



Competence Matrix





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1 Introduction

1.1 Background Information

The meaning and content of specific skill sets are often characterized as competences. It is important to understand the competences required for microelectronics jobs or types of occupations, and the same is true for the abilities, traits and attributes that support successful performance of the skills in question. However, education and training providers, curriculum developers, qualifications authorities and those dealing with microelectronics job descriptions and skills audits in microelectronics industry have different priorities when it comes to competences.

What differentiates soft from transversal skills? How can microelectronic new jobs, detected by this project, specific skills be linked with general knowledge, key competences and individual autonomy and responsibility? What is the concrete definition of the ability to “adapt to change”, the skill also requested by microelectronic industry? How can in-demand transversal skills like this be acquired? And are they fully part of the learning outcomes of microelectronics formal education and training programs in initial and continuous VET?

National and EU institutions have been developing skills and competence frameworks to provide well-structured responses to these, and other questions. Competence frameworks are supported by tools such as detailed handbooks and definitions available on dedicated online portals and platforms.

There is a growing consensus that agreeing on definitions of skills and competences is important so that the general development of human capabilities can be consistently described. This is illustrated by the spread of competence frameworks and taxonomies of skills and occupations, and by the development of mechanisms and platforms for matching Skills and Qualifications with labour market supply with demand.

How do people know about skills and qualifications? With the global focus on climate change, knowing how to act sustainably has become an urgent factor. The EU has adopted competence frameworks and associated tools for digital skills and entrepreneurship competences, while UNESCO (Asia-Pacific) and the Council of Europe have adopted frameworks for transversal competences and democratic culture, respectively.

The EU Council Recommendation on key competences for lifelong learning, revised in 2018, aims to reach out to the wider public by providing “a European reference tool for policy makers, education and training providers, educational staff, guidance practitioners, employers, public employment services and learners themselves”.



The eight key competences of the Recommendation are: literacy; multilingualism; science, technology, engineering and maths; digital; personal, social and learning to learn; citizenship; entrepreneurship; cultural awareness and expression.

These are necessary to ensure basic skills, personal fulfilment, active citizenship, social inclusion, and employment. They are both an expression of fundamental human rights, and part of the EU's vision for a European Education Area in which education and culture are drivers of job creation and social equity. The fifth key competence — 'personal, social and learning to learn' — is defined as "the ability to reflect upon oneself, effectively manage time and information, work with others in a constructive way, remain resilient and manage one's own learning and career." It also includes the ability to learn and work both collaboratively and independently.

This competence matrix tries to help to answer some important questions. How to organize the microelectronics learning? How to evaluate and share learning? Are learners or microelectronics jobseekers in your setting demonstrating these key competences? Are these competences included in VET providers activities and programs? Microelectronics field professionals, feels they have the training and support required to reflect on your own situation, effectively manage time and information, work with others in a constructive way, remain resilient and manage your own learning and career?

1.2 Main Objectives

Learning outcomes described in this competences matrix, are the statements of what a microelectronics learner is expected to know, be able to do and understand at the end of their learning sequence after the ECOVEM courses, and they play an important role in our efforts to improve the quality and relevance of microelectronics education and training in Europe.

Competences matrix have to help to clarify ECOVEM courses programs and qualifications intentions and make it easier for those involved – learners, teachers, tutors or assessors – to work towards these expectations.

The increased transparency offered by competences matrix also provides an important reference point for policymakers, making it easier to analyze the match between microelectronics industry needs detected by the project and the programs and qualifications offered within education and training.

Learning outcomes, however, can be written in many ways and it is not a given that they will add value as expected.



Is for this that to develop this competences matrix, we followed the CEDEFOP European handbook: Defining, writing and applying learning outcomes.

<https://www.cedefop.europa.eu/en/publications/4156> .

The handbook was written for individuals and institutions actively involved in defining and writing learning outcomes in education and training in general, and in vocational training in particular.

Also, because this handbook as a reference point for cooperation and creation of a network that in microelectronics VET could play a key role in taking learning outcomes forward as a language bridging education and training and the world of work.

1.3 Structure

- 1) Framework
 - a) Extract from the ECoVEM Project Proposal
 - b) EQF levels addressed in the ECoVEM Project proposal
 - c) Descriptors defining levels in the European Qualifications Framework (EQF)
- 2) Development process
- 3) Qualifications
 - a) Design and manufacture of PCB
 - b) Microelectronics packaging technologies
 - c) Fundamentals of microelectronics manufacturing
 - d) Integrated circuits design
 - e) System design
 - f) Microelectronics for a greener economy
 - g) Key competences and skills

1.4 Involved partners

The competences matrix development was a P14 ANCCP work, help by P16 UNED.
All the WG2 partners made a revision of this document.



1.5 Task Reference

Number 3.1
Title Competence matrix for ECoVEM courses
Type Report

Description: Competence matrix with statements of what a learner knows, understands and is able to do on completion of a learning process in each course. The learning outcomes will be defined in terms of knowledge, skills and responsibility& autonomy according to the ECVET recommendations and with respect to the concepts and principles shared with the European qualifications' framework, Europass and the European quality assurance reference framework for VET.

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1.6 Acronyms

CRM Customer relationship management
ECVET European Credit System for Vocational Education and Training
EQAVET European Quality Assurance Reference Framework for Vocational Education and Training
EQF European qualification framework
ERP Event-related potentials
ESCO multilingual classification of European Skills, Competences, Qualifications and Occupations.
PCB Printed circuit boards
OER Open Educational Resources
LED Light-Emitting Diode
OLED Organic Light-Emitting Diode
AMOLED Active-Matrix Organic Light-Emitting Diode, Is A Type Of OLED Display Device Technology



2 Inputs and Objectives

2.1 Inputs

The competences matrix comes from other project results.

2.1.1 T2.2 –Skills and occupational profiles for microelectronics

- Job profiles with required skills
- Open microelectronics skills and qualification framework
- European recognition framework for microelectronics
- Update on national & European qualification framework

2.1.2 From ECoVEM VET partners:

- Existing curriculum of current courses in microelectronics

2.1.3 T2.4 in WG2 Planning of the innovated curricula for identified skills for EQF3-8 in microelectronics and its applications

Outputs for each course:

- Objective
- Content
- Results
- Assessment

Expected courses

1. Design and fabrication of PCB EQF 3-4 150 hours
2. Microelectronics packaging technologies EQF 5-6 300 hours
3. Integrated Circuits Design EQF 4-6 300 hours
4. System design EQF 6-8 400 hours
5. Basics of microelectronics manufacturing EQF 4-5 300 hours
6. Microelectronics for greener economy and industrial applications 300 hours
7. Key Competences & Transversal Skills 100 hours



2.2 Objectives

On the basis of the results of WP2 (training needs anticipation, definition of occupational profiles, identification of skills and competences requirements for different EQF levels), the learning outcomes for each course will be defined.

Partners will rely on their own expertise in educational sciences and using the Cedefop guidelines of 2017 "Defining, Writing and Applying Learning Outcomes: a European Handbook"

<https://www.cedefop.europa.eu/en/publications/4156>, as well as other relevant EU tools and guidelines: ECVET, EQAVET, validation of non-formal and formal learning, and the ESCO principles and guidelines to promote the shift from "Learning Outcome" to "employability" and labour market relevance.

Embedding those EU tools and principles will empower ECoVEM curriculum to have built-in mechanisms to establish a common framework and reference for the EU microelectronics sector as a whole, overcoming any possible fragmentation.

3 Content

3.1 Framework

3.1.1 Extract from the ECoVEM Project proposal

"Microelectronics is a multidisciplinary domain. It involves physics (principles of operation), chemistry (technology), digital skills (design of IC and devices), technical skills (construction, assembly, testing, maintenance). Then, the ECoVEM curricula will be multidisciplinary but also interdisciplinary for microelectronic applications such as photovoltaics for green energy; sensors for smart cars, for IoT for ecological control, for medical applications, including cameras for minimally invasive surgery; high frequency devices for communications; LED, OLED, AMOLED displays and technologies for touch screens for smartphones; memories, processors and interfaces for computers; microsystems for large applications".



3.1.2 EQF levels addressed in the ECoVEM Project proposal:

Design and manufacture of printed circuit boards (PCB) EQF 3 to 4: trains the profile of "technician" in the design and manufacture of PCBs, 150 hours duration, including PCB design, board manufacturing, techniques of through hole mounting, surface mounting etc.

Microelectronics packaging technologies EQF 3 to 5: provides expertise in assembly and packaging of devices and integrated circuits (ICs), multi-chip modules, systems in a package, printed circuit boards with a total life of 300 hours covering assembly techniques, assembly, passivation, chip packaging, multi-chip modules, system in one package.

Integrated Circuits Design EQF 4 to 6: provides a first specialization in microelectronic design with a total duration of 300 hours covering digital, analog or mixed signal circuits, (information processing and storage, RF and microwaves, sensors and actuators).

System design EQF 6 to 8: provides a second specialization in microelectronics engineering and design with a focus on Research and Innovation. Total duration 400 hours covering system-on-chip, system-on-package, hardware / software co-design, circuit testing and systems.

Fundamentals of microelectronics manufacturing EQF 4 to 5: trains the profile of "specialized technician" in microelectronics manufacturing for a total duration of 300 hours covering topics such as: introduction to advanced materials, processing equipment, production process, packaging, tests.

Key Competences & Transversal Skills EQF 3 to 8: provides training on transversal skills and competences required by the industry, delivered in OER environment for a total duration of 100 hours.

3.1.3 Organizations involved

- CECE Spanish Confederation of educational centers (**associated partner**)
- ANCCP National Association of Centers with Certificates of Professionalism (associated centers, national and EU partners)
- CRES Centre for Research and European Studies
- CONACEE Confederation of special employment centers
- ACADE. Association of Autonomous Centers for Private Education
- ACEDE-GEDEFORM. Training Group of the Assoc.Cat.d´Executius, Directius i Empresaris
- AFOREN. National Association of Training for Employment
- AMITS. Association of Industrial Masters and Superior Technicians
- APeL. ELearning Provider Association
- Docents FOIB. Association of Training Teachers for Employment of the Balearic Islands
- Association of Professional Training Centers Fpempresa
- INCUAL Qualification National Institut. Ministry of Education
- CNM-CSIC National Microelectronics Center- Spanish National Research Council
- IMSE-CSIC Seville Institute of Microelectronics- Spanish National Research Council
- ANALOG DEVICES (SPAIN)
- FUNDACIÓN EDUCACIÓN EMPLEO
- COLEGIO KARBO



- JUNTA DE ANDALUCIA General Secretariat for the Organization of Training of the Ministry of Employment, Training and Self-Employed Work
- DUALIZA CAIXA BANK FOUNDATION
- REGION DE MURCIA Ministry of Education and Universities
- PIMEC Small and medium enterprise confederation (Catalunya)
- **P15 CEPYME**
- National Reference Center for Information and Communication Technologies (Madrid)
- National Reference Center for Electromechanical Machines (Leganés)
- National Electricity and Electronics Reference Center (Cantabria)
- Training Center in Electricity, Electronics and Aeronautics (Madrid)
- Center For Research and Training in Electricity and Electronics of Cantabria

3.1.4 Descriptors defining levels in the European Qualifications Framework (EQF)

EQF level	Knowledge	Skills	Responsibility and autonomy (Competences)
Level 3	knowledge of facts, principles, processes and general concepts, in a field of work or study	a range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information	take responsibility for completion of tasks in work or study adapt own behavior to circumstances in solving problems
Level 4	factual and theoretical knowledge in broad contexts within a field of work or study	a range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study	exercise self-management within the guidelines of work or study contexts that are usually predictable but are subject to change. supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities
Level 5	comprehensive, specialized, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge	a comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems	exercise management and supervision in contexts of work or study activities where there is unpredictable change. review and develop performance of self and others
Level 6 (BSc)	advanced knowledge of a field of work or study, involving a critical	advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a	manage complex technical or professional activities or projects, taking responsibility for decision-



	understanding of theories and principles	specialized field of work or study	making in unpredictable work or study contexts. take responsibility for managing professional development of individuals and groups
Level 7 (MSc)	highly specialized knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research. critical awareness of knowledge issues in a field and at the interface between different fields	specialized problem-solving skills required in research and/or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields	manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches. take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams
Level 8 (PhD)	knowledge at the most advanced frontier of a field of work or study and at the interface between fields	the most advanced and specialized skills and techniques, including synthesis and evaluation, required to solve critical problems in research and/or innovation and to extend and redefine existing knowledge or professional practice	demonstrate substantial authority, innovation, autonomy, scholarly and professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work or study contexts including research



3.2 Development process

Time	Tasks description
Gener-March 2021	Research and review of relevant literature regarding learning objectives in EU qualification frameworks and related documents from others Centres of Vocational Excellence by ETF network for excellence.
Gener-March 2021	Collaboration of T2.2. Need analysis in Spain for 3-5 EQF levels from Spain regarding to existing VET related to our national qualifications system and following general results to take in account for the learning outcomes definition
March-October 2021	Interviews with experts in microelectronics and taking knowledge about the labour market needs and the training
May -June 2021	Collaboration in the T2.1. ECoVEM_ Questionnaire_Labour-market_Needs and good practices collection in Spain and following general results to take in account for the learning outcomes definition
May-July 2021	Contribution on T2.1. existing curriculum of current courses in microelectronics in Spain and following general results to take in account for the learning outcomes definition
May-October 2021	<p>Research on iVET and cVET courses curriculums on EQF 3-7 on electronics family and on transversal skills in Spain with help from:</p> <ul style="list-style-type: none"> • 2 Cantabria Reference national centers in electronics; • Reference national centers in electronics of Public Madrid Administration help; • ANCCP associated centers and partners from VET network (other VET related associations and institutions). <p>and in EU with ANCCP EU partners (from mobilities and CRESS)</p>
June-October 2021	Researchers internal meeting for result T2.4 of expected courses evaluation for competences matrix development
July-September 2021	Development of version 1 of competencies matrix
October 2021	First revision of competences matrix from WP* coordinator UNED
October 2021	Contributions to T2.4 - Syllabus for courses category with reference of version 1 of competences matrix



3.3 Qualifications

3.3.1 Design and manufacture of PCB

(150 h) (6 ECTS)

EQF	KNOWLEDGES	SKILLS	COMPETENCIES
3	<ul style="list-style-type: none"> - PCB design - Manufacture of boards - Mounting techniques like through hole, surface mounting, etc. 	<ul style="list-style-type: none"> - Complete understanding of the basic concepts of linear circuits. - Transformation functions - Theory of electrical circuits - Types of logic families - Electronic circuits - Combinatorial circuits - Sequential circuits - Synchronous and asynchronous circuits - Semiconductors - Microprocessors - Signal processing - Modulation techniques 	<ul style="list-style-type: none"> - Basic knowledge of electronics and electrical technology, how it works - Easy use of internet resource and collaborative working tools - Creativity
4		<ul style="list-style-type: none"> - Design tools (for example, EasyEDA) - PCB prototyping - Electronic simulation models - Photonics - Material technologies - Implementation of communications systems - Engineering problems solving approaching 	<ul style="list-style-type: none"> - Knowledge of transversal technologies and methodologies for the creation of boards with basic electronic devices - High level of versatility and adaptability - Creativity



3.3.2 Microelectronics packaging technologies
(300 h) (12 ECTS)

EQF	Knowledge	Skills	Competences
3	<ul style="list-style-type: none"> - Specialization in assembly and packaging of devices and integrated circuits (IC) - Multi-chip modules, systems in a package, printed circuit boards - Techniques of assembly, passivation, chip packaging, multichip modules, system in a package 	<ul style="list-style-type: none"> - Understanding wired diagrams - Electrical magnitudes - Types of devices - Electrical and electronic components - PCBs - Integrated circuits - Electric and electronic circuits - Protections - Circuit behavior laws - Types of circuits - Operative systems - Use of tools, manuals and electrical - Measuring instruments - Personal protection and safety equipment 	<ul style="list-style-type: none"> - Manual ability and easy components manipulation - Detail, precision, order - Gathered (ability to work concentrated) - Teamwork - Basic SW installation
4		<ul style="list-style-type: none"> - Traceability of components and devices - Auxiliary elements - Package and restraint elements - Networks and services - Use of tools, manuals and electrical - Measuring instruments - Personal protection and safety equipment - 	<ul style="list-style-type: none"> - Teamwork - Working under pressure - Self-learning - Complete reading and interpretation of technical drawings and graphics - Good communication - Initiative - Prioritize - Flexible - Functional testing
5		<ul style="list-style-type: none"> - Personal protection and safety equipment - Packaging procedures (automated, wafer post-processing, wire bonding, flip chip, hermetic sealing, optical alignment, etc.) 	<ul style="list-style-type: none"> - Assurance of occupational prevention - Social ability - Conflict resolution and negotiation - Leadership - Quality assurance



3.3.3 Fundamentals of microelectronics manufacturing
(300 h) (12 ECTS)

EQF	Knowledge	Skills	Competences
4	Introduction to advanced materials, processing equipment, production process, packaging, testing	<ul style="list-style-type: none"> - Electrical installations - Transmission systems - Transmission circuits - Diagnostics - Repair of electronic devices - Materials for implementation of electronic devices - Test types and procedures - Methodology of learning - Occupational risks and its prevention 	<ul style="list-style-type: none"> - Basic concepts of electronic and electronic principles - Semiconductors - Circuits theory - Energy sources - Measuring device - Intervention plan - Elaboration of technical reports - Electromagnetism regulations - Autonomy - Analytical thinking - Work with quality and method - Teamwork - Flexibility
5		<ul style="list-style-type: none"> - Network principles, including behavior and planning of the mobile network - Telematics - Applied microelectronics - Personal gadgets and devices - Home automation or domotics - New materials to be used in the implementation of electronic devices - Occupational risks and its prevention - Lean production techniques - Quality assurance methodology - Waste management 	<ul style="list-style-type: none"> - Full knowledge of electronic devices such as alarms, televisions, radios, broadcasts, amplifiers, etc. - Design and implementation of electronic devices - Empathy - Interpersonal communication - Problem resolution - Working under pressure



3.3.4 Integrated circuits design

(300 h) (12 ECTS)

EQF	Knowledge	Skills	Competences
4	Digital, analogical or mixed signal circuits, (information processing and storage, RF and microwaves, sensors and actuators)	<ul style="list-style-type: none"> - Materials for integrated circuits - Logic rules and their electronic implementation - Synchronized and asynchronous circuits - Integrated circuit implementation based on different materials - Basic concepts of network behavior - RF and microwaves principles and antenna design - Energy sources - Principles of signal processing - Design alternatives - Environmental protection 	<ul style="list-style-type: none"> - Design of analog and digital circuits - Problem resolution - Analyzing - Teamwork - Autonomy - Adaptation to change - Self-confidence
5		<ul style="list-style-type: none"> - Implementation of advanced communication systems such as routers, switches, hubs, transmitters and receivers, among others - PLC languages - Advanced design and implementation of PLDs such as PROMs and their variants, CPLDs, GAL, etc. - Environmental protection 	<ul style="list-style-type: none"> - Design techniques - Advanced electronic systems design - Simulation techniques and tools - Synthetising - Take decision - Planning - Motivational
6		<ul style="list-style-type: none"> - Implementing sensors, transducers - Robotics - Artificial Intelligence devices - Environmental protection - RF risks for persons 	<ul style="list-style-type: none"> - Design of advanced electronic systems of greater complexity - Decision taken - Organizational - Negotiation - Leading innovation projects - Prevention of organizational risks



3.3.5 System design
(400 h) (16 ECTS)

EQF	Knowledge	Skills	Competences
6	<ul style="list-style-type: none"> - Design and engineering of microelectronics - System on chip, system on package, hardware / software co-design, circuit and system testing 	<ul style="list-style-type: none"> - Design and implementation of communication devices (routers, transmitters, etc.) - A wide range of SW and machine programming languages - ASIC and FPGA - Processing and storage devices - SW modeling and prototyping - SW development cycle - SaaS, PaaS, IaaS - Sensorisation - Prevention of occupational hazards 	<ul style="list-style-type: none"> - Understanding of requirements - Micro and nanoelectronics - A/D and D/A conversions - SW design and development - Integrated circuits design - Information management - Quality assurance - Ethics - Teamwork and coworking - Empathy - Autonomy - Self-learning - Analysis and evaluation of SW platforms - Creativity
7		<ul style="list-style-type: none"> - Economic and environmental impact of integrated circuits alternatives - Electromagnetic regulations - SW engineering methodologies - SW and HE architecture design and analysis techniques - Databases structures - Product of minimum value - User experience techniques - Prevention of occupational hazards 	<ul style="list-style-type: none"> - Optimal mixed circuit design techniques - Design and implementation of analog, digital and mixed circuits - Complex technical reports - Problem resolution - Excellent communication - Negotiation - Planning - Initiative
8		<ul style="list-style-type: none"> - Intellectual and industrial property - Prevention of occupational hazards - International trade regulations - Marketing methods - Basic concepts of economic issues - Customer satisfaction 	<ul style="list-style-type: none"> - Complete understanding of behavior, design and implementation of analog, digital and mixed circuits - Innovation - Entrepreneurship - E-Commerce



3.3.6 Microelectronics for a greener economy
(300 h) (12 ECTS)

EQF	Knowledge	Skills	Competences
3	<ul style="list-style-type: none"> - Photovoltaics for green energy - IoT for smart cities - Electronic components for electric vehicles 	<ul style="list-style-type: none"> - Coding programming - PLCs - Principles of robotics - Chatbots and service bots - Circuit theory - Signal processing - Networks - New materials 	<ul style="list-style-type: none"> - Algorithmizing - Teamwork - Time management - Autonomy and self-learning - Creative thinking - Management and monitoring of personal productivity - Know the main electronic equipment - Basic concepts of electronic components - Sustainability
4		<ul style="list-style-type: none"> - Full stack developer - Virtual assistants like Alexia, Siri or Cortana - Search for digital tools thought like Google - Carbon footprints analysis - Consume profiles - Analytical thinking - Critical thinking 	<ul style="list-style-type: none"> - Synthesize knowledge - Understanding the problem - Analytical thinking - Know and use learning analysis techniques - Personal productivity techniques - Sustainability
5		<ul style="list-style-type: none"> - Virtualization techniques and solutions - Elements and interrelationships of cloud computing - Open-source tools for machine learning like Weka, Neo4J, etc. - SCRUM KANBAN - Fingerprint 	<ul style="list-style-type: none"> - Digital business framework - Economic and energy impact of cloud computing - Machine learning and pattern recognition - Problem resolution - Design thinking - E-Commerce
6		<ul style="list-style-type: none"> - Data analysis - Data science - Behavior of communication networks - Electronics products waste treatment - Lean concepts - Quality assurance 	<ul style="list-style-type: none"> - Deep Learning - Artificial recognition - Robotics - Big Data - Cloud storage - Innovation - Data driven management - Advice and team leadership



EQF	Knowledge	Skills	Competences
7		<ul style="list-style-type: none"> - Recycling procedures - Sustainability techniques - Responsible purchase - Sources of energy production - 5G networks 	<ul style="list-style-type: none"> - Artificial Intelligence - Virtual reality - Cybersecurity - Digital strategy - IoT - Green economy - Sustainability - Digital transformation
8		<ul style="list-style-type: none"> - Energy production processes - Economic and inherited compression - Risk compression at wide range of levels (both technological and financial) - Digital communication tools and technics - Prevention of occupational hazards - Market analysis techniques and competences 	<ul style="list-style-type: none"> - Trusted networks - Blockchain - Circular economy - Strategic understanding of the environment for the construction of solutions designed in interconnected tools - Communication - Management - Problem solving, including the identification of needs and digital resources, decision-making to choose them and act to achieve a goal, or the resolution of conceptual problems through digital resources, as well as the resolution of technical problems - Creative use of technologies - Sustainability



3.3.7 Key competences and transversal skills

(100 h) (4 ECTS)

EQF	Knowledge	Skills	Competences
3	<p>Social-emotional knowledge</p> <p>Cultural responsiveness knowledge</p> <p>Creative interaction knowledge</p>	<ul style="list-style-type: none"> - Learning by doing. - Communication and synthesis of ideas. - Cooperative tools in the cloud such as Google Docs, Slack or Trello, among others. - Use of technologies for teamwork, presentations, spreadsheets. - Ability to identify strenghts in self, community and culture. - Sets and monitors personal goals. - Reflective listening. - Pays attention on how the online activities affect the life, reputation and career of the person and others. - Understands how criticizing or complimenting other people or organisations can have real time consequences. - Demonstrates curiosity and joy to experiment. - Creative organisation of own work and tasks to optimize own performance. - Demonstrates acceptance to new ideas and new knowledge without judgement. 	<ul style="list-style-type: none"> - Teamwork and role play. - Assertiveness. - Empathy. - Effective use of technology to communicate work and results. - Self-awareness. - Positive thinking. - Autonomy. - Demonstration of empathy. - Recognition of cultural diversity. - Respectfulness for diversity in team and in handling data. - Integrity and accountability.
4		<ul style="list-style-type: none"> - Analytical thinking. - Brainstorming techniques. - Personal productivity techniques. - Creative thinking techniques. - Digital communication, including skills to share digital information through digital resources. - Bases decisions on safety, social and ethical considerations. - Be aware of own judgements and biases in handling data. 	<ul style="list-style-type: none"> - Resilience. - Team leader. - Time management. - Effective compression of the required objectives and their transmisión. - Patience. - Analytical thinking. - Self-learning, independence from self-evolved learning.



EQF	Knowledge	Skills	Competences
		<ul style="list-style-type: none"> - Evaluates consequences of different actions. - Aptitude for empathizing with the emotions, thoughts, and attitudes of others even if never met face-to-face. - Inclusiveness of different opinions. - Perceptiveness to cultural implications. - Appropriate use of humour. - Use of a foreign language at Europass level B+. 	<ul style="list-style-type: none"> - Creation and management of digital content. - Ability to find new ways to express own ideas. - Ability to find something new in existing concepts. - Embraces the spirit of unknowing, show joy in experimenting and play. - Familiar with forms of expression of new concepts and ideas.
5		<ul style="list-style-type: none"> - Know the basic set of KPIs applicable in the reference work environment. - Digital advertising. - Minimum viable producto. - Protection of personal data (fingerprint). - Basic innovation techniques. 	<ul style="list-style-type: none"> - Leadership. - Digital first culture (paperless work approach). - Results driven by co-creative cooperative techniques and procedures. - Listening. - E-Commerce. - Tone creation. - Ethics.
EQF	Knowledge	Skills	Competences
6		<ul style="list-style-type: none"> - Work with Canvas models. - Design thinking. - Agile methodologies (SCRUM). - Understand the basic principles of economics (breakeven point, profit and loss rates, etc.). - Basic concepts of traditional methodologies (ex. KANBAN). - Use of foreign language at Europass level C. 	<ul style="list-style-type: none"> - Create new business models. - Improve work environments by working from the demand side. - Master when to use each type of PM methodology. - Manage difficult conversations. - Storytelling. - Change management. - Advice and team leadership. - Willingness to question everything and never stop asking questions, "What if...?". - Ability to use various thinking techniques such as brainstorming, design thinking, 6 thinking hats, etc. for generation of ideas and finding new solutions to existing problems.



EQF	Knowledge	Skills	Competences
			<ul style="list-style-type: none"> - Familiar with tools to turn new concepts and ideas in datasets to support new products.
7		<ul style="list-style-type: none"> - Market analysis techniques and skills such SWOT - Customer travel techniques - Know the basis of business and customer management solutions in operation - Patent procedures - Industrial and intellectual protection methodologies - Data driven strategy - Profound level of self control and control of social relationships in the team. - Self motivation and ability to motivate others. - Makes constructive safe choices and decisions based on data. - Perspective thinking. 	<ul style="list-style-type: none"> - Lead the process of creating a lean start up - Understand market behavior - Customer satisfaction results driven - Understand market and environmental indicators - Manage clashes effectively - Distancing skills* - Mentoring and coaching - Ethics & sustainability. - Confidence in being flexible, adaptable and functioning well with uncertainty. - Makes balanced hypotheses, explores ways of their verification and provides guidance. - Evaluates impact and probability of success of various options. - Ability to apply creative process to various situations and teams.
8		<ul style="list-style-type: none"> - Work with disruptive technologies. - Feel comfortable with working with CRMs and ERPs solutions. - Economic and inherited compression, both locally and internationally. - Legal framework & financial obligations. - European regulations. - Prevention of occupational hazards. 	<ul style="list-style-type: none"> - Definition and monitoring of the strategy. - Digital transformation. - Change leadership. - Manage and make decisions with reports of CRM and ERP solutions. - Financial management. - Entrepreneurial ecosystem. - Problem solving, including the identification of needs and digital resources, decision-making to choose them and act to achieve a goal, or the resolution of conceptual problems through digital resources, as well as the resolution of technical problems. - Creative use of technologies.

