

Qualifications Reference Framework for Bachelor's degrees in ICT (EQF Level 7)

Dimension 1: Knowledge and understanding			
(Sub)descriptor	Knowledge	Skills	Autonomy and Responsibility (Wider Competences)
L7.1. Level descriptor Knowledge and understanding	<i>Demonstrate a depth and breadth of understanding of STEM related to ICT which offers a foundation for developing original thinking and new ideas.</i>	<i>Evidence the ability to contextualise, compare, critique, and integrate specialised knowledge utilised to advance thinking and ideas relevant to IC.</i>	<i>Manifest the ability to use and share specialised knowledge and understanding which allow for the development new knowledge, policies and strategic decision making in complex and unpredictable ICT-related and societal settings.</i>
Subset 1 L7.1.1 STEM	Demonstrate advanced knowledge in mathematics, physics and other STEM fields which are core to ICT.	Evidence the ability to contextualise, integrate and compare specialised STEM knowledge in solving ICT-specific problems.	Manifest the ability to identify, describe and aggregate advanced STEM methodological knowledge required to solve problems in the ICT field.
Subset 2 L7.1.2 ICT-related methodological-operational knowledge	Demonstrate advanced and highly specialised methodological-operational knowledge in ICT systems in order to be able to design, develop and implement them.	Evidence the ability to contextualise, integrate and compare specialised knowledge in order to design, implement and operate computer systems and networks.	Manifest the ability to mobilise and evaluate specific methodological-operational knowledge in ICT to identify, formulate and solve application problems, configure and manage ICT systems of different complexity.

Dimension 1: Knowledge and understanding

<p>Subset 3 L7_1.3 Legal aspects and organisational frameworks</p>	<p>Demonstrate advanced understanding of legal aspects and institutional frameworks of diverse types of organisations, alongside ICT-related regulations.</p>	<p>Evidence the ability to apply advanced knowledge of business processes and corresponding IS in professional contexts related to ICT.</p>	<p>Manifest the ability to formulate and share a digital strategy for an organisation, being capable of starting and managing an operation in an inclusive and sustainable manner.</p>
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Dimension 2: Design, Development and Management of ICT Systems and related processes

(Sub)descriptor	Knowledge	Skills	Autonomy and Responsibility (Wider Competences)
<p>L7_2. Level descriptor Design, development and management of ICT systems and related processes</p>	<p><i>Demonstrate a depth and breadth of knowledge and understanding regarding higher-order generic and ICT specific digital skills and competences required to operate successfully in diversified contexts at expert level, as well as in a wider societal context.</i></p>	<p><i>Evidence the ability to apply higher-order and evidence-informed ICT skills including appropriate digital competences, which facilitate critical thinking, complex problem solving and effective argumentation in multi-dimensional and differentiated work and societal settings.</i></p>	<p><i>Manifest the ability to effectively apply ICT and societal related knowledge, skills and competences, including innovation, entrepreneurship, research, accountability and/or leadership, to manage complex technical and/or content related activities including projects and initiatives in familiar and unfamiliar work and societal contexts.</i></p>

Dimension 2: Design, Development and Management of ICT Systems and related processes

<p>Subset 1 L7_2.1 Methods and techniques in ICT</p>	<p>Demonstrate advanced knowledge and understanding of design and implementation of ICT systems, considering the ethical use of data and information technologies.</p>	<p>Evidence the ability to apply advanced and highly specialised knowledge for analysing, designing, implementing, testing, maintaining and integrating complex ICT systems in companies and other organisations.</p>	<p>Manifest the ability to use appropriate methods and techniques in an innovative and target-oriented way to effectively address complex ICT problems.</p>
<p>Subset 2 L7_2.2 Management of ICT processes</p>	<p>Demonstrate advanced knowledge and understanding of the different aspects involved in processes of ICT system and applications development</p>	<p>Evidence the ability to manage complex ICT processes and solve related problems</p>	<p>Manifest the ability to research, develop and manage innovative and effective ICT solutions and applications</p>
<p>Subset 3 L7_2.3 Transformational impact of ICT</p>	<p>Demonstrate advanced understanding of the transformational impact and implications of ICT in society, communities and work environments.</p>	<p>Evidence the ability to design and manage ICT solutions and systems at an expert level which contribute to the needs and expectations of societies, communities, work environments, and individuals</p>	<p>Manifest the ability to exercise initiative and acknowledge accountability for the managed ICT tasks</p>

Dimension 3: Informed Decision making and Work Ethics

(Sub)descriptor	Knowledge	Skills	Autonomy and Responsibility (Wider Competences)
<p>L7_3. Level descriptor Informed decision making and work ethics</p>	<p><i>Demonstrate advanced knowledge and understanding of complex theoretical frameworks, concepts, methodologies and practices at a level which allows for comparing and integrating these, to serve as a foundation for research and creative thinking in ICT in an ethical, inclusive and sustainable manner</i></p>	<p><i>Evidence the ability to identify, analyse, synthesise and compare theories, concepts, methodologies and skills from ICT related and wider perspectives (including one's social, ethical, cultural and political responsibilities) to organise often incomplete information, to make evidence-based judgements, and to solve complex problems in research related or innovative contexts of professional practice</i></p>	<p><i>Manifest the analytical ability to critically comprehend complex field and societal related challenges and problems and to reflect on new specialised knowledge and skills, and to use this critical capability to contribute to ethical decision-making, finding individual and collaborative ways to move forward, ensuring participation and inclusion</i></p>
<p>Subset 1 L7_3.1 Reciprocal interactions between ICT and society</p>	<p>Demonstrate comprehensive understanding of the reciprocal interactions between ICT and society.</p>	<p>Apply comprehensive understanding of the reciprocal interactions between ICT and society to planning and managing ICT projects.</p>	<p>Manifest the ability to identify appropriate and relevant inclusive, sustainable and ethical approaches to responsibly manage work contexts in the ICT subject area and interdisciplinary contexts.</p>

Dimension 3: Informed Decision making and Work Ethics

<p>Subset 2 L7_3.2 Professional, ethical and social responsibilities</p>	<p>Demonstrate awareness of the key aspects of professional, ethical and social responsibilities linked to management of ICT activities, in particular decision-making and judgement formulation, namely the roles and dynamics of collaboration.</p>	<p>Make decisions and informed judgements on issues related to ICT, exercising professional, ethical and social responsibilities.</p>	<p>Demonstrate knowledge of the norms, regulations and codes of ICT practice, and reflect on professional, ethical and social responsibilities in taking decisions and formulating judgments, valuing diversity.</p>
<p>Subset 3 L7_3.3 Methodologies for ethically collecting and interpreting data</p>	<p>Demonstrate comprehensive understanding of methodologies for gathering, evaluating and interpreting data.</p>	<p>Apply ethical principles of good practice to the retrieval, storage, analysis, management and transformation of data.</p>	<p>Manifest the ability to identify collaborative and proficient ways to interpret and transform data for addressing relevant societal and community challenges.</p>

Dimension 4: Communication and Collaboration

<i>(Sub)descriptor</i>	<i>Knowledge</i>	<i>Skills</i>	<i>Autonomy and Responsibility (Wider Competences)</i>
L7_4. Level descriptor Communication and collaboration	Demonstrate advanced knowledge and understanding of the appropriate means, skills, attitudes, approaches and strategies to effectively communicate complex information and collaborate, sharing ideas, multidimensional problems and solutions related to ICT for a variety of audiences, including ICT specialists.	Evidence effective communication of different sophisticated communication strategies, media, means and skills, expressing ideas, multidimensional problems, challenges and possible solutions by applying technical and non-technical strategies, means and skills tailoring them to a variety of audiences including ICT specialists.	Manifest the ability to communicate clearly and unambiguously in complex work and/or professional, academic and societal situations, by making convincing and evidence-informed arguments and by listening to and appreciating the view of others.
Subset 1 L7_4.1 Communication methods, tools and strategies	Demonstrate advanced knowledge and understanding of existing and emerging innovative communication methods, tools, strategies, and their limitations.	Evidence the ability to communicate proficiently information and express complex ideas, problems and solutions effectively, clearly and unambiguously, orally and in writing, including English or another relevant foreign language.	Manifest the ability to identify and justify appropriate and proficient communication and collaboration methods, tools, and strategies, both established and innovative ones.

Dimension 4: Communication and Collaboration

<p>Subset 2 L7_4.2 ICT-related terminology</p>	<p>Demonstrate advanced knowledge of the scientific and discipline-specific technical terminology in the ICT field, namely in international contexts.</p>	<p>Evidence the ability to describe activities and communicate their results to ICT specialist and non-specialist audiences in national and international contexts using appropriate communication, strategies, methods and tools.</p>	<p>Manifest the ability to communicate proficiently in multicultural and multilingual environments, using evidence, to non-experts, peers and professionals about the application of ICT and its ethical and social impact.</p>
<p>Subset 3 L7_4.3 Team Management</p>	<p>Demonstrate advanced knowledge and understanding of responsibilities and methods to manage teams that may be composed of different disciplines and levels</p>	<p>Evidence the ability to collaborate or cooperate effectively in national and international work environments as leader or member of teams that may be composed of different disciplines and levels, contributing to meet deliverable, schedule and budget requirements</p>	<p>Manifest the ability to identify and implement an appropriate strategy to lead a complex project in the ICT-related field, applying inclusive and ethical principles of conduct</p>

Dimension 5: Professional Lifelong Learning and Continuous Personal Development

<p><i>(Sub)descriptor</i></p>	<p>Knowledge</p>	<p>Skills</p>	<p>Autonomy and Responsibility (Wider Competences)</p>
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Dimension 5: Professional Lifelong Learning and Continuous Personal Development

<p>L7_5. Level descriptor Professional lifelong learning and continuous personal development</p>	<p><i>Demonstrate advanced knowledge and understanding of the learning process and methods required for self-directed continuous learning and development in a variety of formats and settings</i></p>	<p><i>Evidence advanced learning skills and appropriate strategies to advance the continuous learning and development of self and others in order to reflect on, update, and upgrade knowledge, skills and competencies in ICT, and societal developments</i></p>	<p><i>Manifest continuous personal and professional development in individual, team-based and societal settings by initiating, organising, managing and evaluating lifelong learning activities for oneself providing good service in a professional context and to society at large</i></p>
<p>Subset 1 L7_5.1 Professional self-assessment</p>	<p>Demonstrate advanced knowledge and understanding of self- assessment methods needed for personal development</p>	<p>Evidence the ability to continuously evaluate personal knowledge and skills</p>	<p>Manifest the ability to conduct continuous self-assessing of own professional competences</p>
<p>Subset 2 L7_5.2 Autonomous learning</p>	<p>Demonstrate advanced knowledge and understanding of learning methods needed for personal development</p>	<p>Evidence the ability to organise one's own study and/or learning process, using appropriate learning methods and materials</p>	<p>Manifest the ability to identify and justify appropriate learning strategies and methods in independent lifelong learning</p>

Dimension 5: Professional Lifelong Learning and Continuous Personal Development

<p>Subset 3 L7_5.3 Continuous personal development</p>	<p>Demonstrate advanced knowledge and understanding of learning methods necessary to follow developments in ICT subject area and within broader or multidisciplinary and societal contexts</p>	<p>Evidence the ability to follow new developments in the ICT-related field, search for relevant information and seek appropriate support</p>	<p>Manifest the ability to undertake further studies in emerging technologies in ICT also within trans- or multidisciplinary contexts</p>
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