R3.1 – Modular VET Curricula

Hellenic Open University

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Abstract

In this document entitled "Modular VET curricula" the four (4) curricula are described, each needed for a specific role profile. Within the Mu.SA – Museum Sector Alliance project, the research resulted in four emerging role – profiles: **Digital Strategy Manager, Digital Collections Curator, Digital Interactive Experience Developer and Online Community Manager,** which were updated and revised according to the needs of museum professionals. As a result, four curricula were created with a set of competences, so as to meet the needs of the specific role profile in the museum sector.

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1 Introduction

Education and professional training are the foundation on which the whole museum sector stands and the sector has to deliver innovative and creative solutions (ICTOP, 2011). Current technology integration process in labour market substitute ICT tools in the everyday tasks, projects and accomplishments and that has changed the way museum professionals encountered their work – life activities in museums and other cultural organizations.

There is a move toward modular approach to curriculum implementation. The approach has drawn a special attention in most nations' education system particularly in technical and vocational education and higher education (Malik, 2012). Modular approach is an emerging trend educational thinking that shifts traditional method of instruction to an outcome-based learning paradigm. Modularization is based on the principle of dividing the curriculum into small discrete modules or units that are independent, non-sequential, and typically short in duration. A modular approach to teaching enables the learner to have control over his/her learning and accepts greater responsibility for learning (Dejene, 2019).

Modular teaching is concerned for each learner as an individual with his/her own special aptitude and interest, goal of helping each student to think for himself, and allowing the individuality to each learner. The emphasis must be on the one–one learners with unique abilities, aspiration, and influencing experiences and, again to provide quality education, the tutor must personalize and individualize the instructional program. Creativity, flexibility, and lifelong learning are requirements needed to be successful in a real world.

Also, Rushton (2005) stressed that continuous assessment enhances deep learning if there is plenty of feedback at regular intervals, and all assessments need to have clear assessment criteria which are known by the students before they undertake the assessment activity. When frequent assessment is combined with regular feedback, it will improve students' learning (Rushton, 2005). Well-designed assessment procedures set clear expectations, establish a reasonable workload, and provide opportunities for students to self-monitor, rehearse, practice, and receive feedback. Learning outcomes that have been indicated in the modules should be assessed using

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applicable and appropriate assessment procedures so that the outcomes provide evidence of mastery of the desired learning outcomes.

Just like any other sector, public or private, the museum field needs to invest in the continuing education of the workforce. With changing demographics, rapidly evolving technological and communication advances and the need to stay sustainable, it is critical for museums to continually recalibrate the skill set of their staff and optimize available resources to meet this goal. Yet, this most critical need often gets compromised due to strained resources leaving museums to carry on the work without being able to deploy their fullest potential (Gangopadhyay, 2017).

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2 The way towards Mu.SA VET curricula

2.1 Introduction to VET curricula development

Curriculum is increasingly seen by stakeholders as a dynamic framework guiding teaching and learning processes and as a steering mechanism for quality. It features in key European policy documents as a new consensus for contributing to Europe 2020, the European strategy for smart, sustainable and inclusive growth. Findings of empirical research widely recognize that curriculum relevance is a condition sine qua non, not only for improving the human capital potential of education and training graduates but also for retaining learners in education and training systems. The endemic irrelevance of curriculum may be one of the greatest obstacles to matching education and training provision successfully to learner and labor market needs.

Adopting a learning outcomes approach when developing curricula, valuing what a learner knows, understands and is able to do on completion of a learning process – irrespective of how, when and where this learning takes place – is seen by many European countries as an effective way to avoid such potential mismatches and promote active learning and inclusive teaching (Cedefop, 2010).

To empower individuals to develop their own learning pathways, possibilities for validation and recognition of various types of learning at various stages as well as guidance throughout life, are offered in more national systems. The development of national qualifications frameworks, based on learning outcomes, to create favorable contexts for these possibilities to be realized, continues to prove that education and training remains an important priority even in economic downturn (Cedefop, 2010).

Several factors influence the different changing paths of education subsystems. The two most commonly mentioned rationales for introducing learning outcomes in curricula, namely the closer link between employment requirements and training provision and the need to implement EU tools such as the EQF. European policy developments endorsed with the Recommendation of the European Parliament and of

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the Council on key competences for lifelong learning (2006)[1] – defining eight key competences that all young people should develop at the end of their initial education to a level that equips them for further learning and working throughout their life – have also become important drivers for curriculum reforms in compulsory schooling (Leney et al., 2009).

The diversity of use and understandings of the term 'learning outcomes' across Europe, attested for instance by Winterton (in Cedefop; Winterton et al., 2006) and Cedefop (2009a), made it necessary to use the EQF definition as a starting point to compare the specific features of national learning outcomes in the framework of the country studies.

In the EQF, learning outcomes are defined as 'statements of what a learner knows, understands and is able to do on completion of a learning process'.

The common European tools developed in the framework of the Copenhagen process, including the European qualifications framework (EQF) and the European credit system for VET (ECVET), use learning outcomes as a key mechanism to reach the objective of 'transparency, comparability, transferability and recognition of competences and/or qualifications, between different countries and at different levels' (Copenhagen declaration, 29-30 November 2002).

One simple but significant difference between learning outcomes and competence can be found in the understanding of the EQF. According to Markowitsch and Luomi-Messerer (2008, p. 41) learning outcomes are more comprehensive than competences, and hence the term 'learning outcome' can be used as an umbrella term for competence(s), while the reverse is not the case. Competence, in this context, refers to performance in a given situation, i.e. to the ability to use knowledge and skills in an appropriate way. According to that understanding,

[1] The eight key competences as defined in the European framework are: (1) Communication in the mother tongue; (2) Communication in foreign languages; (3) Mathematical competence and basic competences in science and technology; (4) Digital competence; (5) Learning to learn; (6) Social and civic competences; (7) Sense of initiative and entrepreneurship; (8) Cultural awareness and expression (European Commission, 2006).

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competence can be defined as contextualized learning outcomes (Cedefop, 2009e, p. 6).

Cedefop distinguishes the term learning programme from the term curriculum: 'The learning programme is a written document planning learning experiences in a specific learning setting. It is developed on the basis of the curriculum and takes into account the learners' needs' (Cedefop, 2010a, p. 27). Curriculum development refers to the processes by which curriculum documents are generated and then implemented.

The shift to learning outcomes (Cedefop 2009a) sets out the different ways in which learning outcomes are used. In particular, they are used at various levels to:

(a) characterize (at systemic level) overall aims for education and training;

(b) express the requirements or standards set by qualifications;

(c) clarify the intentions of curricula and learning programmes.

Furthermore, depending on the level at which they are used, learning outcomes serve a variety of purposes:

(a) to recognize prior learning;

(b) to award credit;

(c) to ensure quality;

(d) to improve credibility;

(e) to increase transparency (Cedefop 2009a, p. 10).

The distinctive feature of learning outcomes approaches is that the curriculum is described in terms of what the learner will be able to do at the end of his or her course of study rather than in terms of objectives, processes, knowledge or other traditional curricular elements (Cedefop, 2010a; Werquin, 2012).

In the EQF, 'learning outcomes' are defined as statements of what a learner knows, understands and is able to do on completion of a learning process, which are defined as knowledge, skills and competences (European Parliament and Council of the EU, 2008). In this definition, 'competence' is understood as a special capability which is not fully captured as knowledge

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or skill. 'Competence', in this sense, is understood to refer to autonomy and responsibility, values and attitudes.

However, 'competence' is also understood to include descriptions of work-based or social capabilities that are exercised in the workplace or in society (Cedefop 2012).

The use of learning outcomes makes it possible to develop curricula that:

(a) equip learners with knowledge, skills and competence that are relevant to available employment opportunities and of value to them in a range of different work and social situations;

(b) integrate different kinds of skills, for example theoretical and practical or transversal and generic skills;

(c) are transparent and understandable to learners and other stakeholders;

(d) may be learned, taught and assessed at various times and in a variety of places and ways;

(e) are responsive to changing needs (Cedefop, 2010a).

Modular Learning Design is a flexible framework for curriculums in Education. Purpose of this Design ensure the realization of lifelong, whole and meaningful learning fits 21st Century.

When design a curriculum there is an methodology for the Author/ Instructor to follow: to identify real life competences that learner should achieve, connect the real life competences and learning objectives, identify tools and skills that will be developed, create assessment objects for the learning process.

The learning objects are the smallest component of the curriculum. They form the foundation of a structured curriculum, are integral to learning and are used to build pathways to higher level cognitive awareness and understanding. The content within learning objects has always been integral to the teaching and learning processes. The shift to digital learning environments enables discrete digital lessons that can be created, stored, used and reused, labeled (tagged), mapped in sequence, coupled with specific formative assessments, and integrated into larger cohesive curricular structures (Dolence, 2014).

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2.2 Modular learning in Mu.SA project

In Mu.SA project, 4 VET curricula were designed and developed including blended learning (online, face to face and work based learning), which were provided to the museum professionals during the lifecycle of the project. The Mu.SA research activities aimed to identify what are the necessary e-skills /digital and transferable competences to support museum professionals to thrive in the digital environment (see WP2 consolidate report[2]).

The Mu.SA project adopted the e-Competences Framework (e-CF 3.0) in the specific field of e-Culture. This is a framework to improve the mobility and transparency of ICT professionals across Europe developed by the working group of the European Standardization organization on ICT Skills, according to the EQF - European Qualification Framework, in order to fulfil this aim, i.e. to encourage greater job mobility for museum professionals.

Digital or e-competence (e-CF) means using ICT skills according to the following definition*: "Competence is the ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development"* [3]

This is a holistic concept directly related to workplace activities and incorporating complex human behaviours that are expressed as deeply rooted or embedded attitudes.

Instead, transferable competences are those hard and soft skills that relate to many occupations, i.e., creative thinking and communication skills with MS Office Suite applications, or time management by using applications such as Outlook, etc[4].

[2] Consolidate report uploaded in Mu.SA website: http://www.project-musa.eu/results/ (last accessed 10/8/2020)

[3] Source: Terminology of European education and training policy SECOND EDITION. A selection of 130 key terms." CEDEFOP, Luxembourg: Publications office of the European Union, 2014.

[4] According to the Online Cambridge dictionary transferable skills are used in one job or career that can also be used in another: *Leadership is a highly transferable skill.*

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Another European Framework related to digital competences that the Mu.SA project considered is the DigComp (Digital Competence Framework for citizens 2.1)[5], a European framework for developing and applying basic digital competences, which is addressed to all European citizens as users of digital technologies. DigComp with a detailed range of proficiency levels supports the development of learning and training materials while it identifies the key components of digital competence in 5 areas such as: Information and data literacy, Communication and collaboration, Digital content creation, Safety and Problem solving. It also helps in the design of instruments for assessing the development of citizens' competence, career guidance and promotion at work.

For each profile e-competences and transferable competences have been listed on a rating scale from those that are most important to those that are least important. The results of the research show that there are e-competences and transferable competences that should be developed across all job role-profiles and that should be considered essential as a starting point for up skilling.

As detailed in the MuSA Methodology (R3.2), a set of competences was identified as "common" for the four different VET curricula; these competences were proven as essential for the four different job role profiles, therefore they were delivered to all through a MOOC (Massive Open Online Course). This course included 22 competences, originating from the e-CF, DigComp and the Transferrable competences / 21st century skills. The 8-weeks learning duration Mu.SA MOOC course lasted eventually a total of 12 weeks (with a break of two weeks in the middle, and two weeks in the end allowing late learners to finish). Each e-CF competence was taught in about 5 hours of study (for the e-4 level equivalent to EQF 7, plus 2 hours for e-5 level equivalent to EQF 8). Each DigComp competence was taught in 1-2 hours of study, whereas each 21st century (transferrable) competence was taught in approximately 3 hours of study. All of those aggregately summed up to 80 hours of study (10 hours per week on average).

[5] https://ec.europa.eu/jrc/en/digcomp/digital-competence-framework (accessed 7/7/2020).

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Next, a specialization course for each different job role profile was implemented, including online, face-to-face and work based learning. Obviously, there were some common competences for more than one VET curricula. The competences for the four specialization courses aggregated to 336 hours of learning. In detail, each specialization course included:

A. Blended training course lasted 24 weeks (6 months) with an extension of 1 month, with an effort of approximately 15h of study / week (totally 360h of study)

- A1: Online and self-study (288h) (material)
- A2: Face-to-face sessions (24h = 6 x 4h) (once a month) (incl. Skype sessions)
- A3: Assessment (48h)

B. Work-based learning lasted 10 weeks, approximately 20,5h of work in the placement / week (totally 205h)

- B1: Work placement (200h)
- B2: Assessment (5h)

Based on the outcomes of WP2, each e-CF competence should be taught to a particular level that corresponds to the EQF.

- e-3 (e-CF) = Level 6 EQF
- e-4 (e-CF) = Level 7 EQF
- e-5 (e-CF) = Level 8 EQF

The table below presents the appropriate total amount of educational material that is delivered.

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Educational material	Digital Competences (e-CF) Level e-3	Level e-4	Level e-5
Core material[6]	4h (min)	5h (min)	6h (min)
Practical assignment	2h	3,5h	5h
Total	6h	8,5h	11h
Educational material	**Digital Competences (DigComp)**		
Core material	1,5h (min)		
Practical assignment	1,0h		
Total	2,5h		
Educational material	**21st Century competences (Transferrable)**		
Core material	3h (min)		
Practical assignment	2h		
Total	5h		

Table 1 – Educational material characteristics (spec. courses)

Both the MOOC and each specialization course formed together a VET curricula.

In the Appendix of this document the 64 modules are listed, selected for the blended course (MOOC and the Specialization courses). The training modules are consisted by the digital (from the e-CF and the DigComp Framework) and the transferable competences (21st century skills).

Moreover, in the Appendix, the reader may find the hours and the level of each competence, taught in the Specialization courses, for each of the role profile allocated.

[6] Including assessment

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3 Mu.SA VET Curricula 1: Digital Strategy Manager

3.1 Job profile

Job Role-Profile Description	
Title	***Digital Strategy Manager***
Mission	The ***Digital Strategy Manager*** has a strategic function in order to help museums to thrive in a digital environment. S/he is in charge of a digital transformation plan in line with the overall museum strategy. S/he is responsible for the museum digital strategy and the financial planning of technological resources at a senior level, alongside the overall museum management. S/he plays a mediating role between the internal museum departments and external stakeholders, and is able to effectively communicate with various different stakeholders, especially high-tech companies. S/he is comfortable with working with both back-end and front-end technologies. S/he has a good knowledge of how a museum works.
Tasks / Key responsibilities	• To plan the digital strategy and the financial planning of technological resources (budget allocated by the Director) at a senior level, in line with the overall management of a museum • To play a mediating role between the museum and the outside world, and is able to effectively communicate with various different stakeholders, especially high-tech companies • To facilitate the smooth flow from content production to technology in various different departments • To supervise upgrades, installations and backup operations on a day-to-day basis • To supervise the safety of all digital infrastructures • To make strategic decisions based on the relevant evidence and knowledge on new digital products • To provide internal guidelines/policies in compliance with ICT standards and regulations • To conduct benchmarking analyses • To produce periodic reports on the progress of the

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	activities and results obtained • To assess staff training needs and organise training activities • To carry out evaluation reports on audience needs and collect them from other departments • To plan user-centred technology projects and interventions • To foresee the impact of digital solutions while responding to the needs of the museum and its audiences • To advise on digital training and regulations	
Knowledge (*In EQF, Knowledge is described as theoretical)*	Required	Knowledge of: □ Advanced coding, Virtual Reality, Augmented Reality, Application Development, Digitalization of collection, 3D, Metadata Management, Digital Exhibition, XML language, specific software tools, systems of geographic information software, HTML □ Digital terminology and products to assist effective communication with digital collaborators and contractors in the case of joint projects □ The major IT frameworks e.g. COBIT, ITIL, CMMI, ISO and their applications in a museum context □ The different service models (Saas, Paas, Iaas) and operational translational (i.e. Cloud Computing) □ Digital devices and tools for storage and retrieval of data □ The new emerging technologies □ ICT architectural framework □ Museum functions and context □ The principles and regulations of intellectual property rights □ Structured project management

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		methodologies - How to implement audience development strategies - The ability to conduct and interpret audience research
	Desired	- User Experience - Knowledge of Agile process management - Open Data and linked data
Environment	This role-profile is strategic for all those museums that want to thrive in a digital environment. Digital Strategy Managers are in charge of a digital transformation plan, in line with the overall museum strategy. Currently, they are most often seen as external collaborators, but in future they could belong to the internal organisation.	
Relationships / Reporting line/ Answerable to	Reports to: Director and Head of other departments Interacts with: Curatorial Conservation Department Communication Department ICT Department Education Department Customer Relationship Services	

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3.2 Competences of the Digital Strategy Manager

Digital competences

# Competence	Competence Title	Course through which the competence is delivered	Type	Level (EQF)
1	IS and Business Strategy Alignment	MOOC	e-CF	e-4 level
2	Browsing, searching and filtering data, information and digital content	MOOC	DigComp	e-6 level
3	Managing data, information and digital content	MOOC	DigComp	e-6 level
4	Business plan development	MOOC	e-CF	e-4 level
5	Evaluating data, information and digital content	MOOC	DigComp	e-5 level
6	Identifying needs and technological responses	MOOC	DigComp	e-5 level
7	Technology trend monitoring	MOOC	e-CF	e-3 level
8	Netiquette	MOOC	DigComp	e-6 level
9	Innovating	MOOC	e-CF	e-3 level
10	(Innovating and) creatively using technology	MOOC	DigComp	e-5 level
11	Needs identification	MOOC	e-CF	e-3 level
12	Developing digital content	MOOC	DigComp	e-7 level
13	Collaborating through digital technologies	MOOC	DigComp	e-5 level
14	Forecast	MOOC	e-CF	e-4 level

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	development			
15	Relationship management	MOOC	e-CF	e-3 level
16	Protecting personal data and privacy	Specialization course	DigComp	e-5 level
17	ICT quality management	MOOC	e-CF	e-4 level
18	Product / Service Planning	Specialization Course	e-CF	e-3 level
19	Identifying digital competences gaps	Specialization Course	DigComp	e-5 level
20	Service Level Management	Specialization Course	e-CF	e-4 level
21	Protecting personal data and privacy (specialisation course)	Specialization Course	DigComp	e-8 level
22	Sustainable Development	Specialization Course	e-CF	e-4 level
23	Managing digital identity	Specialization Course	DigComp	e-6 level
24	Information Security Strategy Development	Specialization Course	e-CF	e-4 level
25	Copyright and licenses	Specialization Course	DigComp	e-6 level
26	Education and Training Provision	Specialization Course	e-CF	e-3 level
27	Programming	Specialization Course	DigComp	e-6 level
28	Information and Knowledge Management	Specialization Course	e-CF	e-4 level
29	Solving technical problems	Specialization Course	DigComp	e-7 level
30	Purchasing	Specialization Course	e-CF	e-4 level
31	Process	Specialization Course	e-CF	e-4 level

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	Improvement			
32	Risk Management	Specialization Course	e-CF	e-4 level
33	Business Change Management	Specialization Course	e-CF	e-4 level

3.3 Transversal competences

# Competence	Competence Title	Course through which the competence is delivered	Type
1	Team working	MOOC	Transferrable/ 21st Century
2	Creative thinking	MOOC	Transferrable/ 21st Century
3	Leadership and change facilitator	MOOC	Transferrable/ 21st Century
4	Communication skills	MOOC	Transferrable/ 21st Century
5	Time management	MOOC	Transferrable/ 21st Century
6	Mentoring / coaching skills	Specialization Course	Transferrable/ 21st Century
7	Decision making	Specialization Course	Transferrable/ 21st Century
8	Sense of initiative and entrepreneurship	Specialization Course	Transferrable/ 21st Century
9	Analyse and synthesize information	Specialization Course	Transferrable/ 21st Century
10	Networking skills	Specialization Course	Transferrable/ 21st Century
11	Negotiation skills	Specialization Course	Transferrable/ 21st Century
12	Resilience	Specialization Course	Transferrable/ 21st Century

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4 Mu.SA VET Curricula 2: Digital Collections Curator

4.1 Job profile

Job Role - Profile Description		
Title	***DIGITAL COLLECTIONS CURATOR*** **Also known as Digital Cultural Asset Manager, Digital Asset Manager, Digital Curator**	
Mission	The Digital Collections Curator is responsible for implementing the digital strategy relevant to collecting, storing, archiving, preserving and making accessible the digital collections (either born – digital or digitized). In larger museums this could be a role-profile in itself, while in smaller museums a curator should be up skilled in the area.	
Tasks / Key responsibilities	• To improve a museum's digital preservation, management and exploitation plan for all digital cultural content/objects, on an on-going basis • To provide information on copyright and protection of digital cultural property according to international standards • To supervise the implementation of cataloguing/archiving standards • To produce metadata according to recognised international standards • To collaborate with museum staff in order to facilitate their work with digital cultural assets • To collaborate with other departments and manage projects involving enhancement of digital materials • To supervise the security and safety of digital materials • To design projects in collaboration with other departments in order to enhance the digital collection • To facilitate the use of collections according to museum policies and activities.	
Knowledge *(In EQF, Knowledge is described as*	Required	Knowledge of: □ Terminology and products to assist effective communication with ICT collaborators and contractors in the case of joint projects

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theoretical)		□ Web, cloud and mobile technologies □ Devices and tools for the storage and retrieval of digital data □ Good practices and standards for digital asset management □ The new emerging technologies □ The functions and context of the museum □ The principles and regulations of intellectual property rights □ Structured project management methodologies □ Audience development strategies □ The best practices of audience engagement □ Communication strategies □ Knowledge of software □ Open data
	Desired	□ User experience □ Storytelling techniques □ Agile process management □ Audience research □ Implementation of audience development strategy □ How to edit Wikipedia entries
Environment	The Digital Collections Curator collaborates with external technology suppliers and, within the museum, with the: □ Management □ Education departments □ Communication department Object curatorial departments (if different from own)	
Relationships / Reporting line/ Answerable to	*Reports to:* *Director and/or Head of other departments* *Digital Cultural mediator* *Interacts with:* *Communication Department* *ICT department* *Education department* *Customer relationship services*	

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4.2 Competences of the Digital Collections Curator

Digital competences

# Competence	Competence Title	Course through which the competence is delivered	Type	Level (EQF)
1	IS and Business Strategy Alignment	MOOC	e-CF	e-4 level
2	Browsing, searching and filtering data, information and digital content	MOOC	DigComp	e-6 level
3	Managing data, information and digital content	MOOC	DigComp	e-6 level
4	Business plan development	MOOC	e-CF	e-4 level
5	Evaluating data, information and digital content	MOOC	DigComp	e-5 level
6	Identifying needs and technological responses	MOOC	DigComp	e-5 level
7	Technology trend monitoring	MOOC	e-CF	e-3 level
8	Netiquette	MOOC	DigComp	e-6 level
9	Innovating	MOOC	e-CF	e-3 level
10	(Innovating and) creatively using technology	MOOC	DigComp	e-5 level
11	Needs identification	MOOC	e-CF	e-3 level
12	Developing digital content	MOOC	DigComp	e-7 level
13	Collaborating through digital technologies	MOOC	DigComp	e-5 level
14	Forecast	MOOC	e-CF	e-4 level

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	development			
15	Relationship management	MOOC	e-CF	e-3 level
16	Protecting personal data and privacy	MOOC	DigComp	e-5 level
17	ICT quality management	MOOC	e-CF	e-4 level
18	Product / Service Planning	Specialization Course	e-CF	e-3 level
19	Identifying digital competences gaps	Specialization Course	DigComp	e-5 level
20	Protecting personal data and privacy (specialisation course)	Specialization Course	DigComp	e-8 level
21	Managing digital identity	Specialization Course	DigComp	e-6 level
22	Documentation Production	Specialization Course	e-CF	e-3 level
23	Copyright and licenses	Specialization Course	DigComp	e-6 level
24	Service Delivery	Specialization Course	e-CF	e-3 level
25	Programming	Specialization Course	DigComp	e-6 level
26	Information and Knowledge Management	Specialization Course	e-CF	e-5 level
27	Solving technical problems	Specialization Course	DigComp	e-7 level
28	Problem Management	Specialization Course	e-CF	e-4 level
29	Purchasing	Specialization Course	e-CF	e-4 level
30	Risk Management	Specialization Course	e-CF	e-4 level

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4.3 Transversal competences

# Competence	Competence Title	Course through which the competence is delivered	Type
1	Team working	MOOC	Transferrable/ 21st Century
2	Creative thinking	MOOC	Transferrable/ 21st Century
3	Leadership and change facilitator	MOOC	Transferrable/ 21st Century
4	Communication skills	MOOC	Transferrable/ 21st Century
5	Time management	MOOC	Transferrable/ 21st Century
6	Management skills	Specialization Course	Transferrable/ 21st Century
7	Influence/ persuasion skills	Specialization Course	Transferrable/ 21st Century
8	Mentoring / coaching skills	Specialization Course	Transferrable/ 21st Century
9	Decision making	Specialization Course	Transferrable/ 21st Century
10	Sense of initiative and entrepreneurship	Specialization Course	Transferrable/ 21st Century
11	Interpersonal skills	Specialization Course	Transferrable/ 21st Century
12	Networking skills	Specialization Course	Transferrable/ 21st Century
13	Active listening skills	Specialization Course	Transferrable/ 21st Century
14	Mediation skills	Specialization Course	Transferrable/ 21st Century

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5 Mu.SA VET Curricula 3: Digital Interactive Experience Developer

5.1 Job profile

Job Role-Profile Description		
Title	***Digital Interactive Experience Developer*** *Also known as Interactive Experience Developer, Digital Interactive Experience designer, Exhibit interactive designer*	
Mission	The Digital Interactive Experience Developer designs, develops and implements innovative and interactive experiences based on audience needs, providing meaningful experiences for all types of audiences.	
Tasks/ Key responsibilities	□ To design and prototype interactive and innovative installations providing meaningful experiences for all types of audiences □ To carry out audience research and observation analysis □ To develop accessibility tools for all types of visitors □ To facilitate communication flows between various different museum teams and external high-tech companies □ To facilitate relations between various different museum teams and departments: curatorial, ICT, education, marketing, communication, etc.	
Knowledge In EQF, Knowledge is described as theoretical	Required	Knowledge of: □ Devising creative solutions for the provision of new concepts, ideas, products or services that could add value to the museum and enhance the experience of its audiences. □ ICT terminology and products to assist effective communication with ICT collaborators and contractors in the case of joint projects (Augmented Reality, Application Development, Digitalization of the collection, 3D, Metadata Management, Digital Exhibition, XML language, specific software tools (Adobe Photoshop, digital drawing software, AutoCAD - architecture software; systems of geographic information software, HTML). □ The functions of how a museum works □ The principles and regulations of intellectual property

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		rights □ Structured project management methodologies □ Audience development strategies □ The techniques and best practices of audience engagement □ Storytelling techniques □ Communication □ Audience research and interpretation/ analysis of the data □ Interactive storytelling
	Desired	□ User experience □ Agile process □ How to implement an audience development strategy
Environment	The Digital Interactive Experience Developer works closely with exhibition curators and educational services, attempting to detect and capitalize on interactive potential in exhibition plans. S/he works with the ICT team, acting to combine and integrate the exhibition design, ICT, education, marketing and communication.	
Relationships / Reporting line/ *Answerable to*	*Reports to:* Director and/or Head of other departments Digital Strategy Manager *Interacts with:* Curatorial department Communication Department ICT department Education department Customer relationship services/ Visitor services	

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5.2 Competences of the Digital Interactive Experience Developer

Digital competences

# Competence	Competence Title	Course through which the competence is delivered	Type	Level (EQF)
1	IS and Business Strategy Alignment	MOOC	e-CF	e-4 level
2	Browsing, searching and filtering data, information and digital content	MOOC	DigComp	e-6 level
3	Managing data, information and digital content	MOOC	DigComp	e-6 level
4	Business plan development	MOOC	e-CF	e-4 level
5	Evaluating data, information and digital content	MOOC	DigComp	e-5 level
6	Identifying needs and technological responses	MOOC	DigComp	e-5 level
7	Technology trend monitoring	MOOC	e-CF	e-3 level
8	Netiquette	MOOC	DigComp	e-6 level
9	Innovating	MOOC	e-CF	e-3 level
10	(Innovating and) creatively using technology	MOOC	DigComp	e-5 level
11	Needs identification	MOOC	e-CF	e-3 level
12	Developing digital content	MOOC	DigComp	e-7 level
13	Collaborating through digital technologies	MOOC	DigComp	e-5 level
14	Forecast	MOOC	e-CF	e-4 level

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	development			
15	Relationship management	MOOC	e-CF	e-3 level
16	Protecting personal data and privacy	MOOC	DigComp	e-5 level
17	ICT quality management	MOOC	e-CF	e-4 level
18	Product / Service Planning	Specialization Course	e-CF	e-3 level
19	Identifying digital competences gaps	Specialization Course	DigComp	e-5 level
20	Application Design	Specialization Course	e-CF	e-3 level
21	Protecting personal data and privacy (specialisation course)	Specialization Course	DigComp	e-8 level
22	Application Development	Specialization Course	e-CF	e-3 level
23	Managing digital identity	Specialization Course	DigComp	e-6 level
24	Testing	Specialization Course	e-CF	e-3 level
25	Documentation Production	Specialization Course	e-CF	e-3 level
26	Copyright and licenses	Specialization Course	DigComp	e-6 level
27	Change Support	Specialization Course	e-CF	e-3 level
28	Programming	Specialization Course	DigComp	e-6 level
29	User Support	Specialization Course	e-CF	e-3 level
30	Solution Deployment	Specialization Course	e-CF	e-3 level
31	Problem Management	Specialization Course	e-CF	e-4 level
32	Solving technical problems	Specialization Course	DigComp	e-7 level
33	Risk Management	Specialization Course	e-CF	e-4 level

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5.3 Transversal competences

# Competence	Competence Title	Course through which the competence is delivered	Type
1	Team working	MOOC	Transferrable/ 21st Century
2	Creative thinking	MOOC	Transferrable/ 21st Century
3	Leadership and change facilitator	MOOC	Transferrable/ 21st Century
4	Communication skills	MOOC	Transferrable/ 21st Century
5	Time management	MOOC	Transferrable/ 21st Century
6	Decision making	Specialization Course	Transferrable/ 21st Century
7	Fact - driven	Specialization Course	Transferrable/ 21st Century
8	Sense of initiative and entrepreneurship	Specialization Course	Transferrable/ 21st Century
9	Analyse and synthesize information	Specialization Course	Transferrable/ 21st Century
10	Interpersonal skills	Specialization Course	Transferrable/ 21st Century
11	Mediation skills	Specialization Course	Transferrable/ 21st Century
12	Networking skills	Specialization Course	Transferrable/ 21st Century
13	Negotiation skills	Specialization Course	Transferrable/ 21st Century
14	Active listening skills	Specialization Course	Transferrable/ 21st Century
15	Resilience	Specialization Course	Transferrable/ 21st Century
16	Storytelling	Specialization Course	Transferrable/ 21st Century

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6 Mu.SA VET Curricula 4: Online Community Manager

6.1 Job profile

Job Role-Profile Description		
Title	***Online Community Manager*** Also known as Online Cultural Community Manager, (as in the previous project eCult skills, which Mu.SA is a follow up), Digital Communication Manager, (as stated in interviews) Digital Media Curator, Visual Media curator, New Media Manager, Social Media Specialist or Online Community Developer.	
Mission	The online community manager answers to the needs of both the online and offline communities. S/he creates and manages accessible and collaborative online communities for all stakeholders (audiences, colleagues in museums and cultural heritage sector, educational organisations, donors, sponsors, decision makers, etc.).	
Tasks/ Key responsibilities	□ To design and implement an online audience development plan in line with the museum's overall strategic communication plan (including KPI and Smart Objectives) □ To engage, monitor and to manage online audiences □ To liaise effectively with the other departments within the organisation in order to produce both content and meaningful online experiences □ To carry out online surveys tracing audience needs □ To carry out and monitor online activities □ To assess and evaluate the effectiveness and efficiency of online activities (e.g. write periodic reports on online insights, conduct web analytics and analyse them, in order to assess whether objectives are being achieved).	
Knowledge *(In EQF, Knowledge is described as theoretical)*	Required	Knowledge of: □ Marketing (Unconventional and Digital Marketing) □ Digital tools for online events (Chat, Webcast, Facebook, live streaming, among others)

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		□ Legal aspects in Copyright, Creative Commons, Royalties □ Web content accessibility □ Web analytics (Google analytics, Facebook insights, etc.) □ Effective communication, mediation □ Knowledge of how a museum works □ Project management methodologies □ Audience development strategies □ Storytelling techniques □ Audience research data interpretation □ Extensive knowledge of social media platforms
	Desired	□ Online user experience □ Knowledge of the use of graphic tools □ Knowledge of graphic design programs □ Knowledge of web publication tools (e.g. CMS, Blog and Editor) □ Knowledge of Mark-up and style sheets (e.g. XHTML, HTML and CSS) (depending on each organization requirements)
	Desired	• Ability to use visualising tools to create graphic representations
Environment	As a member of the team for communication, marketing and audience development, the Online Community Manager is responsible for developing and implementing an online audience development plan in line with a museum's overall strategic plan and mission.	
Relationships / Reporting line/Answerable to	Reports to: Head of Communication and marketing Interacts with*:* Curatorial department ICT department Education department Customer relationship services Management department	

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6.2 Competences of the Online Community Manager

Digital competences

# Competence	Competence Title	Course through which the competence is delivered	Type	Level (EQF)
1	IS and Business Strategy Alignment	MOOC	e-CF	e-4 level
2	Browsing, searching and filtering data, information and digital content	MOOC	DigComp	e-6 level
3	Managing data, information and digital content	MOOC	DigComp	e-6 level
4	Business plan development	MOOC	e-CF	e-4 level
5	Evaluating data, information and digital content	MOOC	DigComp	e-5 level
6	Identifying needs and technological responses	MOOC	DigComp	e-5 level
7	Technology trend monitoring	MOOC	e-CF	e-3 level
8	Netiquette	MOOC	DigComp	e-6 level
9	Innovating	MOOC	e-CF	e-3 level
10	(Innovating and) creatively using technology	MOOC	DigComp	e-5 level
11	Needs identification	MOOC	e-CF	e-3 level
12	Developing digital content	MOOC	DigComp	e-7 level
13	Collaborating through digital technologies	MOOC	DigComp	e-5 level
14	Forecast development	MOOC	e-CF	e-4 level

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15	Relationship management	MOOC	e-CF	e-3 level
16	Protecting personal data and privacy	MOOC	DigComp	e-5 level
17	ICT quality management	MOOC	e-CF	e-4 level
18	Product / Service Planning	Specialization Course	e-CF	e-3 level
19	Identifying digital competences gaps	Specialization Course	DigComp	e-5 level
20	Protecting personal data and privacy (specialisation course)	Specialization Course	DigComp	e-8 level
21	Managing digital identity	Specialization Course	DigComp	e-6 level
22	Documentation Production	Specialization Course	e-CF	e-3 level
23	Copyright and licenses	Specialization Course	DigComp	e-6 level
24	Programming	Specialization Course	DigComp	e-6 level
25	User Support	Specialization Course	e-CF	e-3 level
26	Problem Management	Specialization Course	e-CF	e-4 level
27	Solving technical problems	Specialization Course	DigComp	e-7 level
28	ICT Quality Strategy Development	Specialization Course	e-CF	e-5 level
29	Digital Marketing	Specialization Course	e-CF	e-4 level
30	Business Change Management	Specialization Course	e-CF	e-5 level

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6.1 Transversal competences

# Competence	Competence Title	Course through which the competence is delivered	Type
1	Team working	MOOC	Transferrable/ 21st Century
2	Creative thinking	MOOC	Transferrable/ 21st Century
3	Leadership and change facilitator	MOOC	Transferrable/ 21st Century
4	Communication skills	MOOC	Transferrable/ 21st Century
5	Time management	MOOC	Transferrable/ 21st Century
6	Management skills	Specialization Course	Transferrable/ 21st Century
7	Influence/ persuasion skills	Specialization Course	Transferrable/ 21st Century
8	Mentoring / coaching skills	Specialization Course	Transferrable/ 21st Century
9	Integrity/ethical	Specialization Course	Transferrable/ 21st Century
10	Decision making	Specialization Course	Transferrable/ 21st Century
11	Sense of initiative and entrepreneurship	Specialization Course	Transferrable/ 21st Century
12	Analyse and synthesize information	Specialization Course	Transferrable/ 21st Century
13	Interpersonal skills	Specialization Course	Transferrable/ 21st Century
14	Networking skills	Specialization Course	Transferrable/ 21st Century
15	Negotiation skills	Specialization Course	Transferrable/ 21st Century
16	Active listening skills	Specialization Course	Transferrable/ 21st Century

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17	Resilience	Specialization Course	Transferrable/ 21st Century
18	Mediation skills	Specialization Course	Transferrable/ 21st Century

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7 Appendix

7.1 List of Competences

Competence	Course through which the competence is delivered
IS and Business Strategy Alignment (e-CF) Anticipates long term business requirements, influences improvement of organisational process efficiency and effectiveness. Determines the IS model and the enterprise architecture in line with the organisation's policy and ensures a secure environment. Makes strategic IS policy decisions for the enterprise, including sourcing strategies.	MOOC
Browsing, searching and filtering data, information and digital content (DigComp) To articulate information needs, to search for data, information and content in digital environments, to access and navigate between them. To create and update personal search strategies.	MOOC
Managing data, information and digital content (DigComp) To organise, store and retrieve data, information, and content in digital environments. To organise and process them in a structured environment	MOOC
Business plan development (e-CF) Addresses the design and structure of a business or product plan including the identification of alternative approaches as well as return on investment propositions. Considers the possible and applicable sourcing models. Presents cost benefit analysis and reasoned arguments in support of the selected strategy. Ensures compliance with business and technology strategies. Communicates and sells business plan to relevant stakeholders and addresses political, financial, and organizational interests.	MOOC
Evaluating data, information and digital content (DigComp) To analyse, compare and critically evaluate the credibility and reliability of sources of data, information and digital content. To analyse, interpret and critically evaluate the data, information and digital content.	MOOC

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Identifying needs and technological responses (DigComp) To understand where one's own digital competence needs to be improved or updated. To be able to support others with their digital competence development. To seek opportunities for self-development and to keep up-to-date with the digital evolution.	MOOC
Technology trend monitoring (e-CF) Investigates latest ICT technological developments to establish understanding of evolving technologies. Devises innovative solutions for integration of new technology into existing products, applications or services or for the creation of new solutions.	MOOC
Netiquette (DigComp) To be aware of behavioural norms and know-how while using digital technologies and interacting in digital environments. To adapt communication strategies to the specific audience and to be aware of cultural and generational diversity in digital environments.	MOOC
Team working (Transferrable/ 21st Century) Carry out agreed tasks that contribute to team success, work well with people with a wide range of diversity, inspire colleagues and provide constructive feedback, tackle problems as part of a group, contribute to problem solving with the whole team, work on group projects.	MOOC
Innovating (e-CF) Devises creative solutions for the provision of new concepts, ideas, products or services. Deploys novel and open thinking to envision exploitation of technological advances to address business / society needs or research direction.	MOOC
Innovating and creatively using technology (DigComp) To use digital tools and technologies to create knowledge and to innovate processes and products. To engage individually and collectively in cognitive processing to understand and resolve conceptual problems and problem situations in digital environments.	MOOC
Creative thinking (Transferrable/ 21st Century) Look and solve problems from different perspectives, thinking outside the box, meet new challenges and seek unusual solutions. Use brainstorming, mind mapping, reframing, envisaging the future, role plays.	MOOC

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Needs identification (e-CF) Actively listens to internal / external customers, articulates and clarifies their needs. Manages the relationship with all stakeholders to ensure that the solution is in line with business requirements. Proposes different solutions (e.g. make-or-buy), by performing contextual analysis in support of user centered system design. Advises the customer on appropriate solution choices. Acts as an advocate engaging in the implementation or configuration process of the chosen solution.	MOOC
Developing digital content (DigComp) To create and edit digital content in different formats, to express oneself through digital means.	MOOC
Collaborating through digital technologies (DigComp) To use digital tools and technologies for collaborative processes, and for co-construction and co-creation of data, resources and knowledge.	MOOC
Forecast development (e-CF) Interprets market needs and evaluates market acceptance of products or services. Assesses the organisation's potential to meet future production and quality requirements. Applies relevant metrics to enable accurate decision making in support of production, marketing, sales and distribution functions.	MOOC
Leadership and change facilitator (Transferrable/ 21st Century) Planning and delivering, adaptability and flexibility with change, drive to learn and improve, build confidence and motivating oneself and others.	MOOC
Relationship management (e-CF) Establishes and maintains positive business relationships between stakeholders (internal or external) deploying and complying with organisational processes. Maintains regular communication with customer / partner / supplier, and addresses needs through empathy with their environment and managing supply chain communications. Ensures that stakeholder needs, concerns or complaints are understood and addressed in accordance with organisational policy.	MOOC
Protecting personal data and privacy (DigComp) Establishes and maintains positive business relationships between stakeholders (internal or external) deploying and complying with organisational processes. Maintains regular communication with customer / partner / supplier, and addresses needs through empathy with their environment and managing supply chain communications.	MOOC

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Ensures that stakeholder needs, concerns or complaints are understood and addressed in accordance with organisational policy.	
ICT quality management (e-CF) Implements ICT quality policy to maintain and enhance service and product provision. Plans and defines indicators to manage quality with respect to ICT strategy. Reviews quality measures and recommends enhancements to influence continuous quality improvement.	MOOC
Communication skills (Transferrable/ 21st Century) Convey information to another effectively and efficiently. These typically include listening, nonverbal communication, clarity and concision, friendliness, confidence, empathy, open-mindedness, respect, feedback, and selection of the right medium.	MOOC
Time management (Transferrable/ 21st Century) Managing short and long term tasks successfully, meet urgent and lengthier deadlines, being proactive rather than reactive, adjust workload, make compromises and contingency plans, work to particular specifications and allocation of resources.	MOOC
Product/ Service Planning (e-CF) Analyses and defines current and target status. Estimates cost effectiveness, points of risk, opportunities, strengths and weaknesses, with a critical approach. Creates structured plans; establishes time scales and milestones, ensuring optimisation of activities and resources. Manages change requests. Defines delivery quantity and provides an overview of additional documentation requirements. Specifies correct handling of products, including legal issues, in accordance with current regulations.	Spec. course
Identifying digital competences gaps (DigComp) To assess needs and to identify, evaluate, select and use digital tools and possible technological responses and to solve them. To adjust and customise digital environments to personal needs (e.g. accessibility).	Spec. course
Service Level Management (e-CF) Defines, validates and makes applicable service level agreements (SLAs) and underpinning contracts for services offered. Negotiates service performance levels taking into account the needs and capacity of stakeholders and business.	Spec. course
Management skills (Transferrable/ 21st Century) The knowledge and ability of the individuals in a managerial position to fulfil some specific management activities or tasks.	Spec. course

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Application Design (e-CF) Analyses, specifies, updates and makes available a model to implement applications in accordance with IS policy and user / customer needs. Selects appropriate technical options for application design, optimising the balance between cost and quality. Designs data structures and builds system structure models according to analysis results through modelling languages. Ensures that all aspects take account of interoperability, usability and security. Identifies a common reference framework to validate the models with representative users, based upon development models (e.g. iterative approach).	Spec. course
Protecting personal data and privacy (DigComp) To protect personal data and privacy in digital environments. To understand how to use and share personally identifiable information while being able to protect oneself and others from damages. To understand that digital services use a "Privacy policy" to inform how personal data is used.	Spec. course
Sustainable Development (e-CF) Estimates the impact of ICT solutions in terms of eco responsibilities including energy consumption. Advises business and ICT stakeholders on sustainable alternatives that are consistent with the business strategy. Applies an ICT purchasing and sales policy which fulfils eco-responsibilities.	Spec. course
Managing digital identity (DigComp) To create, and manage one or multiple digital identities, to be able to protect one's own reputation, to deal with the data that one produces through several digital tools, environments and services.	Spec. course
Application Development (e-CF) Interprets the application design to develop a suitable application in accordance with customer needs. Adapts existing solutions by e.g. porting an application to another operating system. Codes, debugs, tests and documents and communicates product development stages. Selects appropriate technical options for development such as reusing, improving or reconfiguration of existing components. Optimises efficiency, cost and quality. Validates results with user representatives, integrates and commissions the overall solution.	Spec. course
Influence/ persuasion skills (Transferrable/ 21st Century) Persuasion skills refer to the talent of changing the attitudes, beliefs, or behaviors of a person or group towards another person, group, event, object, or idea. It is usually done by conveying, in a message, some feelings, information, reasoning, or a combination. Influencing skills are reliant on good soft skills and the ability to communicate effectively, engage stakeholders which involves the art of storytelling. In the podcast	Spec. course

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we look at negotiation techniques which focus on the ability to influence.	
Information Security Strategy Development (e-CF) Defines and makes applicable a formal organisational strategy, scope and culture to maintain safety and security of information from external and internal threats, i.e. digital forensic for corporate investigations or intrusion investigation. Provides the foundation for Information Security Management, including role identification and accountability. Uses defined standards to create objectives for information integrity, availability, and data privacy.	Spec. course
Documentation Production (e-CF) Produces documents describing products, services, components or applications to establish compliance with relevant documentation requirements. Selects appropriate style and media for presentation materials. Creates templates for document-management systems. Ensures that functions and features are documented in an appropriate way. Ensures that existing documents are valid and up to date.	Spec. course
Testing (e-CF) Constructs and executes systematic test procedures for ICT systems or customer usability requirements to establish compliance with design specifications. Ensures that new or revised components or systems perform to expectation. Ensures meeting of internal, external, national and international standards; including health and safety, usability, performance, reliability or compatibility. Produces documents and reports to evidence certification requirements.	Spec. course
Mentoring/ coaching skills (Transferrable/ 21st Century) Mentoring as an act of giving advice to less experienced people, is a powerful tool for developing personal qualities and obtaining new skills, coaching is largely understood as a tool for improvement of professional performances in order to achieve addressed goals.	Spec. course
Copyright and licenses (DigComp) To understand how copyright and licenses apply to data, digital information and content.	Spec. course
Education and Training Provision (e-CF) Defines and implements ICT training policy to address organisational skill needs and gaps. Structures, organises and schedules training programmes and evaluates training quality through a feedback process and implements continuous improvement. Adapts training plans to address changing demand.	Spec. course

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Service Delivery (e-CF) Ensures service delivery in accordance with established service level agreements (SLA's). Takes proactive action to ensure stable and secure applications and ICT infrastructure to avoid potential service disruptions, attending to capacity planning and to information security. Updates operational document library and logs all service incidents. Maintains monitoring and management tools (i.e. scripts, procedures). Maintains IS services. Takes proactive measures.	Spec. course
Solution Deployment (e-CF) Following predefined general standards of practice carries out planned necessary interventions to implement solution, including installing, upgrading or decommissioning. Configures hardware, software or network to ensure interoperability of system components and debugs any resultant faults or incompatibilities. Engages additional specialist resources if required, such as third party network providers. Formally hands over fully operational solution to user and completes documentation recording all relevant information, including equipment addressees, configuration and performance data.	Spec. course
Integrity/ ethical (Transferrable/ 21st Century) Ethics is understood to be a system of principles that guide how people make decisions and lead their lives. In contrast to ethics, integrity is understood as a consistent application of ethical principles, particularly honesty.	Spec. course
Programming (DigComp) To plan and develop a sequence of understandable instructions for a computing system to solve a given problem or perform a specific task.	Spec. course
Information and Knowledge Management (e-CF) Identifies and manages structured and unstructured information and considers information distribution policies. Creates information structure to enable exploitation and optimisation of information. Understands appropriate tools to be deployed to create, extract, maintain, renew and propagate business knowledge in order to capitalise from the information asset.	Spec. course
User Support (e-CF) Responds to user requests and issues, recording relevant information. Assures resolution or escalates incidents and optimises system performance in accordance with predefined service level agreements (SLAs). Understands how to monitor solution outcome and resultant customer satisfaction.	Spec. course

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Decision making (Transferrable/ 21st Century) Increasing a professional's decision-making competence enhances his/ her ability to make better decisions leading to better life outcomes for individuals, an improved atmosphere in the museum community and downstream benefits to society as a whole.	Spec. course
Change Support (e-CF) Implements and guides the evolution of an ICT solution. Ensures efficient control and scheduling of software or hardware modifications to prevent multiple upgrades creating unpredictable outcomes. Minimises service disruption as a consequence of changes and adheres to defined service level agreement (SLA). Ensures consideration and compliance with information security procedures.	Spec. course
Solving technical problems (DigComp) To identify technical problems when operating devices and using digital environments, and to solve them (from trouble-shooting to solving more complex problems).	Spec. course
Purchasing (e-CF) Applies a consistent procurement procedure, including deployment of the following sub processes: specification requirements, supplier identification, proposal analysis, evaluation of the energy efficiency and environmental compliance of products, suppliers and their processes, contract negotiation, supplier selection and contract placement. Ensures that the entire purchasing process is fit for purpose, adds business value to the organisation compliant to legal and regulatory requirements.	Spec. course
Problem Management (e-CF) Identifies and resolves the root cause of incidents. Takes a proactive approach to avoidance or identification of root cause of ICT problems. Deploys a knowledge system based on recurrence of common errors. Resolves or escalates incidents. Optimises system or component performance.	Spec. course
Process Improvement (e-CF) Measures effectiveness of existing ICT processes. Researches and benchmarks ICT process design from a variety of sources. Follows a systematic methodology to evaluate, design and implement process or technology changes for measurable business benefit. Assesses potential adverse consequences of process change.	Spec. course
ICT Quality Strategy Development (e-CF) Defines, improves and refines a formal strategy to satisfy customer expectations and improve business performance (balance between cost and risks). Identifies critical processes influencing service delivery and product performance for definition in the ICT quality management	Spec. course

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system. Uses defined standards to formulate objectives for service management, product and process quality. Identifies ICT quality management accountability.	
Fact-driven (Transferrable/ 21st Century) Using fact-driven design can save one's company. It forces everyone to focus on what's important to business/organization.	Spec. course
Sense of initiative and entrepreneurship (Transferrable/ 21st Century) The individual's ability to identify and seize opportunities, turn ideas into action, and to plan and manage processes to achieve objectives.	Spec. course
Analyze and synthesize information (Transferrable/ 21st Century) It is often related to critical thinking, creative thinking, innovation, managing information, and is driven from the need of solving problems and making informed decisions. Analysing and synthesizing information is part of the critical and creative thinking.	Spec. course
Risk management (e-CF) Implements the management of risk across information systems through the application of the enterprise defined risk management policy and procedure. Assesses risk to the organisation's business, including web, cloud and mobile resources. Documents potential risk and containment plans.	Spec. course
Digital Marketing (e-CF) Understands the fundamental principles of digital marketing. Distinguishes between the traditional and digital approaches. Appreciates the range of channels available. Assesses the effectiveness of the various approaches and applies rigorous measurement techniques. Plans a coherent strategy using the most effective means available. Understands the data protection and privacy issues involved in the implementation of the marketing strategy.	Spec. course
Business Change Management (e-CF) Assesses the implications of new digital solutions. Defines the requirements and quantifies the business benefits. Manages the deployment of change taking into account structural and cultural issues. Maintains business and process continuity throughout change, monitoring the impact, taking any required remedial action and refining approach.	Spec. course

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Interpersonal skills (Transferrable/ 21st Century) Interpersonal skills are the behaviors and tactics a person uses to interact with others effectively. Interpersonal skills range from communication and listening to attitude and deportment.	Spec. course
Networking skills (Transferrable/ 21st Century) Networking is the exchange of information and ideas among people with a common profession or special interest, usually in an informal social setting. Networking is the process of building and maintaining a network of contacts.	Spec. course
Negotiation skills (Transferrable/ 21st Century) Negotiation is a type of discussion used to settle disputes and reach agreements between two or more parties. Generally, a negotiation results in a compromise where each party makes a concession for the benefit of everyone involved.	Spec. course
Active listening skills (Transferrable/ 21st Century) Active listening is a skill that can be acquired and developed with practice. Active Listening requires effort, self-awareness, and practice.	Spec. course
Resilience (Transferrable/ 21st Century) Resilience relies on different skills and draws on various sources of help, including rational thinking skills, physical and mental health, and the relationships with others. To face challenges and respond appropriately can require us to draw on all our resources, both internal and external, including our personal relationships.	Spec. course
Mediation skills (Transferrable/ 21st Century) Mediation is a means to resolve disputes without resorting to litigation or other adversarial modes of dealing with conflict.	Spec. course
Storytelling (Transferrable/ 21st Century) Storytelling is the conveying of events in words, and images, often by improvisation or embellishment. Stories or narratives have been shared in every culture as a means of entertainment, education, cultural preservation, and to instil moral values. Crucial elements of stories and storytelling include plot, characters, and narrative point of view.	Spec. course

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7.2 Competences per Job Role Profile

DIGITAL COMPETENCES	TYPE	Digital Strategy Manager (Level)	Digital Collections Curator (Level)	Digital Interactive Experience Developer (Level)	Online Cultural Community Manager (Level)	Core material (hours)	Practical assignment (hours)
Service Level Management	e-CF	e-4				5	3,5
Product / Service Planning	e-CF	e-3	e-3	e-3	e-3	4	2
Application Design	e-CF			e-3		4	2
Sustainable Development	e-CF	e-4				5	3,5
Application Development	e-CF			e-3		4	2
Testing	e-CF			e-3		4	2
Solution Deployment	e-CF			e-3		4	2
Documentation Production	e-CF		e-3	e-3	e-3	4	2
User Support	e-CF			e-3	e-3	4	2
Change Support	e-CF			e-3		4	2
Service Delivery	e-CF		e-3			4	2
Problem Management	e-CF		e-4	e-4	e-4	5	3,5
Information Security Strategy Development	e-CF	e-4				5	3,5
ICT Quality Strategy Development	e-CF				e-5	6	5
Education and Training Provision	e-CF	e-3				4	2
Purchasing	e-CF	e-4	e-4			5	3,5
Information and Knowledge Management	e-CF	e-4	e-5			6	3,5 (level e-4) 5 (level e-5)
Digital Marketing	e-CF				e-4	5	3,5

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Risk Management	e-CF	e-4	e-4	e-4		5	3,5
Process Improvement	e-CF	e-4				5	3,5
Business Change Management	e-CF	e-4			e-5	6	3,5 (level e-4) 5 (level e-5)
Copyright and licenses	DigComp	√	√	√	√	1,5	1
Programming	DigComp	√	√	√	√	1,5	1
Solving technical problems	DigComp	√	√	√	√	1,5	1
Protecting personal data and privacy	DigComp	√	√	√	√	1,5	1
Identifying digital competences gaps	DigComp	√	√	√	√	1,5	1
Managing digital identity	DigComp	√	√	√	√	1,5	1
21ST CENTURY SKILLS	TYPE	R1 (Level / hours)	R2 (Level/ hours)	R3 (Level/ hours)	R4 (Level/ hours)	Core material (hours)	Practical assignment (hours)
Mentoring / coaching skills	21st Cent	√	√		√	3	2
Analyse and synthesize information	21st Cent	√		√	√	3	2
Negotiation skills	21st Cent	√		√	√	3	2
Networking skills	21st Cent	√	√	√	√	3	2
Sense of initiative and entrepreneurship	21st Cent	√	√	√	√	3	2
Resilience	21st Cent	√		√	√	3	2
Decision making	21st Cent	√	√	√	√	3	2
Management skills	21st Cent		√		√	3	2
Interpersonal skills	21st Cent		√	√	√	3	2

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Mediation skills	21st Cent		√	√		3	2
Influence / persuasion skills	21st Cent		√		√	3	2
Active listening skills	21st Cent		√	√	√	3	2
Storytelling	21st Cent			√	√	3	2
Fast-driven	21st Cent			√		3	2
Integrity / ethical	21st Cent				√	3	2
		N. competences	**N. competences**	**N. competences**	**N. competences**		
SUM		**23**	**22**	**27**	**26**		

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7.3 Digital competences

7.3.1 Digital competence (e-CF)

N. Competence	1
Competence Title	IS and Business Strategy Alignment
Type	e-CF
Learning outcomes	Knowledge level • Define future developments in business process and technology application • Recognize requirements for processes related to ICT services • Identify long term visitor / customer needs Comprehension level • Illustrate the development of ICT strategy and policy, including ICT security and quality • Describe the development of the business strategy Application level • Examine feasibility in terms of costs and benefits • Demonstrate effects of implementations • Assess the impact of new technologies on business • Study the business benefits of new technologies and how this can add value and provide competitive advantage Analysis level • Analyse the Museum business architecture • Examine the legal & regulatory landscape in order to factor into business requirements Synthesis level Evaluation level

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N. Competence	2
Competence Title	Business plan development
Type	e-CF
Learning outcomes	Knowledge level • Describe the methodology of doing a SWOT analysis • Identify 2 risks in a management plan • Present an example of a competitive analysis • Recognize the mission, the vision and values of a museum • Label 4 museum needs • Present the Museum Innovation Model (MIM) • Identify the 4 elements of the marketing mix (the 4 Ps) • Describe the methodology of doing a PEST analysis • Name 5 competitive forces to maximize profitability (Porter's 5 Forces) Comprehension level • Estimate a cost analysis • Differentiate a business plan from a business model. • Indicate the steps of a business plan • Describe a marketing strategy • Describe the business model canvas • Indicate 2 sustainability issues of a museum • Recognize the value of 2 marketing communication functions • Identify a management plan for a museum • Give examples of 2 business models Application level • Produce a financial planning and analysis • Select an example of a Museum Marketing Plan Analysis level Synthesis level Evaluation level

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N. Competence	3
Competence Title	Technology trend monitoring
Type	e-CF
Learning outcomes	Knowledge level • Identify at least 2 of the main milestones in the history of ICT in museums. • Identify at least 2 of the current technologies that will shape the future in museums. • Explore a SW tool to prototype a digital storytelling example. • Examine 3 examples of how games provide distinct experiences in museums and enhance the visitor experience, by exploring case studies. • List 3 advantages of how gamification can increase the visitors' engagement. • Describe the concept of interactive storytelling and how it expands linear storytelling, by exploring case studies. • Examine examples of how the reality virtuality continuum can improve the museum communication. • Identify 2 different types of examples of Augmented Reality applications in museums • Identify 2 different types of examples Virtual Reality applications in museums • Identify 2 different types examples of Mixed Reality applications in museums • Identify one set of principles of usability and how it promotes user adoption of technology. • Identify the main guidelines for accessibility in museums places and the web, with a focus on inclusive museums Comprehension level • From analysing 2 case studies, explain how games and gamification are used distinctively. For each, complete the following fields: target, synopsis, objectives, advantages, constrains. • From analysing case studies, understand how AR/VR or mixed reality solutions are used distinctively inside-out in museums. • Discuss how usability can affect the user experience, from analysing a case study. • When confronted with a specific problem in a museum, specify a solution based on interactive storytelling. Make a case-study by prototyping a solution. • From analysing examples of using VR/AR or mixed reality

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	solutions in museums understand the artist`s world. • When confronted with specific problems in museums and websites, identify the principles that can enhance the accessibility Application level Analysis level Synthesis level Evaluation level

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N. Competence	4
Competence Title	Innovating
Type	e-CF
Learning outcomes	Knowledge level • Define innovation and the areas it occurs • Identify the four different types of innovation • Identify the five different types of innovators • Identify the steps of the innovation-decision process • Describe the Museum Innovation Model • Identify the steps of design thinking process for innovations in museums • Identify the characteristics of open thinking • Define Open Thinking for museum innovation • Identify how crowdsourcing can be used from museums • Identify Linked Open Data for museum resources Comprehension level • Classify innovations implemented in museums according to their type Application level Analysis level Synthesis level Evaluation level

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N. Competence	5
Competence Title	Needs identification
Type	e-CF
Learning outcomes	Knowledge level • Define at least 3 research techniques • Outline at least 3 scenario characteristics Comprehension level • Indicate how to manage an interview • Identify the aim of qualitative research within a Museum • Explain why personas are important Application level • Choose the data gathering techniques depending on prefixed requirements • Interpret data techniques Analysis level Synthesis level Evaluation level

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N. Competence	6
Competence Title	Forecast development
Type	e-CF
Learning outcomes	Knowledge level • Identify the difference between prediction and foresight • Identify at least one technique used to perform qualitative forecasting analysis with museum staff on digital opportunities • Identify at least one technique used to perform quantitative forecasting analysis with museum staff on digital opportunities • List the steps and scope in the scanning process • Identify one method used to monitor change • Identify at least one new trend • Identify at least one method used to assess staff capacity for welcoming new digital tools • Identify at least three relevant metrics (KPI's) used to enable accurate decision making • Identify at least one technique used to understand audience needs and behaviours • Identify the difference between Digital communication and digital transformation Comprehension level Application level • Develop at least two scenarios, intersecting new and existing trends and potentially disruptive events • Create a stakeholders' list Analysis level Synthesis level • Collect at least two techniques used to assess user/technologies interaction • Plan one forecasting session • Plan at least two warm up exercises Evaluation level • Choose one evaluation tool used to monitor change

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N. Competence	7
Competence Title	Relationship management
Type	e-CF
Learning outcomes	Knowledge level • Describe relationship management and its two main components in the business domain • Identify six interpersonal skills • List ten relationship management skills to enhance a business • Identify six fundamental competencies for a successful business relationship management • Identify the four types of customer relationship management • Discuss four objectives of customer relationship management • Give three examples of customer relationship management applications • Name three goals of customer relationship management • List seven steps of a museum's complaints handling process Comprehension level • Explain the four core disciplines of business relationship management • Describe the five tests of good customer relationship management strategy • Indicate six benefits of CRM in museums Application level • Sketch the business relationship management framework using the "House of BRM" approach Analysis level Synthesis level Evaluation level

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N. Competence	8
Competence Title	ICT quality management
Type	e-CF
Learning outcomes	Knowledge level • Identify the benefits of quality improvement • Define a quality management system • Identify why IT projects fail • Identify the quality management principles • Define actions for organisation to improve their performance applying the principles • Identify the key benefits of ISO 9001:2015 standard • Identify the key areas of a Quality Management System based on the ISO 9001:2015 standard • Define the Capability Maturity Model Integration • Identify the CMMI maturity levels • Identify the critical elements of the ICT Quality Management implementation • Identify indicators for ICT Quality • Identify the critical aspects of ensuring ICT Quality • Identify the cornerstones of ICT Quality Auditing Comprehension level Application level Analysis level Synthesis level Evaluation level

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N. Competence	9
Competence Title	Product/ Service Planning
Type	e-CF
Learning outcomes	Knowledge level • Define the fundamental elements of Service Design • Define the fundamental elements of Project Management Comprehension level • Understand the lifecycle of a service/product • Understand the role of Stakeholders in Project Management Application level • Apply a Project Plan • Apply a Network Planning • Apply a Project Execution Analysis level Synthesis level • Create a Network Planning Evaluation level

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N. Competence	10
Competence Title	Service Level Management
Type	e-CF
Learning outcomes	Knowledge level • Understand the Service Level Management process. • Recognize the need to apply it. • Recognize the implementation of Service Level Management levels for museum spaces. Comprehension level • Separate of the needs of each level of the SLM separately. • Describe the needs of Service Level Management levels. Application level • Prepare a list of services and needs. • Identify services and needs. • Create of a template according to services and needs. Analysis level • Analyse the Service Level Management level based on needs of the organization and the client. Synthesis level • Understand the needs by utilizing the organization's services. Evaluation level • Evaluate Service Level Management models.

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N. Competence	11
Competence Title	Application Design
Type	e-CF
Learning outcomes	Knowledge level • Comprehension level • Identify the elements that can be used to model an application. • Describe one data structure that could represent a model. • Discuss how to validate models and applications. • Explain the basis of the framework presented. Application level • Construct a model of an application. • Apply a data structure to support the application design. Analysis level • Analyze a domain with the goal of creating a model of an application. Synthesis level Evaluation level

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N. Competence	12
Competence Title	Sustainable Development
Type	e-CF
Learning outcomes	Knowledge level • List the four phases for sustainable development's historical evolution • Name the three major alternative concepts of sustainable future • Recognize the ISO37120 indexes that match the UN SDGs • Name examples of ICT that match the sustainability dimensions and SDGs • Classify the stakeholders for sustainability assessment Comprehension level • Describe what sustainability stands for • List the three sustainability dimensions and the five general indicator groups • List the 17 UN SDGs • List 3 EU sustainable strategies • Describe what sustainability assessment stands for • Describe how ICT matches the sustainability dimensions • List the 5 environmental sustainability dimensions Application level • Measure the environmental impact of alternative ICTs • Define ICT alternatives from the sustainability point of view • Define ICT alternatives that meet sustainability dimensions • List ICT sustainability criteria that can be applied in museums Analysis level Synthesis level Evaluation level

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N. Competence	13
Competence Title	Application Development
Type	e-CF
Learning outcomes	Knowledge level • Comprehension level • Identify the activities of the software development life cycle; • Identify software development processes and their characteristics; • Identify languages and platforms that can be used for application development. • Identify different elements that can be used to develop an application with HTML; • Identify different visual styling that can be done with CSS. Application level • Construct a Web page using HTML and CSS according to a certain specification; Analysis level Synthesis level Evaluation level

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N. Competence	14
Competence Title	Information Security Strategy Development
Type	e-CF
Learning outcomes	Knowledge level • Understand the family of standards ISO 27001 • Understand the principal components of a management systems • Understand the principles of information security • Describe the requirements of the clauses 4 to 8 of ISO 27001 • Describe implementation phases of ISO 27001 framework • Understand the principles of information security controls • Describe the components of monitoring and reviewing process on ISO 27001 Comprehension level Application level • Choose the best control to apply and document the process Analysis level • Choose the best controls applied to a museum use case Synthesis level • Implement an ISMS complying with international standards (e.g. ISO 27001:2013) Evaluation level

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N. Competence	15
Competence Title	Documentation Production
Type	e-CF
Learning outcomes	Knowledge level • Outline the two major achievements of a good documentation • Recognize the two main documentation types • Define process documentation • Describe the purpose of a product requirements document • Identify two broad information categories to describe an object of a heritage collection Comprehension level • Describe four skills of a documentation specialist • Identify three types of document quality standards • Explain what each of the document production phases performs • Describe the four process documentation types • Distinguish between user and system documentation • Describe the three main processes when documenting heritage collections • Explain the two things documentation in museums focuses on Application level • Choose appropriate documentation components to address specific needs • Apply two writing style guidelines for good documentation • Document a museum object using the Artifacts Canada Data Dictionary Analysis level • Synthesis level • Evaluation level •

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N. Competence	16
Competence Title	Testing
Type	e-CF
Learning outcomes	Knowledge level • Define six (6) quality parameters of a software product • Recognize the different rules of testing within the SDLC models • Describe the concept of software testing Comprehension level • Identify five (5) goals of the defect management process • Identify the five (5) test process phases • Indicate the five (5) quality components that define usability Application level • Choose when to use a certain usability method Analysis level • Distinguish between different testing techniques • Distinguish the formative and summative evaluation approaches • Analyze a digital interactive installation using the M-dimensions Framework and the Heuristic Evaluation technique Synthesis level Evaluation level • Value a digital interactive installation using the M-dimensions Framework and the Heuristic Evaluation technique

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N. Competence	17
Competence Title	Education and Training Provision
Type	e-CF
Learning outcomes	Knowledge level • Identify what are the existing generations • Describe what are the learning profiles of each generation • Identify some models of active learning methodologies • Describe how models work in practice Comprehension level • Associate audience profile with learning methodologies Application level • Implement class planning according to association between audience profile and learning methodologies. Analysis level Synthesis level Evaluation level

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N. Competence	18
Competence Title	Service Delivery
Type	e-CF
Learning outcomes	Knowledge level • To enumerate the main concepts of service management; • To describe the main concepts of knowledge management; • To define the main concepts of change management; • To present and use code lines and baselines; • To recall what an event, even types and event management process; • To define incidents and incident management process; • To describe user access management and key concepts related; • To list common operating activities; Comprehension level • To understand ITIL lifecycle; • To explain main processes of service transition; • To explain main processes of service operation; • To recognize main processes of SLAs; • To understand the main concepts of configuration management; • To describe the basic concepts of release management; • To explain what an event, even types and event management process; • To describe incidents and incident management process; • To define user access management and key concepts related; • To recognize common operating activities; • To understand Software operation as a service in Cloud environments; • To comprehend key concepts of DevOps methodology Application level • To use a change request form; Analysis level • To analyse a system's version tree; Synthesis level •

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	Evaluation level •

N. Competence	19
Competence Title	Solution Deployment
Type	e-CF
Learning outcomes	Knowledge level • Identify the different cloud service and cloud deployment models; • Identify software packaging and distribution methods; • Identify technologies and standards used for deploying software; Comprehension level • Explain the trade-offs between virtual machines and containers; • Explain the relationship between deployment and software architecture; Application level Analysis level Synthesis level • Design the deployment environment of a given system. Evaluation level

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N. Competence	20
Competence Title	Information and Knowledge Management
Type	e-CF
Learning outcomes	Knowledge level • Comprehension level • Application level • Implement queries for finding paintings of an artist • Implement queries for counting Objects in a museum • Implement queries for counting nationality or gender of artists • Graph plots for culture or technique in a collection • Display the most visited museums in the world or in a country • Implement queries for counting portrait painting works per artist or per country of origin Analysis level • Categorize the artworks of each artist • Categorize the material used in artists' works • Categorize the movements in a collection or in artworks generally • Categorize the type of museums • Categorize the genre in artworks • Organize the Eurostat museum data for plotting information about museums per country or per city Synthesis level • Generate the locations of archaeological sites of a county • Generate the distribution of public art by place • Check the genre or depicted entities or material used or locations of an artist works • Generate a map with the museums of the world or a map with the museums/ archaeological sites of a specific country Evaluation level • Produce timelines with paintings produced per year by an artist • Produce recommendations for the top museums for each user • Produce timelines with museums creation in a country

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	• Produce a map with monuments and other heritage items located around our location.

N. Competence	21
Competence Title	User Support
Type	e-CF
Learning outcomes	Knowledge level • Understand User Support. • Recognize the need to apply it to improve services. • Recognize its application for museum spaces. Comprehension level • Separate needs for better utilization. • Describe user needs. Application level • Determine users' needs for creating a strategy. Analysis level • Analyse User Support level based on the needs of the organization and the client. Synthesis level • Create a User Support model for the museum spaces needs Evaluation level • Evaluate corresponding User Support models

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N. Competence	22
Competence Title	Change Support
Type	e-CF
Learning outcomes	Knowledge level • Understand the Change Support Process. • Recognize the need to apply Change Support. Comprehension level • Separate the needs for the initial design of Change Support. • Describe the Change Support process. Application level • Determine the original design to create a model. Analysis level • Analyse the Change Support level based on the needs of the organization and the customer. Synthesis level • Create a Change Support model for the needs of museum spaces. Evaluation level • Evaluate the Assessment of Matching other Change Support Models.

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N. Competence	23
Competence Title	Purchasing
Type	e-CF
Learning outcomes	Knowledge level • List the 4 basic principles of procurement • Name the 5 basic procurement stages according to ITIL • Describe the procurement process/cycle • Name the 6 procurement procedures available • Define the requirements (technical and other) of a contract • Name the 5 stages of bid evaluation • Define the basic structure of a contract • Identify Green and ICT procurement issues Comprehension level • Differentiate between purchasing and procurement Application level • Apply contract award methods Analysis level • Debate on "make, lease or buy" options Synthesis level • Establish tenderer evaluation criteria • Formulate contract performance clauses Evaluation level • Evaluate contract performance • Appraise good practices paradigms in ICT procurement • Identify and evaluate the risk factors involved in the procurement process.

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N. Competence	24
Competence Title	Problem Management
Type	e-CF
Learning outcomes	Knowledge level • Recall the definitions of the key concepts of IT service management • Name the service lifecycle stages • Identify the types of problem management • Outline the main types of data a typical problem record includes • Identify the basic factors problem prioritization is based on Comprehension level • Explain what problem management means • Distinguish problem management from incident management • Recognize the outcomes of problem management • Describe the problem management phases • Indicate where workarounds are documented • Explain the main target of root cause analysis Application level • Perform problem analysis using the Kepner - Tregoe method Analysis level • Choose the most appropriate problem analysis technique in particular circumstances Synthesis level Evaluation level

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N. Competence	25
Competence Title	Process Improvement
Type	e-CF
Learning outcomes	Knowledge level • Understand business planning in the digital era • Identify at least two frameworks or approaches dedicated to business process management • Define museum processes and sub processes integrated with ICT-within-the-process characteristics Comprehension level • Distinguish between standard operating procedures and non-documented operating procedures or between quality system / accreditation schemes and non-well performed job / work inconsistency • Describe the nature of Digital Strategy Operating Processes and associated activities in your own words Application level • Prepare a Standard Operating Procedure model for at least one museum process • Prepare of an Executive Summary examining the transformative potential of digital and social media for at least one museum process • Create an assessment checklist reflecting continuous review and improvement appraisal of a performance area framework (i.e. Collections Management, Exhibition, etc.) Analysis level • Differentiate between Museum Digital Strategy and Digital Asset Management framework. • Arrange benchmarks to be used as part of an organisation's planning cycle to assess and plan an activity and measure progress against those plans. Synthesis level • Design management policy of personal data. • Create accreditation schemes with a purpose to support the organization performance and planning. Evaluation level

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	• Criticize the organization business processes model.

N. Competence	26
Competence Title	ICT Quality Strategy Development
Type	e-CF
Learning outcomes	Knowledge level • Describe principles of ICT quality management. Comprehension level • Interpreting the performance of online communication applications. Application level • Implementing indicators set for formulate objectives for service management, application and process quality in online communication. Analysis level • Assessing the performance of online communication applications. Synthesis level • Structuring the quality management of online communication. Evaluation level

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N. Competence	27
Competence Title	Risk management
Type	e-CF
Learning outcomes	Knowledge level • Recall the definitions of the key concepts of Risk Management • Identify the types of risks • Outline the main types of information a typical risk mitigation plan includes • Identify the basic factors risk analysis is based upon Comprehension level • Explain what risk management means • Distinguish quality from quantity risk categorization • Recognize the outcomes of risk mitigation • Describe the risk categorization phases • Indicate how risks are documented • Explain the main goals of cause and cause and effect analysis Application level • Perform risk categorization using the Pareto Analysis • Perform cause and effect analysis using the Ishikawa diagram Analysis level • Choose the most appropriate risk analysis techniques in particular circumstances Synthesis level Evaluation level

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N. Competence	28
Competence Title	Digital Marketing
Type	e-CF
Learning outcomes	Knowledge level Comprehension level • To clarify the scope of digital marketing and the elements contained within a digital marketing plan Application level • To develop an online community • To select relevant content to post online • To choose at least 2 different social platforms to use for different goals • To select at least 2 appropriate tools according the adopted channels Analysis level • To compare at least 2 different marketing tools Synthesis level • To create a digital marketing strategy including setting Key Performance Indicators (KPIs) • To develop 3 different KPIs Evaluation level • To measure the success of digital activity including social media activity.

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N. Competence	29
Competence Title	Business Change Management
Type	e-CF
Learning outcomes	Knowledge level • Identify at least three strategic options • Identify at least three customer's segmentation • Identify at least three museum positioning • Identify at least three trends of branding of Visitors destinations • Identify the use of relationship marketing on museum • Identify the experience marketing on museum • Identify the marketing mix on museum • Identify the branding and brand equity on museum Comprehension level • Classify the needs of museum strategic marketing. Application level • Construct an audience development strategy. • Choose audience and visitors according to segmentation and positioning • Choose best options to ensure good experiences and authenticity to visitors Analysis level Synthesis level • Plan long-term strategic relations with all the museum stakeholders • Design innovative museum marketing mix campaigns • Design interactive and innovative solutions that provide meaningful experiences for all types of museum audiences. Evaluation level

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7.3.2 Digital competence (DigComp)

N. Competence	1
Competence Title	Browsing, searching and filtering data, information and digital content
Type	DigComp
Learning outcomes	Knowledge level • Describe the value of information and data analytics in the digital era • Identify at least two (2) good practices on the use of digital content in Museums • Define strategies and goals on data browsing research and information analysis Comprehension level • Convert knowledge into analytical thinking in order to select accurate data in the age of information • Identify efficient use of internet tools for superior research collection methods Application level • Develop a museum policy on data usage and extraction (set rules and goals compatible with targets and legislation) • Prepare a case study report on museum rethinking using information retrieved online • Apply a copyright and GDPR compliant policy on information usage and data collection • Develop digital content using resources from the public domain and free stock material Analysis level • Identify capacity-building on open source applications and tools for digital content and information management and analysis Synthesis level Evaluation level

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N. Competence	2
Competence Title	Managing data, information and digital content
Type	DigComp
Learning outcomes	Knowledge level • Define data, information, digital content, metadata • Examine the added value of Software • Examine the use of Software Applications regarding data, information and digital content management • Define the web threats and the necessity to face them Comprehension level • Identify the web threats • Estimate the risk of data loss or corruption Application level • Employ effective methods of data archive • Explore effective methods of managing information • Use effective methods of retrieving information • Utilize effective methods of preservation of digital content Analysis level • Analyze web threats • Apply effective management of data, information and digital content of museum sector Synthesis level Evaluation level

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N. Competence	3
Competence Title	Evaluating data, information and digital content
Type	DigComp
Learning outcomes	Knowledge level • Identify two technologies for organizing information. • List the best method for digital content assessment. • Present four steps for evaluating information. • Name four criteria when evaluating internet sources. Comprehension level • Indicate the best strategy in searching data resources. • Select two principles on data resources Management. • Describe two digital tools for measuring a museum's popularity. • Identify three trends in analytics. • Indicate the four key areas of SEO that a site owner need to take into consideration. Application level • Prepare at least five questions in evaluating the credibility of an information source. • Find one metrics' report of a well – known museum. Analysis level Synthesis level Evaluation level

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N. Competence	4
Competence Title	Identifying needs and technological responses
Type	DigComp
Learning outcomes	Knowledge level • Identify the key steps of a needs assessment procedure. • List at least two emerging technologies per main museum function. • Define the main technology characteristics required to cover common museum professionals' needs. Comprehension level • Select a needs assessment model to identify the museum professional needs. • Recognize technologies embedding particular characteristics covering museum professionals' needs. Application level • Choose the appropriate technologies to solve museum professionals' needs. Analysis level Synthesis level Evaluation level

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N. Competence	5
Competence Title	Netiquette
Type	DigComp
Learning outcomes	Knowledge level • Describe what netiquette is. • Recall the importance of rules when interacting on the Internet. • Identify at least five rules for communicating on the Internet. • Describe how the cultural and generational diversity implicate the online communication. Comprehension level • Illustrate at least three examples of different environments and audiences. • Illustrate at least three cases of poor online behaviour. Application level • Choose an effective communication strategy considering the context and regarding the audience and the digital environment. Analysis level • Distinguish between good and poor netiquette practices. Synthesis level Evaluation level

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N. Competence	6
Competence Title	Innovating and creatively using technology
Type	DigComp
Learning outcomes	Knowledge level • Identify two Information technology and creative practices (ITCP). • Outline the meaning of Cultural Informatics. • Present two examples of creative digital media. Comprehension level • Indicate three challenges in cross –disciplinary collaborations. • Select five ITCP Technologies used in museums. • Describe two different types of virtual museums. Application level • Choose two examples of digital communication technology in culture. • Find three mobile applications designed for museums. Analysis level Synthesis level Evaluation level

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N. Competence	7
Competence Title	Developing digital content
Type	DigComp
Learning outcomes	Knowledge level • Recognize at least 3 sections of a webpage • Describe at least 2 ways of communications through social media channels Comprehension level • Associate the information from a list in at least 3 web pages Application level • Schedule the actions to take to create a video Analysis level Synthesis level Evaluation level • Evaluate at least 3 different type of visuals

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N. Competence	8
Competence Title	Collaborating through digital technologies
Type	DigComp
Learning outcomes	Knowledge level • Outline at least 3 digital tools for collaborating Comprehension level • Identify at least 2 typical human behaviour while collaborating within a team • Indicate at least 1 technique to promote collaboration within a museum Application level • Choose at least 2 appropriate features depending on the prefixed digital need. Analysis level Synthesis level Evaluation level

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N. Competence	9
Competence Title	Protecting personal data and privacy
Type	DigComp
Learning outcomes	Knowledge level • Recognize the four different types of stakeholders in data protection • Identify the seven data protection principles according to GDPR • Describe the four data security domains • Describe the four data protection functional components • Recognize the eight rights of data subjects according to GDPR • Outline five fundamental steps of a generic data protection strategy Comprehension level • Explain the main distinctions of data privacy and data protection Application level • Apply basic measures to harmonize their organization with the GDPR requirements • Choose appropriate actions to comply with data protection regulations in specific occasions Analysis level Synthesis level Evaluation level

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N. Competence	10
Competence Title	Identifying digital competences gaps
Type	DigComp
Learning outcomes	Knowledge level • List the five areas of digital competence according to the DigComp • Name the two components of e-learning • Describe three ways that e-learning is delivered • Recognize three benefits of e-learning Comprehension level • Describe what digital competence stands for Application level • Demonstrate digital competence gaps through online tools • Choose appropriate e-learning solutions for self-development Analysis level • Synthesis level • Evaluation level •

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N. Competence	11
Competence Title	Protecting personal data and privacy (specialisation course)
Type	DigComp
Learning outcomes	Knowledge level • Understand privacy policies and data protection regulation • Identify principles, rights and obligations in reference with a cultural organization approach to privacy issues and processing personal data • Define the appropriate technical and organisational measures to meet the requirements of accountability and to demonstrate the organization compliance with GDPR Comprehension level • Distinguish between exercising overall control of the purpose and means of the data processing and making technical decisions about data processing and administration • Describe the role and responsibilities of data controllers and processors in relation to the personal data the organization is holding Application level • Create a set of indicators as to whether you are a controller, a processor or a joint controller in relation to the personal data the organization is holding • Prepare your organization detailed privacy notice in relation to information collected about visitors Analysis level • Undertake information audit on what data (and the types of personal data) the organization holds. Synthesis level • Classify GDPR obligations to be applied to the organization in relation to personal data Evaluation level • Decide when a Data Protection Impact Assessment (DPIA) is required.

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N. Competence	12
Competence Title	Managing digital identity
Type	DigComp
Learning outcomes	Knowledge level Comprehension level • Indicate what is digital reputation • Indicate at least two steps that can help build and maintain your museum digital reputation Application level Analysis level • Identify the most important outcome of building and maintaining your museum digital reputation • Analyse Trip Advisor reviews about a museum Synthesis level Evaluation level

N. Competence	13
Competence Title	Copyright and licenses
Type	DigComp
Learning outcomes	Knowledge level Comprehension level Application level Analysis level • Identify in the hub site if there are, and where are the terms of use and the policies • Examine the presence and type of information of the online captions of the images of the museum site Synthesis level Evaluation level

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N. Competence	14
Competence Title	Programming
Type	DigComp
Learning outcomes	Knowledge level • Identify the fundamentals of programming Comprehension level • Explain the main difference between client and server side Application level • Use 3 elements of CSS to do specific things in more than one HTML page Analysis level • Illustrate the 5 basic elements of an HTML page structure Synthesis level Evaluation level

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N. Competence	15
Competence Title	Solving technical problems
Type	DigComp
Learning outcomes	Knowledge level Comprehension level • Describe principles and concepts of problem solving; • Identify different methods and tools that could be used to problem solving; • Explain the different problem solving methods and techniques; • Identify the typical problems; • Identify different approaches to solve a problem; • Identify problem, causes, consequences and actions Application level • Employ the different problem solving methods and techniques; • Construct a problem tree; Analysis level • Create a problem tree scheme; Synthesis level • Evaluate the relevance of a problem and respective causes and consequences; Evaluation level

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7.4 Transversal competences (21st century skills)

N. Competence	1
Competence Title	Team working
Type	Transferable
Learning outcomes	Knowledge level • Identify the main characteristics of a working team. • Identify the key functional aspects of effective communication. • Identify at least three norms of a working team. • Identify the main characteristics of a working team. • Identify the different team roles. Comprehension level Application level • Choose adequate communication skills in order to promote teamwork and collaboration. • Articulate different team rules and roles and the significance of these differences for team working functioning. Analysis level Synthesis level Evaluation level

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N. Competence	2
Competence Title	Creative thinking
Type	Transferable
Learning outcomes	Knowledge level • Identify at least three attributes of a creative thinker • Identify at least three facts that contradict popular perceptions of how creativity works Comprehension level • Indicate at least three strategies that stimulate creative thinking • Indicate two daily work situations creative thinking is a useful (or valuable) skill Application level Analysis level • Identify the most important outcome of creative thinking skills in museum work • Infer two of the most popular perception that limits creative thinking Synthesis level Evaluation level

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N. Competence	3
Competence Title	Leadership and change facilitator
Type	Transferable
Learning outcomes	Knowledge level • Identify the core components of the emotional intelligence model • Identify at least one case study in which effective, inclusive leadership initiated a digital transformation plan • Identify the main skills, values and competencies for leadership • Identify the main difference between management and leadership • Identify at least 3 characteristics of leadership • Recognise two different approaches to storytelling as relating to leadership • Identify at least 3 skills that storytelling can help you to build • Identify at least one storytelling technique for team building Comprehension level • Recognise 3 characteristics of inclusive leadership • Recognise at least 3 elements of recent leadership models Application level • Choose at least one storytelling exercise to develop leadership skills Analysis level • Formulate appropriate questions Synthesis level Evaluation level

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N. Competence	4
Competence Title	Communication skills
Type	Transferable
Learning outcomes	Knowledge level • Define five key elements of communication Comprehension level • Indicate two techniques to manage a conversation • Identify at least 3 elements of nonverbal communication • Identify at least 3 positive attitudes in a conversation Application level • Interpret two body language signs • Interpret two feelings from a team conversation Analysis level Synthesis level Evaluation level

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N. Competence	5
Competence Title	Time management
Type	Transferable
Learning outcomes	Knowledge level • Understand time management in the digital era • Identify at least two (2) different time management Software applications • Define time scheduling and understand its different dimensions Comprehension level • Distinguish between cost and non-cost related time fractions in project implementation • Describe the nature of Milestones and time dependencies and typologies in your own words Application level • Prepare a list of Tasks by time and priority • Prepare of a WBS • Create an automated Timesheet Analysis level Synthesis level Evaluation level

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N. Competence	6
Competence Title	Management skills
Type	Transferable
Learning outcomes	Knowledge level • Define two current actions of a digital strategy according to the interview Comprehension level • Indicate two possibilities for people who use the Rijksstudio platform Application level • Apply three principles of the digital strategy explored with Inspiring People project Analysis level • Analyze one of the possibilities offered by digital experience at Tate Modern gallery • Arrange a digital platform Synthesis level Synthesis level Evaluation level • Decide the main steps for the creation of a digital collection

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N. Competence	7
Competence Title	Influence/ persuasion skills
Type	Transferable
Learning outcomes	Knowledge level Comprehension level • Identify three principles of influence/persuasion Application level • Indicate three strategies that stimulate influence Analysis level • Indicate two daily work situations where persuasion is a useful and a valuable skill Synthesis level • Identify the most important outcome of influence and persuasion skills in museum work Evaluation level

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N. Competence	8
Competence Title	Mentoring/ coaching skills
Type	Transferable
Learning outcomes	Knowledge level Comprehension level • Describe what mentoring is in 10 words • Describe the coaching relationship in 10 words • Recognize differences and similarities between mentoring and coaching Application level Analysis level • Identify 1 specific moment when you were 'mentorable' • Identify at least 5 traits of a great mentor • Identify at least 5 traits of a successful coach • Illustrate a mentoring programme for your existing or ideal work place. • Identify 3 soft skills that a mentee can develop through a mentoring relationship Synthesis level Evaluation level • Evaluate 3 benefits of being in a mentoring programme both for the mentor and the mentee.

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N. Competence	9
Competence Title	Integrity/ ethical
Type	Transferable
Learning outcomes	Knowledge level • Identify when was published the first Code of Ethics for museum workers Comprehension level • Recognize what makes ICOM Code of Ethics distinctive from other codes of ethics in the museum sector • Select at least three ethical issues in the museum sector • Indicate at least two ethical challenges for museums in the digital environment Application level • Analysis level • Identify the most important outcome of using professional codes of ethics as reference tools • Analyse ethical dilemmas in action with the help of the ICOM Code of Ethics Synthesis level Evaluation level

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N. Competence	10
Competence Title	Decision making
Type	Transferable
Learning outcomes	Knowledge level • Define the dynamics of decision-making in groups; Comprehension level • Indicate two decision-making theories; Application level • Apply an analytic approach; Analysis level • Arrange the data analysis. Synthesis level • Integrate to the already existing possibilities, two possibilities of use of the images Evaluation level • Decide three actions to apply the data's outcomes • Evaluate the application of the data analysis introducing two initiatives • Predict two possible scenarios of interactions of users on the website

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N. Competence	11
Competence Title	Fact-driven
Type	Transferable
Learning outcomes	Knowledge level • Understand technology as enabler of business process innovation • Identify at least two drivers of museum innovation and digital transformation • Define reasons to automate and benefits an organization that embraces BPA could have Comprehension level • Distinguish between process innovation and process improvement which both operate concurrently in a cycle of alteration for a single process • Describe a meaningful performance evaluation process Application level • Prepare a Data Envelopment Analysis exercise • Prepare a performance evaluation for a cultural organization • Create a performance review as a crucial part of the ongoing dialogue between managers and employees - An evaluation process for managers (employee evaluation) Analysis level • Differentiate between technology driven business models and human intelligence solutions. Synthesis level • Integrate performance and evaluation techniques in organization management. Evaluation level • Recommend Key Performance Indicators for the evaluation of organizational efficiency.

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N. Competence	12
Competence Title	Sense of initiative and entrepreneurship
Type	Transferable
Learning outcomes	Knowledge level • Know the meaning of sense of initiative and entrepreneurship within the lifelong learning framework. Comprehension level • Describe the broad concept of entrepreneurship for the cultural sector in 10 words. • Identify three characteristics of museum entrepreneurship. • Recognize similarities and differences between entrepreneurship for profit and non-profit organizations. • Identify the main characteristics of digital entrepreneurship Application level • Apply evidence based approaches for improving their entrepreneurship competences. Analysis level • Analyze at least 3 competences from each of the areas of the EntreComp Synthesis level • Summarize the rationale and scope of the Entrepreneurship Competence Framework. • Manage their resilience at their work environment. • Combine digital and entrepreneurial competences for the cultural sector Evaluation level • Evaluate from the 15 competences of the EntreComp the most suitable according to their needs for professional and personal development

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N. Competence	13
Competence Title	Analyze and synthesize information
Type	Transferable
Learning outcomes	Knowledge level • Identify three situations in museum work that demand the ability to analyse and synthetize information • List three tools that can be useful when analysing information Comprehension level • Select at least three domains where the ability to analyse and synthesize information is often related • Indicate at least two steps that can help making informed decisions and building your critical and creative museum practice Application level Analysis level • Identify the most important outcome of analysing and synthesizing information • Analyse an article Synthesis level Evaluation level

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N. Competence	14
Competence Title	Interpersonal skills
Type	Transferable
Learning outcomes	Knowledge level • Identify two main types of interpersonal skills Comprehension level Application level • Indicate three strategies that develop interpersonal skills Analysis level • Indicate two online work attitudes you must have online, according to best practices of your interpersonal skills Synthesis level Evaluation level

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N. Competence	15
Competence Title	Networking skills
Type	Transferable
Learning outcomes	Knowledge level Comprehension level Application level Analysis level • To illustrate networking in the cultural sector, specifically in museums, as a means of audience engagement • To examine networking for museums as a means of digital development Synthesis level • To construct a professional network. Evaluation level

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N. Competence	16
Competence Title	Negotiation skills
Type	Transferable
Learning outcomes	Knowledge level Comprehension level • Describe at least three dimensions of a negotiation strategy • Describe the four elements of the mutual gain approach • Identify at least three elements of psychological influence in negotiation Application level • Apply at least one tool to use to prepare for a negotiation strategy • Demonstrate how to prepare for the three fundamental dimensions of any negotiation: People, Problem (substance) and Process Analysis level • Analyze at least two successful factors of the two museums analysed • Identify three soft skills that you need in a negotiation process • Analyze at least one typical factor of failure in negotiation and develop proper responses Synthesis level Evaluation level • Evaluate one key element of a successful negotiation strategy • Conclude at least three reasons why museums should become places of negotiation.

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N. Competence	17
Competence Title	Active listening skills
Type	Transferable
Learning outcomes	Knowledge level Comprehension level • Describe at least 1 element of active listening • Differentiate between active and passive listening • Describe one methodology to creatively listening to your audiences Application level • Discover the principle of Imitative decoding • Illustrate the principle of active empathic listening • Illustrate one reason how active listening can diffuse conflict in workplaces Analysis level • Identify 1 element of "non-functional" listening • Experiment active listening within the workplace Synthesis level Evaluation level • Argue the importance of active listening

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N. Competence	18
Competence Title	Resilience
Type	Transferable
Learning outcomes	Knowledge level • Identify the resilience definition Comprehension level • Identify two principles of resilience Application level • Indicate two strategies that stimulate resilience Analysis level • Indicate two daily work situations where resilience is a useful and a valuable skill Synthesis level • Identify the most important outcome of resilience use in museum work Evaluation level

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N. Competence	19
Competence Title	Mediation skills
Type	Transferable
Learning outcomes	Knowledge level • Identify the main characteristics of mediation. Comprehension level • Identify the mediation mission in museums about digital collections. Application level • Identify the role of mediation using social media and social networking in museums Analysis level • Identify the main activities of the mediator using social networks. Synthesis level Evaluation level

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N. Competence	20
Competence Title	Storytelling
Type	Transferable
Learning outcomes	Knowledge level Comprehension level Application level Analysis level • Compare museums using storytelling in It, Gr and Pt • Identify 3 features for museums to be agent of change Synthesis level • Propose a strategy on storytelling Evaluation level • Compare strategies adopted by museums embracing storytelling for audience engagement • Compare strategies adopted by museums embracing storytelling for audience engagement.

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