, counterweight, lift drive, ropes, safety components, control systems) and corresponding EN standards, technical drawings in lift design, technical documentation, maintenance, occupational health and safety and correspondingly basic terms in foreign languages (especially English).

**Learning Outcomes**

Upon successful completion of the micro-credential, the participant will:

• Be familiar with existing types of lifts, and also be aware of definitions and

symbols used in the analysis and design of lifts; explain the different principles of lift operation.

- Be familiar with specifications and design practices adopted by various manufacturers for lifts, including corresponding data, figures and graphs, particularly related to current design practices in Serbia. Explain the difference between an electric and a hydraulic lift; list and distinguish the basic parts of the lift and its safety components; Understand the elements of the technical drawing of lifts; distinguish the basic elements of the lift on the technical drawing; and understand the meaning of the basic abbreviations on the technical drawing.
- Be informed about technical regulations and legislation, including valid standards for lifts, EU Machinery directives, corresponding by-laws and safety regulations. Be familiar with the issues of occupational health and safety.
- Understands and uses terminology in English

**Access and admission**

This micro-credential is suitable for students in a higher-level training cycle, university degree, or university master's degree in mechanical engineering.

**Curriculum structure**
**Content of theoretical education (45 hours)**

- Introduction (from history to contemporary trends)
- Principle of lift operation
- Classification of lifts
- Basic parts (lift shaft, rail guides, cabin frame, cabin, counterweight, lift drive, supporting means, safety components, control)
- Specifications for the design of lifts
- Belt and rope drives
- Design analysis of lift elements and components
- Lift travel analysis
- Environmentally friendly lifts
- Principles of lift traffic design
- Technical drawing (base, section)
- Basic principles of visual presentation in lift construction (how to present lifts and components)
- Basic abbreviations
- Construction book
- Technical documentation (assembly drawing, electrical diagrams, assembly instructions)
- Internal documentation

- Fundamentals of lift maintenance
- Basic safety rules
- Safety at the construction site (protection of the work area, shafts)
- EU Machinery directive
- EN and other relevant standards for lifts
- National regulations for lifts
- Basic professional terms in English (Glossary of Lift Terms)

**Content of practical education (65 hours)**

- Video presentations of constructions and principles of operation of lifts
- Examples for calculation of elements of lifting mechanism and superstructure
- Application in lift design of software for 2D drawings and 3D modelling
- Laboratory exercise on the computer, 2D drawings and 3D modelling of elements of lifts
- Presentations by professionals in the lift industry in companies (showrooms, design offices, production plant).

**Evaluation methodology**

The syllabus is developed with master classes where the teacher explains the theoretical concepts and practical activities.

The evaluation is done by delivering documents showing evidence that the practical activities have been carried out correctly. In addition, it will also be necessary to include texts that demonstrate that the concepts worked on in each activity have been understood.

**Teaching staff**

The teaching staff must have expertise in the following areas:

- Mechanical engineering, material handling and conveying machines, vertical transportation
- Technical legislation and directives on machine safety, technical regulations on lifts, valid EN standards for lifts
- English terminology regarding lifts
- Proficiency in 2D drawings and 3D modelling

**Material resources**

This micro-credential needs a classroom that has:

- Tablu;
- Projector
- One computer for each student. The student will need administration permissions to enable him/her to use corresponding software for practical activities.
- Internet connection

# PILOT MICRO-CREDENTIAL 2 – AUSTRIA

**Name of the micro-credential:**

Mechatronics engineering

**Provider information:**

FH JOANNEUM Graz, Styria, Austria

**Programme level:**

Suitable for students (academic purpose) or/and LLL.

**Link to the EQF:**

Level EQF-6, equivalent to MECES-2

**Duration:**

50 h

**Modality:**

Blended learning

**ECTS:**

2

**Justification**

The development of a Mechatronics engineering micro-credential is crucial given the evolving demands of the labour market. Here are key justifications:

- **Interdisciplinary Skill Integration:** Mechatronics engineering combines skills from mechanical engineering, electronics, computer science, and control engineering. This interdisciplinary approach equips graduates with a versatile skill set that is highly valued across various industries;
- **Technological Advancements:** As technology rapidly advances, there is a growing need for professionals who can develop and manage complex mechatronic systems. These systems are essential in modern manufacturing, robotics, automation, and smart technologies, all of which are pivotal in the current industrial landscape;
- **Versatility and Career Opportunities:** Mechatronics engineers have the

flexibility to work in various sectors, including automotive, aerospace, healthcare, and consumer electronics. This versatility enhances employability and allows for career adaptability in an ever-changing job market;

- **Economic Development:** By fostering innovation and efficiency in production processes, mechatronics engineers contribute significantly to economic growth. Their ability to design and implement advanced technological solutions helps businesses stay competitive and boosts overall productivity;
- **Educational Demand:** There is increasing interest among students for mechatronics engineering courses. This growing demand reflects the recognition of the field's relevance and potential for future career prospects.

**The objective of the training**

The purpose of the micro-credential is to acquaint participants with the basic principles of fields of mechatronics (identification of technical systems in mechatronics and dynamics of mechatronic systems), sensors and measuring technologies (fundamentals in measuring technologies, effects and errors in measuring technologies and sensors in mechatronic systems), actuators and drives (rotating electrical drives, linear electrical actuators, fluidic actuators and novel actuator systems), automation and control (automation concepts, open and closed loop control and data processing and microprocessor applications in mechatronics) and mechatronics systems (development of mechatronics systems and systems and subsystems in mechatronics).

**Learning Outcomes**

Upon successful completion of the micro-credential, the participant is able to:

- work with different sensors and actuators in mechatronic systems;
- process and evaluate sensor signals and control different actuators;
- design and run a mechatronic system;
- design and simulate electronic circuits;
- design a digital twin and simulate different scenarios.
- analyse technical tasks in mechatronic systems and solve problems given
- Grasp and understand the core principles of mechatronics
- apply methodical principles when dealing with tasks in mechatronic systems
- understand the theory of operation of mechatronic systems and evaluate the pros and cons of the different system solutions
- analyse, compute, and solve basic problems in mechatronic systems; design appropriate systems and structures and define the required system components.

**Access and admission**

This micro-credential is suitable for students who have already passed the following exams from the study programme of Production Technology and Organisation study programme: Mechanical Engineering Dynamics; Machine Elements and Design Theory 1 & 2, Electrical Engineering and Electronics 1 & 2, and Industrial IT 1 & 2.

**Curriculum structure**

**Content of theoretical education (30 hours)**

- **Fundamentals of Mechatronics:** Introduction to mechatronics systems, integration of mechanical and electronic systems, basic principles of sensors and actuators;
- **Control Systems:** Concepts of feedback control, PID controllers, state-space analysis, and digital control systems;
- **Microcontrollers and Embedded Systems:** Programming microcontrollers, interfacing with sensors and actuators, real-time operating systems;
- **Electronics and Electrical Systems:** Circuit analysis, power electronics, signal processing, and electronic instrumentation;
- **Mechanical Systems:** Mechanics of materials, dynamics of mechanical systems, CAD/CAM, and manufacturing processes.
- **Robotics:** Kinematics, dynamics, and control of robotic systems, robotic programming, and applications in automation;
- **Software Engineering:** Object-oriented programming, software development for mechatronics applications, simulation and modelling tools.

**Content of practical education (20 hours)**

- **Laboratory Work:** Hands-on experiments with sensors, actuators, and microcontrollers; circuit design and testing; control system implementation;
- **Industrial Training:** Internship or co-op experience in industry to apply theoretical knowledge in real-world settings;
- **Integrated Design Projects:** Team-based projects that require designing, building, and testing a mechatronic system, often in collaboration with industry partners;
- **Final Year Projects:** Individual or group projects that involve extensive research and development of innovative mechatronic solutions;
- **Workshops and Seminars:** Specialized workshops on advanced topics like artificial intelligence in robotics, IoT applications in mechatronics, and emerging technologies;

**Evaluation methodology**

The syllabus is developed with master classes where the teacher explains the theoretical concepts and practical activities.

The evaluation is done by delivering documents showing evidence that the practical activities have been carried out correctly. In addition, it will also be necessary to include texts that demonstrate that the concepts worked on in each activity have been understood.

**Teaching staff**

The teaching staff must have expertise in the following areas:

- Mechatronics for manufacturing industries;
- Material handling;
- CNC-machining systems;
- Robots and PLC-system technology.

**Material resources**

This micro-credential needs a classroom that has:

- Blackboard
- Projector
- One computer for each student. The student will need administration permissions to enable him/her to use corresponding software for practical activities.
- Internet connection

# PILOT MICRO-CREDENTIAL 3 – SPAIN

**Name of the micro-credential:**

Security management of computer systems

**Provider:**

University of Lleida

**Programme level:**

Suitable for students of higher education with a degree or master's in computer science or telecommunications.

**Link to the EQF:**

Level EQF-6, equivalent to MECES-2

**Duration:**

60 h

**Modality:**

100% face-to-face

**ECTS awarded**

6

**Justification**

In recent years, it has become clear that an Internet presence is necessary for any company or organization. The Internet is a fundamental medium through which you can communicate with partners, customers, and suppliers.

Despite all the advantages it brings, the Internet presence also involves a series of risks. The possibility of being a victim of a cyberattack always exists. For this reason, having expert personnel in managing the security of computer systems is essential.

According to a report by Check Point Research[32], Spanish companies received an average of 1042 attacks per week during 2023. If successful, the impact of these attacks can be harmful in many aspects, such as loss of intellectual property,

32 https://www.itdigitalsecurity.es/actualidad/2024/01/descienden-los-ataques-en-espana-en- 2023-mientras-se-incrementan-en-el-resto-del-mundo

physical damage resulting from the alteration of processes, interruption of daily activity, financial losses, reputational damage, or legal and regulatory penalties.

This micro-credential in cybersecurity aims to provide specific and specialized knowledge to professionals who administer or carry out their activity through services connected to the Internet.

**The objective of the training**

The course provides extensive training in the security of computer systems connected to the Internet. The training provided will allow us to know the tasks that are in charge of a company's head of cybersecurity, as well as particular knowledge of the technology and tools available to provide security to the teams of an organization.

**Learning Outcomes**

At the end of the micro-credential, participants will be able to:

- Analyse the nature of the data that form part of an information system and design appropriate technical measures to protect them according to their level of sensitivity.
- Choose the right cryptographic technology to protect an organization's data and communications, including proper key management.
- Securely manage a multi-user machine to avoid/detect both internal and external attacks.
- Securely manage an organization's network to prevent/detect both internal and external attacks.
- Securely configure and use commonly used telematic services.

**Access and admission**

OThis micro-credential is suitable for students in a higher-level training cycle, university degree, or university master's degree in computer engineering, telecommunications, or related disciplines.

**Curriculum structure**

**1. Regulations and standards (6h)**

- The General Data Protection Regulation
- The ISO/IEC 27002 standard

**2. System administration (12h)**

- User management

- File system security
- Logs management
- Pen testing

**3. Fundamentals of cryptography (16h)**

- Shared key encryption
- Public key encryption
- Digital signature
- Public key infrastructures

**4. Network security (16h)**

- Security in wireless networks
- Firewall systems
- Intrusion detection systems
- Virtual private networks

**5. Security in telematic services (10h)**

- Security in the Web service
- Email security
- Secure remote access

**Evaluation methodology**

The syllabus is developed with master classes where the teacher explains the theoretical concepts and practical activities.

The evaluation is done by delivering documents showing evidence that the practical activities have been carried out correctly. In addition, it will also be necessary to include texts that demonstrate that the concepts worked on in each activity have been understood.

**Teaching staff**

The teaching staff must have expertise in the following areas:

- Legislation on data protection and regulations on the secure management of computer systems
- Cryptography
- Operating System Administration
- Network Administration
- Configuration of telematic services

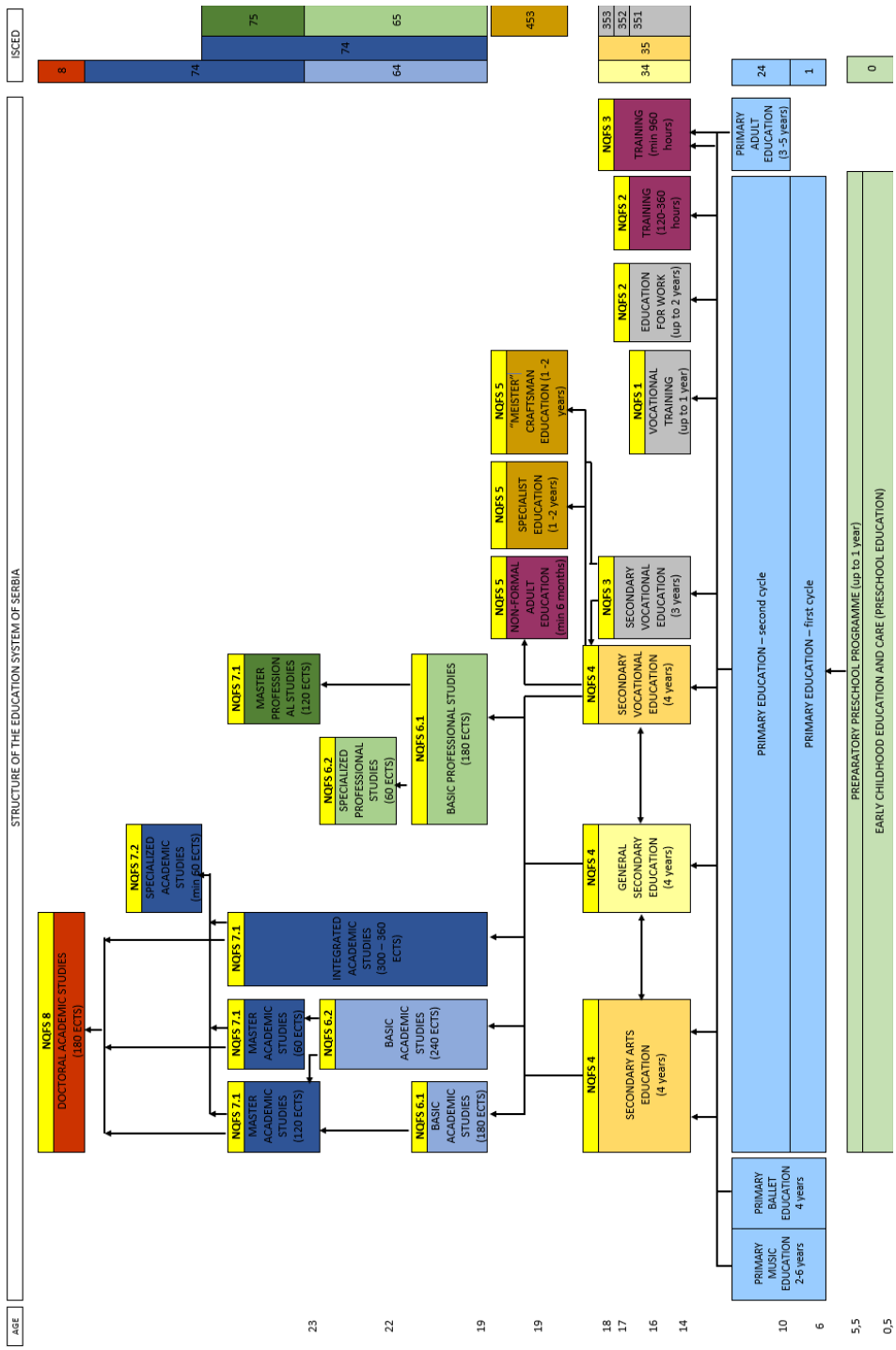
**Material resources**

This micro-credential needs a classroom that has:

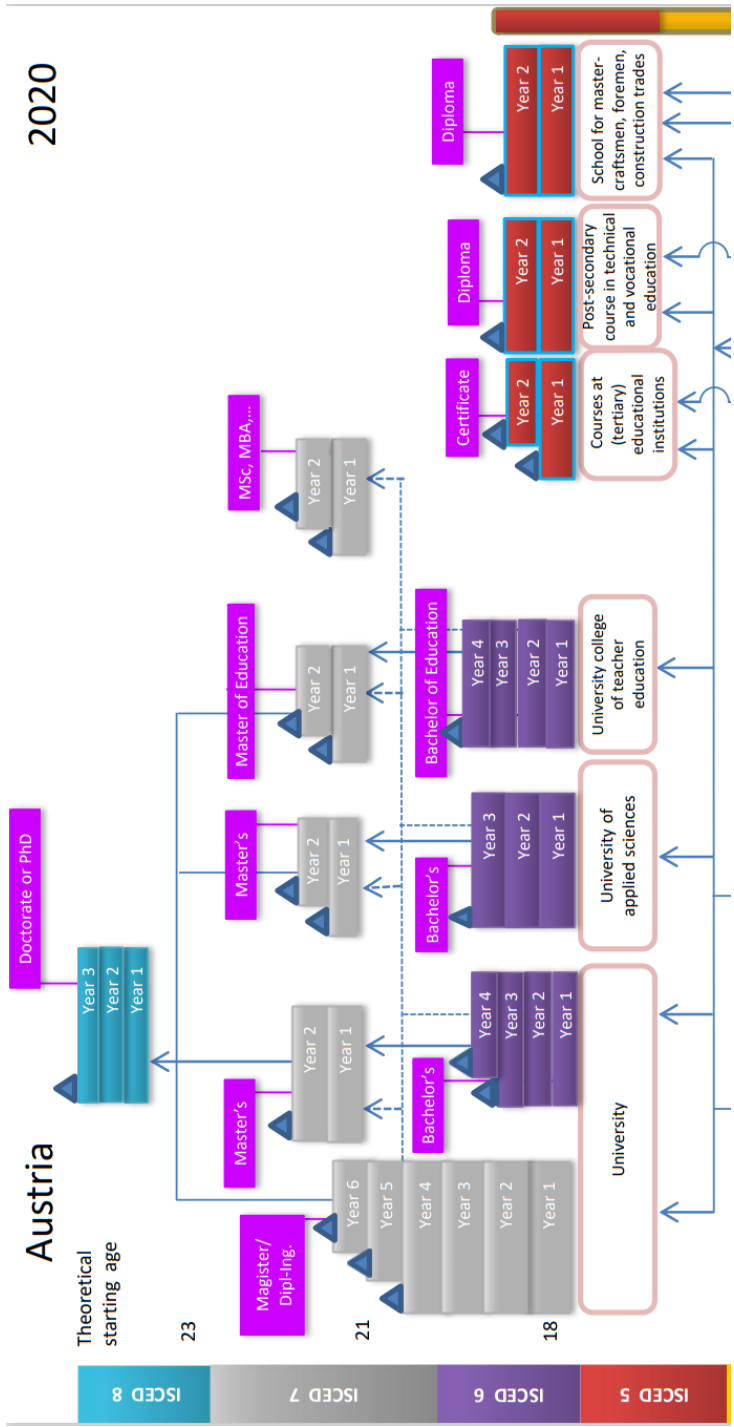
- Blackboard
- Projector
- One computer with a Linux operating system for each student. The student will need to have administration permissions. For this reason, the use of virtual machines is recommended.
- Internet connection

The entire practical activity of the course can be done using free distribution software.

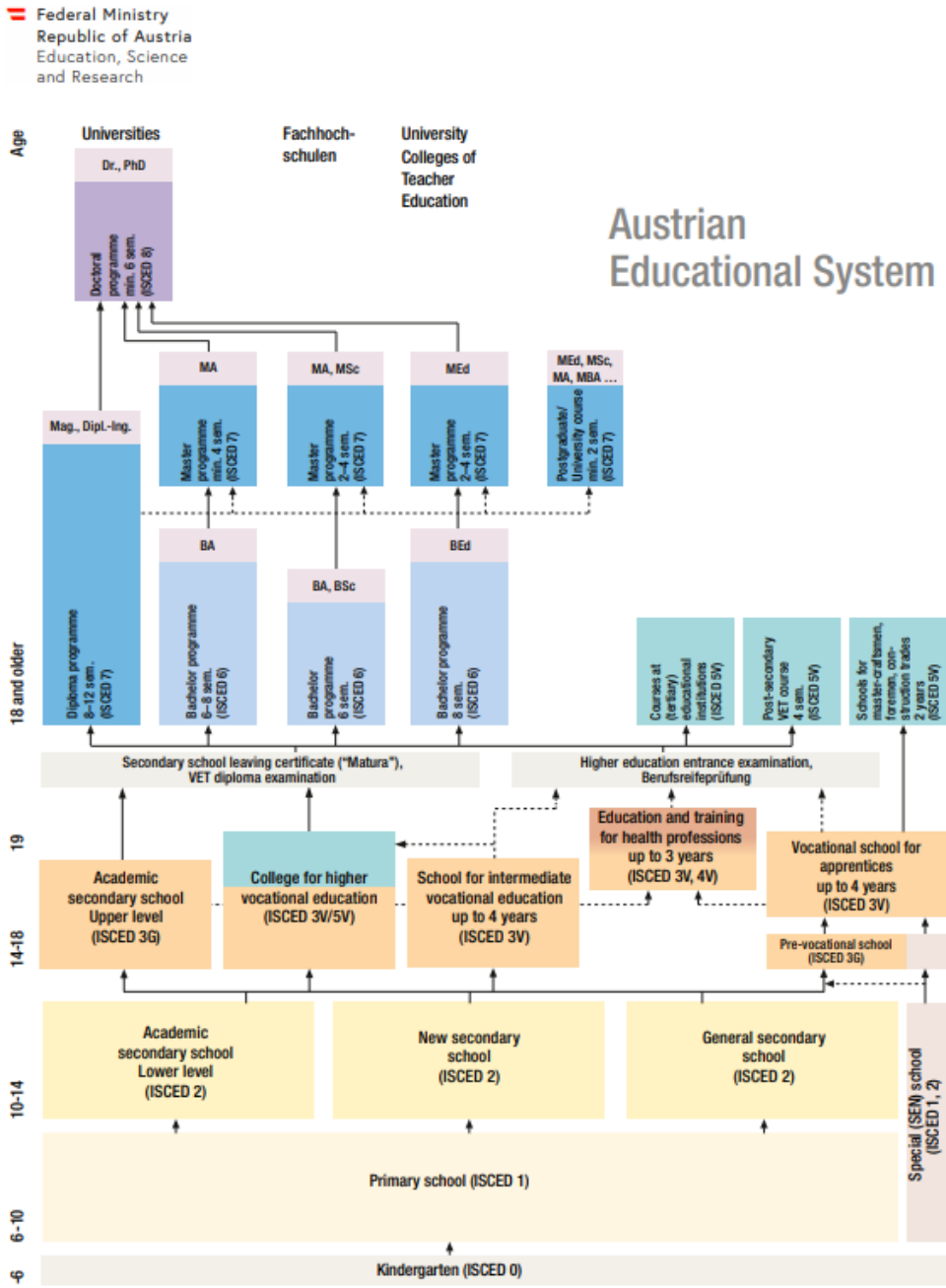
## Appendix 1. Educational system in Serbia



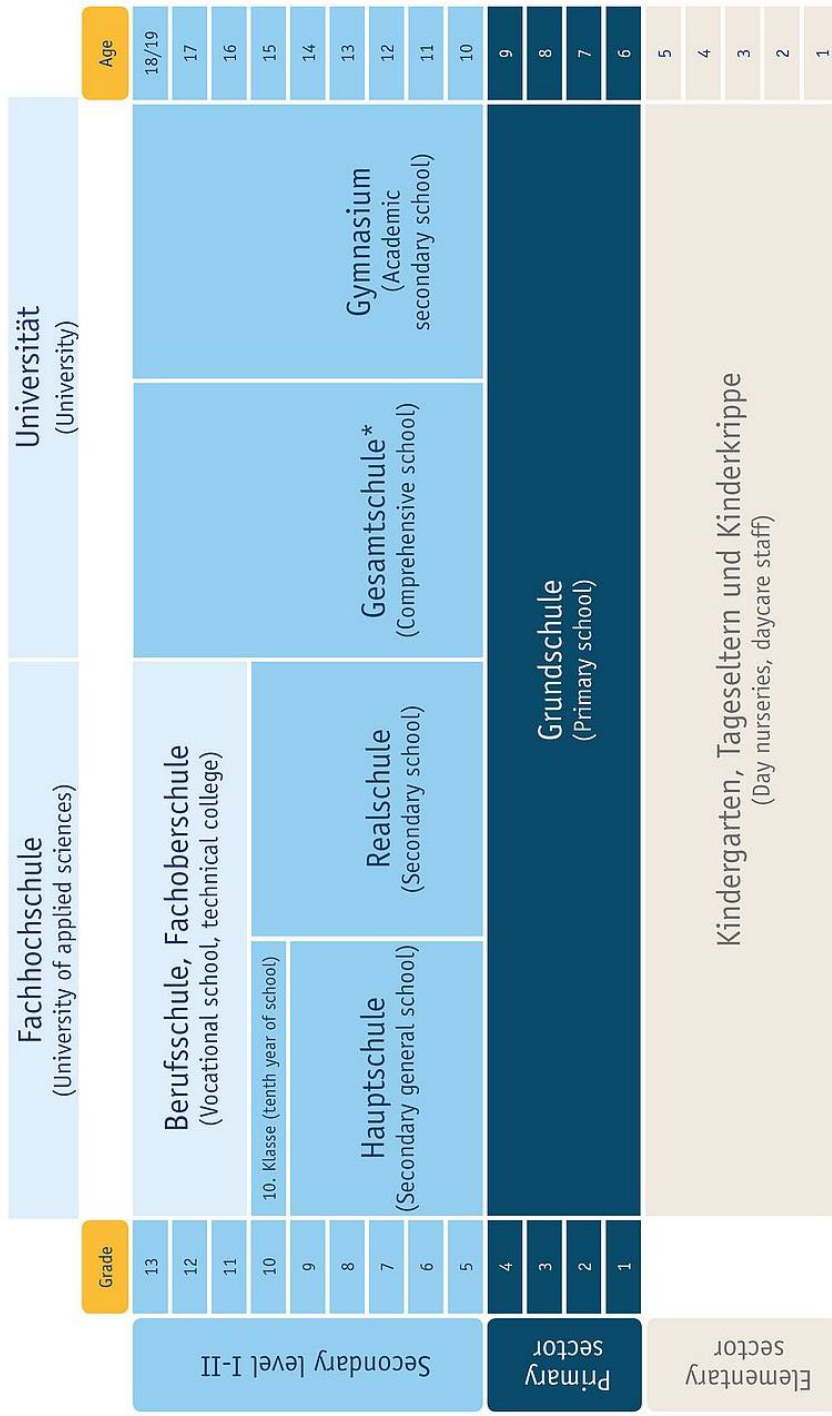
## Appendix 2. Tertiary level of education in Austria



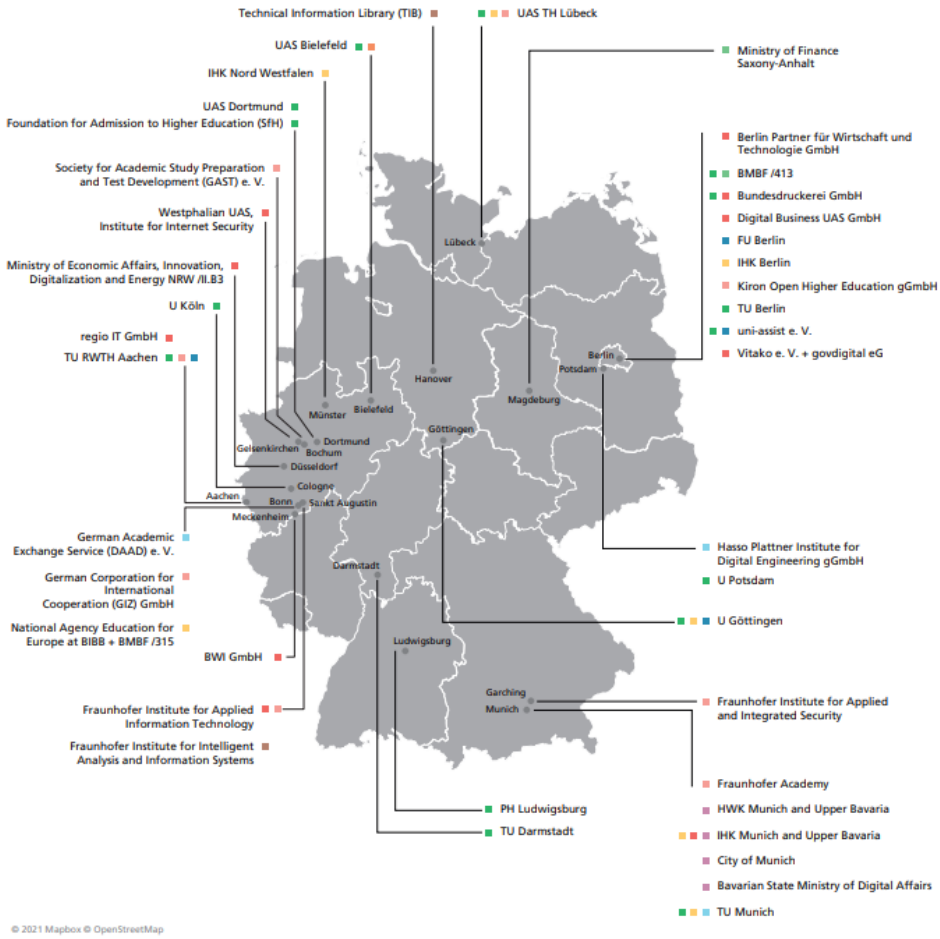
## Appendix 3. Austrian educational system



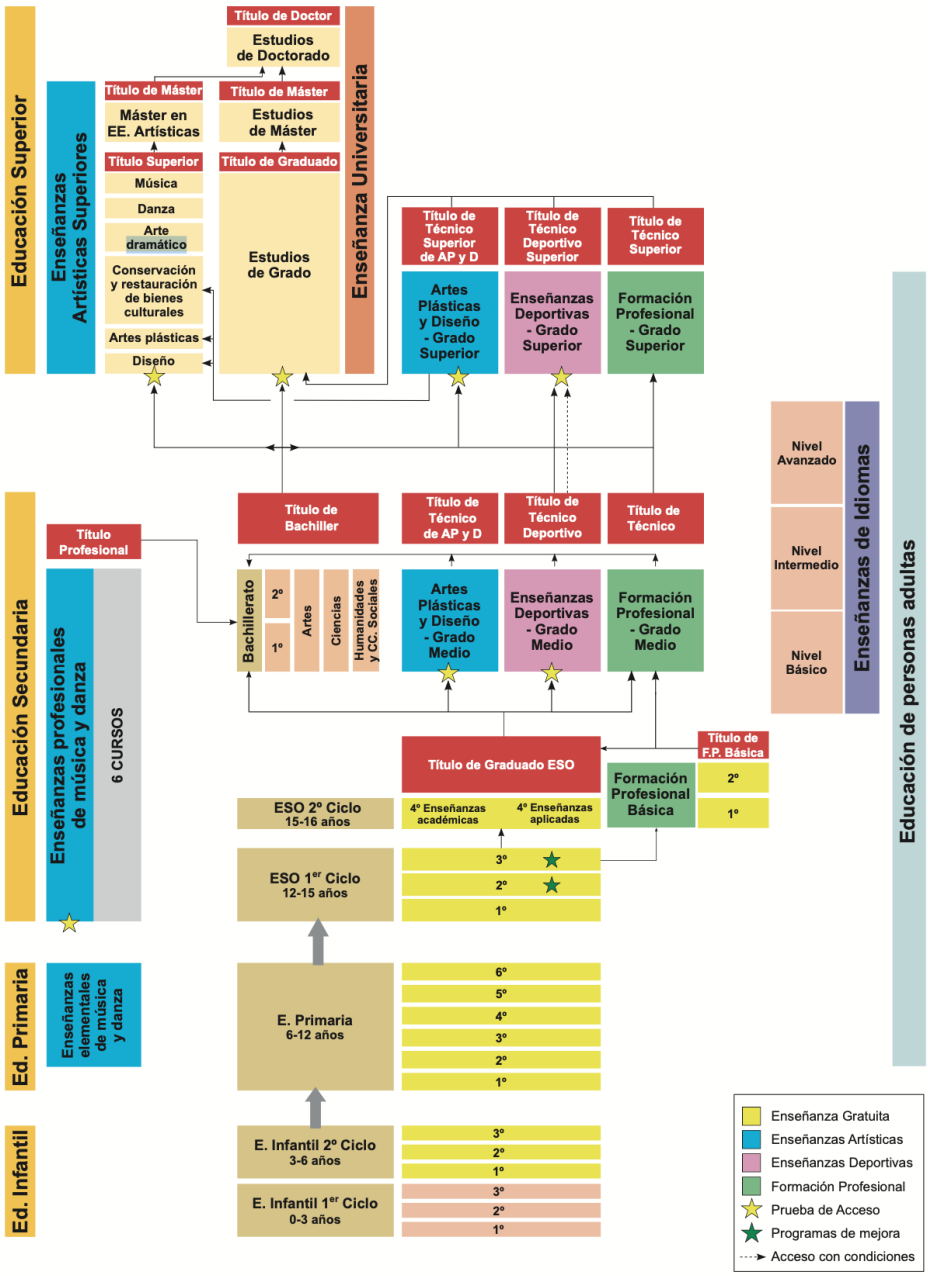
## Appendix 4. Educational system in Germany



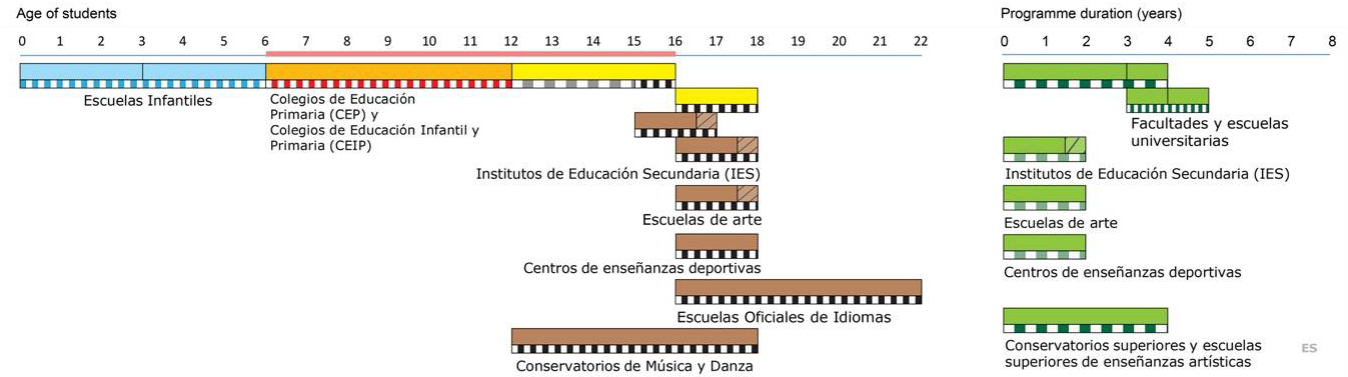
## Appendix 5. Networking of German stakeholders on the topic of digital credentials in education



## Appendix 6. Educational system in Spain



## Spain – 2022/2023




Note: *Escuelas oficiales de idiomas* offer language courses that may last for 11 years.
Some of the education provision of *Conservatorios* can be recognised/validated in full-time mainstream education programmes, such as *Bachillerato artístico at* upper secondary education.

Early childhood education and care (for which public education authorities are not responsible)
Early childhood education and care (for which public education authorities are responsible)
Primary education
Single structure
Secondary general education
Secondary vocational education
Post-secondary non-tertiary education
Tertiary education (full-time)

Allocation to the ISCED levels: ISCED 0 ISCED 1 ISCED 2 ISCED 3 ISCED 4 ISCED 5 ISCED 6 ISCED 7

Compulsory full-time education/training
Compulsory part-time education/training
Possible additional year
Study abroad
Combined school and workplace courses
-/n/- Compulsory work experience + its duration
Years
Programme being phased out in (year)

*Source:* Eurydice.

## Appendix 8. MECES correspondence with Catalan QF and EQF and QF-EHEA

<table>
<tr><th>CHE-QF LEVELS</th><th colspan="4">QUALIFICATIONS</th><th>LEVELS MECES</th><th>LEVELS EQF</th><th>LEVELS QF-EHEA</th></tr>
<tr><td></td><td>Upper Vocational Training</td><td>HE Study Programmes In Arts</td><td colspan="2">University</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td colspan="3"></td><td>PhD Diploma<br>Not typically credit-rated<br>3 years</td><td>4</td><td>8</td><td>Third Cycle</td></tr>
<tr><td rowspan="2">3</td><td colspan="2" rowspan="2"></td><td>Master's Degree in Arts<br>120 ECTS<br>2 years</td><td>Master's Degree<br>120 ECTS<br>2 years</td><td>Integrated Bachelor's Degree<br>360-ECTS<br>6 years</td><td rowspan="2">3</td><td rowspan="2">7</td><td rowspan="2">Second Cycle</td></tr>
<tr><td>60-ECTS<br>1 years</td><td>60-ECTS<br>1 years</td></tr>
<tr><td>2B</td><td colspan="2" rowspan="2"></td><td rowspan="3">Bachelor's Degree in Arts<br>240 ECTS<br>4 years</td><td>Advanced Bachelor's Degree<br>240 ECTS<br>4 years</td><td rowspan="3">300-ECTS<br>5 years</td><td rowspan="2">2</td><td rowspan="2">6</td><td rowspan="2">First Cycle</td></tr>
<tr><td>2A</td><td rowspan="2">Bachelor's Degree<br>180 ECTS<br>3 years</td></tr>
<tr><td>1</td><td>Advanced Technician in Vocational Training, Advanced Technician in Plastic Arts and Design, Advanced Technician in Sports Education (Advanced Technician)<br>120 ECTS<br>2 years</td><td>1</td><td>5</td><td>Short Cycle</td></tr>
</table>

**Appendix 9. List of MCs examples of good practices in Partner countries**

# AUSTRIA

**1. Technical University Graz:**

**Link to webpage:** Kurse – microcredentials.at

**Developed MCs**:

1. Decarbonisation & sustainability management
2. Power System Protection
3. Accounting and Controlling
4. Business Administration
5. Business Administration for Engineers

**2. University of Applied Science FH JOANNEUM:**

**Link to webpage:** CORSHIP.eu – corporate edupreneurship

**Developed Micro-credential:**

1. Co-Innovation MasterClass

**3. Platform iMooX:**

**Link to webpage:** https://imoox.at/mooc/

1. Developed 119 online courses (MOOCs)

**4. Fern FH Ferdinand Porsche:**

**Link to webpage:** https://www.fernfh.ac.at/fileadmin/user_upload/FernFH/Fernstudium/Micro-credentials/Folder-Micro-Credentials-FernFH.pdf

**Developed MCs:**

**Betriebswirtschaft und Ökonomie:**

1. Betriebswirtschaft Basics
2. Business Engineering
3. Internationales Human Resource Management
4. Internationales Marketing & Management

**Digital Business:**

5. Digital Leadership
6. E-Business-Management
7. E-Commerce Konzeption
8. Entwicklung digitaler Prozesse

Softwareentwicklung

9. Human-Centred Software Engineering

Wissenschaften Allgemein

10. Quantitative und qualitative Forschungsmethoden

Gesundheitswesen

11. Diversitätssensible Gesundheitsförderung im Alter
12. Gerontologie
13. Public Health

**Psychologie**

14. Allgemeine und Persönlichkeitspsychologie
15. Allgemeine und Sozialspsychologie
16. Wirtschafts- & Entscheidungspsychologie

**Daten, Informationssysteme und IT-Management:**

17. Datenanalyse-Tools
18. Digital Essentials
19. Entwurf und Betrieb resilienter IT-Systeme
20. IT-Beratung
21. IT-Management und Service Integration
22. IT-System-Koordination

## GERMANY

**1. RWTH Aachen University**: Aachen University or Rheinisch-Westfälische Technische Hochschule Aachen is a German public research university. With more than 47,000 students enrolled in 144 study programmes, it is the largest technical university in Germany.

**Link to webpage:**

https://www.edx.org/micromasters/rwthx-managing-technology-and-innovation-how-to-deal-with-disruptive-change

**Developed MCs**: "Managing Technology & Innovation: How to Deal with Disruptive Change". Micro-degree was launched in May 2017, making RWTH Aachen University the first German university out of 23 HEI pioneers to provide such a course. It is an English-taught Micro-degree developed by the Technology, Innovation, Marketing, Entrepreneurship (TIME) Research Area at RWTH's School of Business and Economics. The programme is supported and certified by the newly founded RWTH Business School. Successfully completed, the credential can be recognized as credit towards a full-time Master's degree programme.

**Structure:** 6 graduate-level courses

**Duration:** 9 months, 6–8 hours per week

**Price: 1,089–1,210 €**

**Language:** English

**Credits: 15 ECTS**

**ZFU number (Approval by the State Central Office for Distance Learning):** Not found

**2. AKAD University**: The AKAD Group sees itself as an innovative distance learning provider, offering the widest range of distance learning and further education in digitization & innovation, business & management, IT, etc.

**Link to webpage:**

https://www.akad.de/lp/studienangebote/?utm_source=google&utm_medium=cpc&utm_campaign=Brand_Exact&gclid=Cj0KCQjw--2aBhD5ARIsALiRlwDS0TLrgfCcjFY7kGBBFC0yRNkSJb

**Developed MCs**: "Digital Transformation Nanodegree". So far, 63 participants have rated the course. The current overall rating is 4.5 stars. The categories of flexibility, value for money and digital learning were rated particularly well. 97% of the participants would also recommend the course. If you want to test the course first, the institute offers a test phase (4 weeks).

**Format: 100% online distance learning**

**Duration: 4 months**

**Price: about 996 €**

**Language: German**

**Credits: 5 ECTS**

**ZFU: 173017c**

**3. The Wilhelm Büchner University:** The WBU is a part of the Stuttgart Klett Group. The Klett Group is a leading European educational company and is represented internationally in 18 countries. The university offers many other Nano-degrees, such as "Einführung in die it-sicherheit", "Grundlagen des software engineering", "It-Sicherheitmanagement", and others.

**Link to webpage:**

https://www.wb-fernstudium.de/kursseite/big-data-grundlagen-methoden-und-technologien.html

**Developed MCs**: "Nano Degree Big Data: Grundlagen, Methoden und Technologien"

(Nano Degree Big Data: Basics, Methods and Technologies). A final exam is to be taken for the university certificate (incl. creditable ECTS points for a bachelor's degree). The programme has 8000 graduates and 7000 current students. 97% of all graduates are satisfied with the programme.

**Format: 100% online distance learning**

**Duration: 2 months**

**Price: 1150 €**

**Language: German**

**Credits: 8 ECTS**

**ZFU: 180518c**

**4. Euro-FH European Fernhochschule Hamburg**: German private distance learning university based in Hamburg. It started operations in 2003 and offers bachelor's and master's degree programmes. The university offers other Nano-degrees, such as "Gesunde Führung", "Personaldienstleistungen und HR-Consulting in der Praxis", etc.

**Link to webpage:**

https://www.euro-fh.de/hochschulkurse-mit-zertifikat/politische-ideen-im-spiegel-der-zeit/

**Developed MCs**: "Politische Ideen im Spiegel der Zeit" (Political Ideas in the Mirror of Time). This course is state-approved by the ZFU (Staatliche Zentralstelle für Fernunterricht in Cologne). The ZFU also checks, for example, the terms of the contract, withdrawal and termination deadlines, compliance with consumer protection regulations, impeccable advertising behaviour and the quality of guidance.

**Format: 100% online distance learning**

**Duration: 3 months**

**Price: 891–990 €**

**Language: German**

**Credits: Yes, but the amount is not mentioned**

**ZFU: 180518c**

**5. Technical University of Munich**: The TUM is a public research university in Munich with additional campuses in Garching, Freising, Heilbronn, Straubing, and Singapore. A University of Excellence under the German Universities Excellence Initiative, TUM is consistently ranked among the leading universities in the European Union. It offers 14 courses on EDX and 2 programmes.

**Link to webpage:**

https://www.edx.org/course/six-sigma-define-and-measure?source=aw&awc=6798_1667381288_caffa8199003df1cd2f6da3ff5e641a2&utm_source=aw&utm_medium=affiliate_partner&utm_content=text-link&utm_term=301045_https%3A%2F%2Fwww.class-central.com%2F

**Developed MCs**: "Six Sigma – Define and Measure". Upon successful completion of this programme, learners will earn the TUM Lean and Six Sigma Yellow Belt certification, confirming mastery of Lean Six Sigma fundamentals to a Green Belt level. The Professional Certificate is designed to prepare for a Lean Six Sigma Green Belt exam.

**Format: 100% online distance learning**

**Duration: 2 months**

**Price: Free course; certificate is available for $99.00**

**Language: English**

**Credits: No, professional certificate instead**

**ZFU: 180518c**

# Spain

Agència per a la Qualitat del Sistema Universitari de Catalunya

## ACREDITACIÓ 'EX ANTE' DE PROGRAMES DE CURTA DURADA VINCULATS AL CATÀLEG D'ESPECIALITATS FORMATIVES DEL SERVEI PÚBLIC D'OCUPACIÓ DE CATALUNYA

## *AVALUACIÓ DEL DISSENY DEL PCD*

**Denominació: Android mobile developer**

**Resultat: FAVORABLE**

### 1. Descripció del programa

La denominació del títol és adequada, coherent amb la disciplina i no dona lloc a errors sobre el seu nivell o efectes acadèmics.

S'informa adequadament sobre la vinculació amb l'especialitat professional, la durada de la formació, modalitat d'impartició i oferta de places de nou ingrés.

### 2. Justificació

Es presenta una justificació ben fonamentada que es relaciona amb les necessitats del mercat laboral.

### 3. Objectiu i Resultats d'aprenentatge

S'ha definit de manera adequada l'objectiu del programa. Els resultats d'aprenentatge són coherents i estan en general ben redactats, ajustant-se de manera correcta al contingut del programa de curta durada. Els resultats d'aprenentatge estan correctament distribuïts entre els mòduls.

### 4. Accés de l'estudiantat

S'inclou informació sobre les vies i requisits d'accés al programa de curta durada. Es defineixen de manera adequada les vies d'accés al programa. Els requisits mínims que han de complir els i les estudiants per accedir al programa estan definits correctament.

### 5. Planificació

La informació sobre la Planificació del programa es considera favorable en relació amb la coherència del conjunt de mòduls amb els resultats d'aprenentatge previstos en el programa i en relació amb la

coherència interna entre els resultats d'aprenentatge i els mètodes d'ensenyament, i les activitats d'avaluació dels mòduls.

## 6. Personal docent i de suport

Es defineix adequadament el perfil i el nombre de professors i professores necessaris amb relació a les característiques del programa de curta durada i al nombre d'estudiants.

D'altra banda, s'estableix de manera adequada el personal de suport a la docència necessari per impartir el programa de curta durada.

## 7. Recursos materials i serveis

Es defineix de manera adequada els recursos materials i serveis necessaris per impartir el programa de curta durada.

## 8. Resultats previstos

S'informa sobre els resultats previstos en el programa de curta durada.

A tall de síntesi es presenten a continuació unes propostes de millora per a la seva implantació immediata:

**Propostes de millora:**

- S'han de revisar exhaustivament els continguts perquè no hi hagi disfuncions en els textos al llarg del document. S'ha fet un redisseny dels coneixements i habilitats que sembla adequada. Hi ha algunes discrepàncies menors entre el redactat en alguns punts de la memòria i d'altres (p. ex. "la competència "desenvolupar projectes en entorns col.laboratius de forma coordinada" apareix d'aquesta forma en una part del programa i com a "desenvolupar projectes en entorns col.laboratius reals de forma coordinada" en d'altres. S'han de repassar coneixements i habilitats perquè el redactat sigui coherent a tot el document. Hi ha un coneixement que està repetit "Connexió amb servidors i bases de dades externes" i a més apareix en el text també com "Connexió d'una aplicació amb servidors i bases de dades externes")
- Quan s'imparteix formació de tipus virtual s'hauria d'explicitar si aquesta és síncrona o asíncrona per les implicacions que té, per exemple, per als alumnes a l'hora de matricular-se en el curs.

El president de la Comissió d´Enginyeria i Arquitectura,

Ángel Ortiz Bas

València, 19 de novembre de 2020

Agència per a la Qualitat del Sistema Universitari de Catalunya

# ACREDITACIÓ 'EX ANTE' DE PROGRAMES DE CURTA DURADA VINCULATS AL CATÀLEG D'ESPECIALITATS FORMATIVES DEL SERVEI PÚBLIC D'OCUPACIÓ DE CATALUNYA

## *AVALUACIÓ DEL DISSENY DEL PCD*

**Denominació: Cloud Deployer**

**Resultat: FAVORABLE**

## 1. Descripció del programa

La denominació del títol és adequada, coherent amb la disciplina i no dona lloc a errors sobre el seu nivell o efectes acadèmics.

S'informa adequadament sobre la vinculació amb l'especialitat professional, la durada de la formació, modalitat d'impartició i oferta de places de nou ingrés.

## 2. Justificació

Es presenta una justificació ben fonamentada que es relaciona amb les necessitats del mercat laboral.

## 3. Objectiu i Resultats d'aprenentatge

S'ha definit de manera adequada l'objectiu del programa. Els resultats d'aprenentatge són coherents i estan en general ben redactats, ajustant-se de manera correcta al contingut del programa de curta durada. Els resultats d'aprenentatge estan correctament distribuïts entre els mòduls.

## 4. Accés de l'estudiantat

S'inclou informació sobre les vies i requisits d'accés al programa de curta durada. Es defineixen de manera adequada les vies d'accés al programa. Els requisits mínims que han de complir els i les estudiants per accedir al programa estan definits correctament.

Es diu que es necessita una experiència mínima de 5 anys en l'àmbit TIC, s'hauria d'explicitar si és algunes especialitats concretes o en general

## 5. Planificació

La informació sobre la Planificació del programa es considera favorable en relació amb la coherència del conjunt de mòduls amb els resultats d'aprenentatge previstos en el programa i en relació amb la coherència interna entre els resultats d'aprenentatge i els mètodes d'ensenyament, i les activitats d'avaluació dels mòduls.

## 6. Personal docent i de suport

Es defineix adequadament el perfil i el nombre de professors i professores necessaris amb relació a les característiques del programa de curta durada i al nombre d'estudiants.

D'altra banda, s'estableix de manera adequada el personal de suport a la docència necessari per impartir el programa de curta durada.

## 7. Recursos materials i serveis

Es defineix de manera adequada els recursos materials i serveis necessaris per impartir el programa de curta durada.

## 8. Resultats previstos

S'informa sobre els resultats previstos en el programa de curta durada.

A tall de síntesi es presenten a continuació unes propostes de millora per a la seva implantació immediata:

**Propostes de millora:**

- Incloure a la secció 5 les hores de treball autònom dels alumnes en cada mòdul
- Quan s'imparteix formació de tipus virtual s'hauria d'explicitar si aquesta és síncrona o asíncrona per les implicacions que té, per exemple, per als alumnes a l'hora de matricular-se en el curs.

El president de la Comissió d´Enginyeria i Arquitectura,

Ángel Ortiz Bas

València, 19 de novembre de 2020

Agència per a la Qualitat del Sistema Universitari de Catalunya

# ACREDITACIÓ 'EX ANTE' DE PROGRAMES DE CURTA DURADA VINCULATS AL CATÀLEG D'ESPECIALITATS FORMATIVES DEL SERVEI PÚBLIC D'OCUPACIÓ DE CATALUNYA

## *AVALUACIÓ DEL DISSENY DEL PCD*

**Denominació: Consultor CRM**

**Resultat: FAVORABLE**

## 1. Descripció del programa

La denominació del títol és adequada, coherent amb la disciplina i no dona lloc a errors sobre el seu nivell o efectes acadèmics.

S'informa adequadament sobre la vinculació amb l'especialitat professional, la durada de la formació, modalitat d'impartició i oferta de places de nou ingrés.

## 2. Justificació

Es presenta una justificació ben fonamentada que es relaciona amb les necessitats del mercat laboral.

## 3. Objectiu i Resultats d'aprenentatge

S'ha definit de manera adequada l'objectiu del programa. Els resultats d'aprenentatge són coherents i estan en general ben redactats, ajustant-se de manera correcta al contingut del programa de curta durada. Els resultats d'aprenentatge estan correctament distribuïts entre els mòduls.

## 4. Accés de l'estudiantat

S'inclou informació sobre les vies i requisits d'accés al programa de curta durada. Es defineixen de manera adequada les vies d'accés al programa. Els requisits mínims que han de complir els i les estudiants per accedir al programa estan definits correctament, encara que s'hauria d'afegir en els criteris de selecció "Coneixements bàsics sobre ERPs".

## 5. Planificació

La informació sobre la Planificació del programa es considera favorable en relació amb la coherència del conjunt de mòduls amb els resultats d'aprenentatge previstos en el programa i en relació amb la

coherència interna entre els resultats d'aprenentatge i els mètodes d'ensenyament, i les activitats d'avaluació dels mòduls.

## 6. Personal docent i de suport

Es defineix adequadament el perfil i el nombre de professors i professores necessaris amb relació a les característiques del programa de curta durada i al nombre d'estudiants.

D'altra banda, s'estableix de manera adequada el personal de suport a la docència necessari per impartir el programa de curta durada.

## 7. Recursos materials i serveis

Es defineix de manera adequada els recursos materials i serveis necessaris per impartir el programa de curta durada.

## 8. Resultats previstos

S'informa sobre els resultats previstos en el programa de curta durada.

A tall de síntesi es presenten a continuació unes propostes de millora per a la seva implantació immediata:

**Propostes de millora:**

- A la taula de la secció 5 s'ha de modificar la informació referent als ECTS del M01 que han de ser 2,4 i no 0,75 com posa actualment.
- Quan s'imparteix formació de tipus virtual s'hauria d'explicitar si aquesta és síncrona o asíncrona per les implicacions que té, per exemple, per als alumnes a l'hora de matricular-se en el curs.

El president de la Comissió d´Enginyeria i Arquitectura,

Ángel Ortiz Bas

València, 19 de novembre de 2020

Agència per a la Qualitat del Sistema Universitari de Catalunya

# ACREDITACIÓ 'EX ANTE' DE PROGRAMES DE CURTA DURADA VINCULATS AL CATÀLEG D'ESPECIALITATS FORMATIVES DEL SERVEI PÚBLIC D'OCUPACIÓ DE CATALUNYA

## *AVALUACIÓ DEL DISSENY DEL PCD*

**Denominació: Data Scientist**

**Resultat: FAVORABLE**

## 1. Descripció del programa

La denominació del títol és adequada, coherent amb la disciplina i no dona lloc a errors sobre el seu nivell o efectes acadèmics.

S'informa adequadament sobre la vinculació amb l'especialitat professional, la durada de la formació, modalitat d'impartició i oferta de places de nou ingrés.

## 2. Justificació

Es presenta una justificació ben fonamentada que es relaciona amb les necessitats del mercat laboral.

## 3. Objectiu i Resultats d'aprenentatge

S'ha definit de manera adequada l'objectiu del programa. Els resultats d'aprenentatge són coherents i estan en general ben redactats, ajustant-se de manera correcta al contingut del programa de curta durada. Els resultats d'aprenentatge estan correctament distribuïts entre els mòduls.

## 4. Accés de l'estudiantat

S'inclou informació sobre les vies i requisits d'accés al programa de curta durada. Es defineixen de manera adequada les vies d'accés al programa. Els requisits mínims que han de complir els i les estudiants per accedir al programa estan definits correctament.

## 5. Planificació

La informació sobre la Planificació del programa es considera favorable en relació amb la coherència del conjunt de mòduls amb els resultats d'aprenentatge previstos en el programa i en relació amb la

coherència interna entre els resultats d'aprenentatge i els mètodes d'ensenyament, i les activitats d'avaluació dels mòduls.

## 6. Personal docent i de suport

Es defineix adequadament el perfil i el nombre de professors i professores necessaris amb relació a les característiques del programa de curta durada i al nombre d'estudiants.

D'altra banda, s'estableix de manera adequada el personal de suport a la docència necessari per impartir el programa de curta durada.

## 7. Recursos materials i serveis

Es defineix de manera adequada els recursos materials i serveis necessaris per impartir el programa de curta durada.

## 8. Resultats previstos

S'informa sobre els resultats previstos en el programa de curta durada.

A tall de síntesi es presenten a continuació unes propostes de millora per a la seva implantació immediata:

**Propostes de millora:**

- S'ha d'incloure la H14 en el mòdul 3 de la secció 5
- Quan s'imparteix formació de tipus virtual s'hauria d'explicitar si aquesta és síncrona o asíncrona per les implicacions que té, per exemple, per als alumnes a l'hora de matricular-se en el curs.

El president de la Comissió d´Enginyeria i Arquitectura

Ángel Ortiz Bas

València, 19 de novembre de 2020

Agència per a la Qualitat del Sistema Universitari de Catalunya

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## *AVALUACIÓ DEL DISSENY DEL PCD*

**Denominació: Frontal developer**

**Resultat: FAVORABLE**

## 1. Descripció del programa

La denominació del títol és adequada, coherent amb la disciplina i no dona lloc a errors sobre el seu nivell o efectes acadèmics.

S'informa adequadament sobre la vinculació amb l'especialitat professional, la durada de la formació i oferta de places de nou ingrés.

## 2. Justificació

Es presenta una justificació ben fonamentada que es relaciona amb les necessitats del mercat laboral.

## 3. Objectiu i Resultats d'aprenentatge

S'ha definit de manera adequada l'objectiu del programa. Els resultats d'aprenentatge són coherents i estan en general ben redactats, ajustant-se de manera correcta al contingut del programa de curta durada. Els resultats d'aprenentatge estan correctament distribuïts entre els mòduls.

## 4. Accés de l'estudiantat

S'inclou informació sobre les vies i requisits d'accés al programa de curta durada. Es defineixen de manera adequada les vies d'accés al programa. Els requisits mínims que han de complir els i les estudiants per accedir al programa estan definits correctament.

## 5. Planificació

La informació sobre la Planificació del programa es considera favorable en relació amb la coherència del conjunt de mòduls amb els resultats d'aprenentatge previstos en el programa i en relació amb la

coherència interna entre els resultats d'aprenentatge i els mètodes d'ensenyament, i les activitats d'avaluació dels mòduls.

## 6. Personal docent i de suport

Es defineix adequadament el perfil i el nombre de professors i professores necessaris amb relació a les característiques del programa de curta durada i al nombre d'estudiants.

D'altra banda, s'estableix de manera adequada el personal de suport a la docència necessari per impartir el programa de curta durada.

## 7. Recursos materials i serveis

Es defineix de manera adequada els recursos materials i serveis necessaris per impartir el programa de curta durada.

## 8. Resultats previstos

S'informa sobre els resultats previstos en el programa de curta durada.

El president de la Comissió d´Enginyeria i Arquitectura,

Ángel Ortiz Bas

València, 19 de novembre de 2020

Agència per a la Qualitat del Sistema Universitari de Catalunya

# ACREDITACIÓ 'EX ANTE' DE PROGRAMES DE CURTA DURADA VINCULATS AL CATÀLEG D'ESPECIALITATS FORMATIVES DEL SERVEI PÚBLIC D'OCUPACIÓ DE CATALUNYA

## *AVALUACIÓ DEL DISSENY DEL PCD*

**Denominació: Java Back-end web developer**

**Resultat: FAVORABLE**

## 1. Descripció del programa

La denominació del títol és adequada, coherent amb la disciplina i no dona lloc a errors sobre el seu nivell o efectes acadèmics.

S'informa adequadament sobre la vinculació amb l'especialitat professional i l'oferta de places de nou ingrés.

## 2. Justificació

Es presenta una justificació ben fonamentada que es relaciona amb les necessitats del mercat laboral.

## 3. Objectiu i Resultats d'aprenentatge

S'ha definit de manera adequada l'objectiu del programa. Els resultats d'aprenentatge són coherents i estan en general ben redactats, ajustant-se de manera correcta al contingut del programa de curta durada. Els resultats d'aprenentatge estan correctament distribuïts entre els mòduls.

## 4. Accés de l'estudiantat

S'inclou informació sobre les vies i requisits d'accés al programa de curta durada. Es defineixen de manera adequada les vies d'accés al programa. Els requisits mínims que han de complir els i les estudiants per accedir al programa estan definits correctament.

## 5. Planificació

La informació sobre la Planificació del programa es considera favorable en relació amb la coherència del conjunt de mòduls amb els resultats d'aprenentatge previstos en el programa i en relació amb la coherència interna entre els resultats d'aprenentatge i els mètodes d'ensenyament, i les activitats d'avaluació dels mòduls.

## 6. Personal docent i de suport

Es defineixen adequadament les característiques del perfil del professorat necessari per impartir el programa de curta durada.

D'altra banda, s'estableix la informació a aportar sobre el personal de suport a la docència necessari per impartir el programa de curta durada.

## 7. Recursos materials i serveis

S'estableix la informació a aportar sobre els recursos materials i serveis necessaris per impartir el programa de curta durada.

## 8. Resultats previstos

S'informa sobre els resultats previstos en el programa de curta durada i són adequats.

A tall de síntesi es presenten a continuació unes propostes de millora per a la seva implantació immediata:

**Propostes de millora:**

- Quan s'imparteix formació de tipus virtual s'hauria d'explicitar si aquesta és síncrona o asíncrona per les implicacions que té, per exemple, per als alumnes a l'hora de matricular-se en el curs.

El president de la Comissió d´Enginyeria i Arquitectura,

Ángel Ortiz Bas

València, 19 de novembre de 2020

Agència per a la Qualitat del Sistema Universitari de Catalunya

# ACREDITACIÓ 'EX ANT'E DE PROGRAMES DE CURTA DURADA VINCULATS AL CATÀLEG D'ESPECIALITATS FORMATIVES DEL SERVEI PÚBLIC D'OCUPACIÓ DE CATALUNYA

## *AVALUACIÓ DEL DISSENY DEL PCD*

**Denominació: Open Source Back end web developer**

**Resultat: FAVORABLE**

## 1. Descripció del programa

La denominació del títol és adequada, coherent amb la disciplina i no dona lloc a errors sobre el seu nivell o efectes acadèmics.

S'informa adequadament sobre la vinculació amb l'especialitat professional i l'oferta de places de nou ingrés.

## 2. Justificació

Es presenta una justificació ben fonamentada que es relaciona amb les necessitats del mercat laboral.

## 3. Objectiu i Resultats d'aprenentatge

S'ha definit de manera adequada l'objectiu del programa. Els resultats d'aprenentatge són coherents i estan en general ben redactats, ajustant-se de manera correcta al contingut del programa de curta durada. Els resultats d'aprenentatge estan correctament distribuïts entre els mòduls.

## 4. Accés de l'estudiantat

S'inclou informació sobre les vies i requisits d'accés al programa de curta durada. Es defineixen de manera adequada les vies d'accés al programa. Els requisits mínims que han de complir els i les estudiants per accedir al programa estan definits correctament.

## 5. Planificació

La informació sobre la Planificació del programa es considera favorable en relació amb la coherència del conjunt de mòduls amb els resultats d'aprenentatge previstos en el programa i en relació amb la coherència interna entre els resultats d'aprenentatge i els mètodes d'ensenyament, i les activitats d'avaluació dels mòduls.

## 6. Personal docent i de suport

Es defineixen adequadament les característiques del perfil del professorat necessari per impartir el programa de curta durada.

D'altra banda, s'estableix la informació a aportar sobre el personal de suport a la docència necessari per impartir el programa de curta durada.

## 7. Recursos materials i serveis

S'estableix la informació a aportar sobre els recursos materials i serveis necessaris per impartir el programa de curta durada.

## 8. Resultats previstos

S'informa sobre els resultats previstos en el programa de curta durada i són adequats.

A tall de síntesi es presenten a continuació unes propostes de millora per a la seva implantació immediata:

**Propostes de millora:**

- Quan s'imparteix formació en modalitat virtual s'hauria d'explicitar si aquesta és síncrona o asíncrona per les implicacions que té, per exemple, per als alumnes a l'hora de matricular-se en el curs.

El president de la Comissió d´Enginyeria i Arquitectura,

Ángel Ortiz Bas

València, 19 de novembre de 2020

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