European Software
Skills Alliance.

**Train the Trainer
Programme**

Annex VII

**Solution Designer
EQF 7**

Train the Trainer Programme – Annex VII– Solution Designer EQF 7, 2024.

Deliverable 13: "ESSA Train the Trainer Programme & Materials"– Annex VII

This document is a draft version and is subject to change after review coordinated by the European Education and Culture Executive Agency (EACEA).

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About ESSA

The European Software Skills Alliance (ESSA) is a four-year transnational project funded under the EU's Erasmus+ programme. It ensures the skills needs of the rapidly evolving Software sector can be met — today and tomorrow.

ESSA provides current and future software professionals, learning providers and organisations with software needs with the educational and training instruments they need to meet the demand for software skills in Europe.

ESSA will develop a European Software Skills Strategy and learning programmes for Europe. It will address skill mismatches and shortages by analysing the sector in depth and delivering future-proof curricula and mobility solutions; tailored to the European software sector's reality and needs.

Project partners

The ESSA consortium is led by DIGITALEUROPE. It is composed of academic and non-academic partners from the education, training, and software sectors.

View all project partners: ESSA Partners I ESSA Associated Partners

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List of abbreviations and acronyms

Abbreviation	Term
e-CF, EN 16234-1	European e-Competence Framework, European Norm 16234 - Part 1: Framework
ECTS	European Credit Transfer and Accumulation System
EQF	European Qualifications Framework
ESSA	European Software Skills Alliance
LO	Learning Outcome
PLO	Programme Learning Outcome
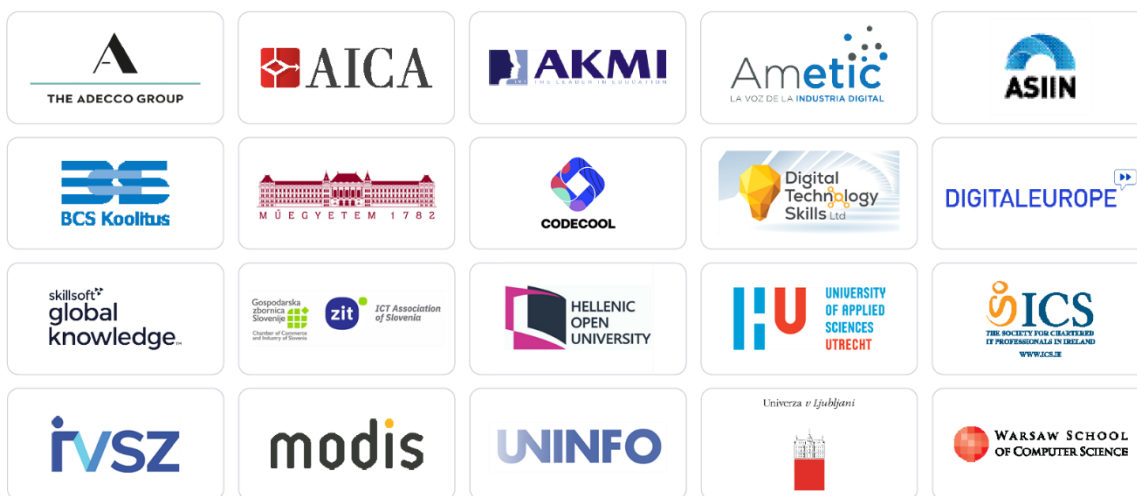
1 How to use the ESSA Learning programme for Solution Designer EQF 7 profile

1.1 Introduction

In this Annex trainers, teachers and educators are provided with all information necessary to deliver the ESSA Learning Programme designed for the Solution Designer EQF 7 Educational profile.

The proposed learning path follows a modular and flexible structure based on Programme Learning Outcomes (PLOs). Each PLO includes self-consistent Learning Units (LUs) supported by specific learning materials.

In particular, this document provides:

- overall information about the Learning Programme - Objective, Total number of Program Learning Outcomes (PLOs) concerned, Total Learning Units (LUs), Overall duration (hours); Total number of ECTS; Targeted Institutions (learning providers);
- detailed Learning Programme including the Learning Units for each Programme Learning Outcome (PLO).

In this regard, more specifically, the following is provided for each Programme Learning Outcome (PLO):

- overall information (N. of Learning Units, Duration in hours, Total number of ECTS, Recommendations for Micro-credentials, possible integration with studies related to other PLOs, Recommended Didactical Approach, Recommended Delivery methods, etc);
- detailed information for each Learning Unit (Title, Duration in hours, Didactical Approach and delivery method, type of Assessment, Title of the related Learning material proposed, Link to access to the learning material - ESSA Platform).

This Annex is strictly related to the document "*Train the Trainer Programme. DELIVERABLE 13 – ESSA Train the Trainer Programme & Materials*".

As a further support, it is advised to consult the documents indicated in the paragraph "*Sources of reference*" of the Deliverable 13 above mentioned, through the available links.

Learning materials developed to support the delivery of the ESSA Learning Programme for this Educational Profile are available on the ESSA platform at the following link: https://learn.softwareskills.eu/.

1.2 TARGET

The following Learning Programme addresses **university students interested in advanced tech studies and professionals seeking upskilling/reskilling opportunities.**

2 How to deliver the ESSA Learning programme for Solution Designer EQF 7 profile

2.1 University students interested in advanced tech studies and professionals seeking upskilling/reskilling opportunities

2.1.1 Overall Information about the Learning Programme

Objective	*The programme aims to cultivate advanced expertise in identifying, articulating, and addressing specific business needs, focusing on innovative technologies and methods. Participants will learn to draft advisory reports and present creative solutions tailored to unique business requirements. The course deals with topics such as architecture design for cutting-edge solutions, facilitating students in charting coherent technology roadmaps aligned with business evolution and technological constraints. Additionally, the course fosters an innovative mindset, equipping learners with the skills to ideate, evaluate, and materialize novel technological concepts, leading to actionable product innovation plans and hands-on proofs of concept.*
Total number of PLOs concerned	*7*
Total Learning Units (LU)	*16*
Duration	*100 hours*
Total number of ECTS	*4*
Targeted Institutions	*Higher Education Institutions*

2.1.2 Learning Program PLO 1 – Needs identification [e-4]

Overall information PLO 1 – Needs identification [e-4]	
N. of Learning Units	*2*
Learning Outcomes	- *Guides the process of identification of customer needs in line with the overall business (e.g, market, strategy, value proposition)* - *Writes an advisory report with a creative proposal with possible solutions to specific business need(s), considering advanced/innovative methods and technologies (e.g. by comparing and analysing different*

	solutions/ suppliers, weighing costs/benefits, clarifying value proposition)
Duration	-
Total number of ECTS	*starting from n.2 ECTS*
Recommendations for Micro-credentials	*This PLO is recommended as an independent micro-credential for introducing software experts to methods for needs identification of complex software.*
Often integrated with studies of PLO	-
Recommended Didactical Approach	e-learning work placement Virtual Classroom
Additional comments	*It is recommended to deepen the topics presented in the Learning Units by reading publications dedicated to the various topics, reading websites specialized in software testing, watching online tutorials and downloading materials useful for practical exercises from authoritative sources.*
Recommended Delivery methods	*Lecture up to 50%* *Case study. Individual/team project 50+%*
Additional comments	*Lectures, e-learning are recommended for learning the basic principles, terminology, and models of needs analysis. These should be reinforced through practical tasks, case studies, individual projects.*
Work Based Learning Task *(If foreseen) and* Follow-up, learning reinforcement	*After learning the basic principles, terminology, and methods of needs analysis, the study should focus on analysing and simulating real work-life-like tasks as, for example:* • *Systems Design & Architecture: Understanding how to design scalable, secure, and efficient software solutions to meet identified needs. This includes designing system architectures, data structures, algorithms, and user interfaces.* • *Project Management: Mastering techniques for managing projects efficiently, including agile and waterfall methodologies, resource management, risk assessment, and project lifecycle management.* • *Problem-Solving and Innovation: Enhancing critical thinking and innovative problem-solving abilities, vital for creating effective and novel software solutions.* • *User Experience (UX) Design: Learning how to make software solutions intuitive and user-friendly, taking into account usability and accessibility standards.*
Important (new) approaches and technologies to consider	• *DevOps and Agile Methodologies: These practices promote faster, more efficient development through continuous integration, delivery, and testing. They foster a collaborative environment where development and operations teams work in unison.*

	Microservices Architecture: This design approach structures an application as a collection of loosely coupled services, which can improve modularity and make the application easier to understand, develop, and scale. *Cloud Computing and Cloud Services: Cloud platforms like AWS, Azure, and Google Cloud are increasingly essential in solution design. Familiarity with Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS) is crucial.* *Containerization and Orchestration: Technologies like Docker and Kubernetes are becoming integral for packaging applications into standardized units for development, shipment, and deployment.* *Artificial Intelligence and Machine Learning: These technologies are changing how software solutions are designed and deployed, enabling more personalized user experiences and better data-driven decisions.*
Training facilities (Link to ESSA learning material Platform)	*https://learn.softwareskills.eu/*

2.1.2.1   Learning Units PLO 1 – Needs identification [e-4]

LU1	**Solution Architects in an Organization**
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*eLearning*
Assessment	*Practical assignment*
Title of the Learning material	*Solution Architects in an Organization*

LU2	**Attributes of the Solution Architecture**
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*eLearning*
Assessment	*Report*
Title of the Learning material	*Attributes of the Solution Architecture.docx*

2.1.3 Learning Program PLO 2 – Architecture Design [e-4]

Overall information PLO 2 - Architecture Design [e-4]	
N. of Learning Units	*2*
Learning Outcomes	- *Proposes a coherent architecture design for an innovative/ advanced solution or technology, taking into account relevant business and technological issues (e.g., business evolution and needs, budget and other resources; current technology, obsolescent equipment)* - *Develops a technology roadmap; an approach or strategy to implement a solution or technology (e.g., identifies change requirements, components affected/ involved by the implementation of specific solutions/ services)*
Duration	-
Total number of ECTS	*starting from n.2 ECTS*
Recommendations for Micro-credentials	*This PLO is recommended as an independent micro-credential for introducing software experts to advance methods of architecture design.*
Often integrated with studies of PLO	-
Recommended Didactical Approach	e-learning work placement Virtual Classroom
Additional comments	-
Recommended Delivery methods	*Lecture up to 50%* *Case study. Individual/team project 50+%*
Additional comments	*Lectures, e-learning are recommended for learning advanced principles of software architecture design.*
Work Based Learning Task (If foreseen) and Follow-up, learning reinforcement	*After learning the basic principles, terminology, and methods of needs analysis, the study should focus on analysing and simulating real work-life-like tasks as, for example:* • *Designing Scalable Systems: Assign tasks where students must design a system that can handle significant scaling. For example, designing the architecture for a high-traffic e-commerce site or a global social media platform.* • *Refactoring Monolithic Applications: Provide a monolithic application and instruct students to refactor it into a microservices architecture. This gives students hands-on experience with the challenges and benefits of this architectural style.*

	• *Building Secure Systems: Create exercises where students must design a system with particular security needs, such as a banking or healthcare data management system.*
Important (new) approaches and technologies to consider	• *Microservices Architecture: As opposed to monolithic architecture, microservices break down an application into its core functions, each running independently. This approach promotes scalability and ease of updates.* • *Containerization: Technologies like Docker encapsulate software in a complete filesystem with everything required to run, ensuring consistency across various computing environments.*
Training facilities (Link to ESSA learning material Platform)	*https://learn.softwareskills.eu/*

2.1.3.1   Learning Units PLO 2 – Architecture Design [e-4]

LU1	Principles of Solution Architecture Design
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*e-learning*
Assessment	*Practical assignment*
Title of the Learning material	*Principles of Solution Architecture Design*

LU2	Cloud Migration and Hybrid Cloud Architecture Design
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*e-learning*
Assessment	*Report*
Title of the Learning material	*Cloud Migration and Hybrid Cloud Architecture Design.docx*

2.1.4 Learning Program PLO 3 – Innovating [e-4]

Overall information PLO 3 – Innovating [e-4]	
N. of Learning Units	*3*
Learning Outcomes	- *Applies idea generation and evaluation techniques to propose and evaluate creative ideas on the application of novel technologies – formulates an idea proposal and idea evaluation* - *Writes a product innovation plan on the exploitation of technological advances to introduce a new business, product or service.* - *Designs and executes a Proof of Concept to check feasibility of product innovation*
Duration	-
Total number of ECTS	*starting from n.3 ECTS*
Recommendations for Micro-credentials	*Recommended as an independent micro-credential for upskilling senior Solution Designers.*
Often integrated with studies of PLO	-
Recommended Didactical Approach	e-learning work placement
Additional comments	-
Recommended Delivery methods	*Lecture up to 50%* *Case study. Individual/team project 50+%*
Additional comments	*Lectures, e-learning are recommended for learning the basic principles, terminology, and models of software design. These should be reinforced through practical tasks, case studies, individual/team-projects.*
Work Based Learning Task (If foreseen) and Follow-up, learning reinforcement	*After learning the basic principles, terminology, and methodologies for innovating, the study should focus on analysing and simulating real work-life-like tasks as, for example:* • *Prototyping and Testing: Develop the skills to turn ideas into working prototypes. Learn various testing methodologies to ensure functionality, usability, and performance of the prototype.* • *Iterative Development: Learn how to use feedback from prototype testing to iterate and refine the idea. This could involve making improvements, identifying bugs, or making changes to better meet user needs.*

	• Business Case Development: Understand how to create a compelling business case for your idea. This includes market analysis, cost-benefit analysis, and strategies for implementation.
Important (new) approaches and technologies to consider	• Design Thinking: This human-centric approach to innovation emphasizes empathy, iteration, and multidisciplinary collaboration. It's a proven framework for solving complex problems. • Lean Startup Methodology: An approach that favors iterative product releases to gain valuable customer feedback, make adjustments, and pivot when necessary, reducing product development cycles and increasing efficiency. • Agile Development: A flexible and iterative method of software development that involves constant collaboration between cross-functional teams and stakeholders. It allows for quick adjustments and continuous improvement in response to changes.
Training facilities (Link to ESSA learning material Platform)	https://learn.softwareskills.eu/

2.1.4.1   Learning Units PLO 3 – Innovating [e-4]

LU1	Solution Architecture Design Patterns
Duration	2 ECTS
Didactical Approach and delivery method	Lecture/Project
Additional information	eLearning
Assessment	Practical assignment
Title of the Learning material	Solution Architecture Design Patterns.docx

LU2	Performance Considerations
Duration	2 ECTS
Didactical Approach and delivery method	Lecture/Project
Additional information	eLearning
Assessment	Practical assignment
Title of the Learning material	Performance Considerations.docx

LU3	Security Considerations

Duration	*2 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*eLearning*
Assessment	*Practical assignment*
Title of the Learning material	*Security Considerations.docx*

2.1.5   Learning Program PLO 4 – Profession related competences [EQF7]

Overall information PLO 4 – Profession related competences [EQF7]	
N. of Learning Units	*3*
Learning Outcomes	- *Advises on the application of a new technology. Given a certain situation or context, writes a report with recommendations or an advice on a solution that involves the application of a new technology. Reflects critically on a new technology* - *Analyses, improves, and provides expert advice and guidance on security standards, regulations, measures, methods, tools, and techniques, taking into account the broader business context and current IT developments* - *Analyses, improves, and provides expert advice and guidance on sustainability standards, regulations, measures, and methods, taking into account the broader business context and current IT developments* - *Is continuously aware of ethical considerations and issues and applies these in professional contexts and activities. Forms and communicates an opinion based on incomplete and or limited information, taking into account social, scientific and ethical responsibilities related to the application of own knowledge and opinions. Promotes ethical thinking*
Duration	-
Total number of ECTS	*starting from n.3 ECTS*
Recommendations for Micro-credentials	*This PLO should be an integral part of the studies for students with no prior knowledge of software development.* *Recommended as an independent micro-credential for upskilling Solution Designers.*
Often integrated with studies of PLO	-
Recommended Didactical Approach	e-learning
Additional comments	-

Recommended Delivery methods	*Lecture*	*up to 50%*
	Case study. Individual/team project	*50+%*

Additional comments	*Lectures, e-learning are recommended for learning the basic principles, terminology, and behaviour models of various Solution Designer Soft Competences. These should be reinforced through practical tasks and case studies.*
Work Based Learning Task *(If foreseen) and* **Follow-up, learning reinforcement**	*After learning the basic principles, the study should focus on analysing and simulating real work-life-like tasks as, for example:* • *Ethical Impact Assessment: Students can be given a scenario where they have to design a solution with potential ethical implications (e.g., a facial recognition system). They will need to identify the ethical considerations, discuss possible mitigation strategies, and justify their decisions in the context of existing ethical frameworks.* • *Sustainable Solution Development: In this task, students could design a software solution with specific sustainability requirements, like minimizing power usage or ensuring the solution is designed in a way that it would remain relevant and usable for a long period of time (longevity). They could also be asked to assess and optimize the energy consumption of existing software systems.* • *Accessibility and Inclusivity: In this task, students can be asked to design software that meets accessibility standards and is usable for people with various disabilities. They could be asked to simulate the experience of using their software as a person with a disability, and make necessary adjustments to improve accessibility.*
Important (new) approaches and technologies to consider	• *Green Software Engineering: This involves developing software in a way that minimizes its impact on the environment, for instance by optimizing its resource usage. This approach aligns with the growing emphasis on sustainability in all fields of technology.* • *Ethics in AI: Given the increasing use of AI in decision-making processes, understanding how to develop and implement these systems ethically is crucial. This includes knowledge of bias, fairness, transparency, and accountability in AI systems.*
Training facilities (Link to ESSA learning material Platform)	*https://learn.softwareskills.eu/*

2.1.5.1   Learning Units PLO 4 – Profession related competences [EQF7]

LU1	Security Considerations
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*

Additional information	*e-learning*
Assessment	*Report*
Title of the Learning material	*Security Considerations.docx*

LU2	Cost Considerations
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*e-learning*
Assessment	*Report*
Title of the Learning material	*Cost Considerations.docx*

LU3	Solution Architecture Document
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*e-learning*
Assessment	*Report*
Title of the Learning material	*Solution Architecture Document.docx*

2.1.6 Learning Program PLO 5 – Soft competences [EQF7]

Overall information PLO 5 – Soft competences [EQF7]	
N. of Learning Units	*1*
Learning Outcomes	- *Related to the occupation, knowledge domain, and field of science critically collects: in-depth and detailed professional and scientific information on a range of basic theories, principles and concepts, as well as information on some important current issues and topics. Analyses, evaluates, and combines critically this information, knowledge and insights and presents this in a scientific way. Critically applies/ translates/ interprets results of research (possibly executed by others) to the own context (the occupation and/or knowledge domain). Executes detailed scientific research* - *Exercises (self-)management in situations that are complex, unpredictable and require new strategic approaches. Is able to cope*

with change (positive or negative), to adapt to a considerable level of
variety in the workplace and to transform the work or study context.
Handles pressure and setbacks and maintains composure. Shows
initiative, creativity and originality and carries responsibility for the
results of own activities, work and or study and for the work results of
others. Works correctly and carefully, fully aware of the importance of
trustworthiness and accountability.
-   Realises learning and personal development, mostly autonomous and
    based on intrinsic motivation, looking for personal learning objectives.
    Selects and uses training/instructional methods and procedures
    appropriate for the situation when learning or teaching new things.

Duration	-
Total number of ECTS	*starting from n.2 ECTS*
Recommendations for Micro-credentials	*This PLO should be an integral part of the initial studies for students with no prior knowledge of software development.* *Recommended as an independent micro-credential for upskilling Solution Designers.*
Often integrated with studies of PLO	PLO 4. Profession related competences [EQF7]
Recommended Didactical Approach	e-learning
Additional comments	-
Recommended Delivery methods	*Lecture* *up to 50%* *Case study. Individual/team project* *50+%*
Additional comments	-
Work Based Learning Task *(If foreseen) and* Follow-up, learning reinforcement	*After learning the basic principles, terminology, and model soft competences, the study should focus on analysing and simulating real work-life-like tasks as, for example:* • *Project Management Simulation: Assign students a project where they need to develop a hypothetical software solution. This could be anything from a mobile app to a data analysis system. Make the project parameters vague and open-ended, and introduce unexpected changes or challenges partway through. This will require them to strategize, adapt, and manage their resources effectively. To enhance the complexity, include multiple stakeholders with varying interests and requirements.* • *Peer-Led Learning Sessions: Encourage students to select a topic related to the course content that they're particularly interested in, and then task them with leading a class session or workshop on that topic. This will help foster autonomous learning and teaching skills, and help*

	them develop the ability to choose appropriate instructional methods for different situations. • *Failure Analysis: Have students examine real-life cases of software solution failures. They could analyse why the solution failed, how the situation was managed, and how it could have been handled better. This will help them learn how to handle setbacks, manage pressure, and strategize in complex, unpredictable situations.* • *Independent Research Project: Assign an open-ended research project that requires students to investigate and present on a current trend or issue in the software solutions field. The project can be chosen based on the students' own interests, encouraging intrinsic motivation and personal learning objectives.*
Important (new) approaches and technologies to consider	• *Collaborative Tools: Technologies like Microsoft Teams, Slack, and GitHub facilitate collaboration and can help students learn to work as part of a team, manage their time and tasks, and navigate a remote work environment.* • *Online Learning Platforms: Sites like Coursera, edX, and LinkedIn Learning allow students to pursue additional learning autonomously. This can be particularly useful for helping them find and explore personal learning objectives.* • *Digital Portfolios: Tools like GitHub, Behance, and Dribbble allow students to showcase their work and track their learning progress. These portfolios can also help them reflect on their growth, set goals, and take responsibility for their learning outcomes.*
Training facilities (Link to ESSA learning material Platform)	*https://learn.softwareskills.eu/*

2.1.6.1   Learning Units PLO 5 – Soft competences [EQF7]

LU1	**Learning Soft Skills to Become a Better Solution Architect**
Duration	*2 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*e-learning*
Assessment	*Practical assignment*
Title of the Learning material	*Learning Soft Skills to Become a Better Solution Architect.docx*

2.1.7   Learning Program PLO 6 – Functioning in organisation [EQF7]

Overall information PLO 6 – Functioning in organisation [EQF7]

N. of Learning Units	3
Learning Outcomes	- *Explains organisation theory and behaviour* - *Describes the relationship between business and IT* - *Works in an organisational context under broad direction, performing coordinating activities, with at least 3 years of working experience at an intermediate or senior level, as e.g., a specialist, team leader, manager, or a comparable role* - *Leads a project* - *Writes a report on functioning in organisation*
Duration	-
Total number of ECTS	*starting from n.2 ECTS*
Recommendations for Micro-credentials	*Recommended as an independent micro-credential for upskilling Software Designers*
Often integrated with studies of PLO	PLO 4. Profession related competences [EQF7], PLO 5 – Soft competences [EQF7]
Recommended Didactical Approach	e-learning work placement
Additional comments	-
Recommended Delivery methods	*Lecture* up to 50% *Case study. Individual/team project* 50+%
Additional comments	Lectures, e-learning are recommended for learning the basic principles, terminology, and models of software design. These should be reinforced through practical tasks and case studies.
Work Based Learning Task **(If foreseen) and** Follow-up, learning reinforcement	*After learning the basic principles, terminology, and models of how a Solution Designer should function within an organisation, the study should focus on analysing and simulating real work-life-like tasks as, for example:* • *Case Study Analysis: Students can study real-life examples of successful and unsuccessful software projects within organizations. They can analyze what went well, what went wrong, and how organizational theory and behavior influenced the outcomes.* • *Cross-functional Teamwork: Assign students to teams that mimic the structure of a real software development team, with roles such as project manager, developer, UX/UI designer, and quality assurance. This task will help them understand the dynamics of working in a cross-functional team and the challenges and benefits that come with it.* • *Stakeholder Communication Simulation: In this task, students can simulate meetings with various stakeholders, such as clients, senior management, or other teams within the organization. This will give*

	them practice communicating effectively in a professional setting and managing expectations.
Important (new) approaches and technologies to consider	• *Digital Collaboration Tools: Platforms like Slack, Microsoft Teams, or Asana can simulate real-world project management and team collaboration. They can help students learn how to coordinate with remote or distributed teams, which is increasingly common in the software industry.* • *Business Process Automation Tools: Software like Zapier or Integromat can be introduced to show students how repetitive tasks can be automated in an organization, thus improving efficiency and allowing more focus on strategic tasks.* • *Data Analytics Tools: Understanding data analytics tools like Google Analytics, Tableau, or PowerBI can be essential for making data-driven decisions. These tools can support case study analysis and help students grasp the impact of metrics and KPIs on organizational behavior and strategies..*
Training facilities (Link to ESSA learning material Platform)	*https://learn.softwareskills.eu/*

2.1.7.1 Learning Units PLO 6 – Functioning in organisation [EQF7]

LU1	**Data Engineering for Solution Architecture**
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*E-LEARNING*
Assessment	*Practical assignment*
Title of the Learning material	*Data Engineering for Solution Architecture.docx*

LU2	**Rearchitecting Legacy Systems**
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*E-LEARNING*
Assessment	*Practical assignment*

Title of the Learning material	*Rearchitecting Legacy Systems.docx*

LU3	**Solution Architecture Document**
Duration	*1 ECTS*
Didactical Approach and delivery method	*Lecture/Project*
Additional information	*E-LEARNING*
Assessment	*Self-reflection report*
Title of the Learning material	*Solution Architecture Document.docx*

2.1.8 Learning Program EXTRA CURRICULAR PLO: New Technology [EQF7]

Overall information EXTRA CURRICULAR PLO: New Technology [EQF7]	
N. of Learning Units	*2*
Learning Outcomes	- *Given a certain situation or context, writes a report with recommendations or an advice on a solution that involves the application of (a method, technique or tool related to) a new technology, considering specific issues related to this technology (e.g., impact on the organisation/ business/ society; security, ethical issues)* - *Writes a critical reflection on a new technology*
Duration	*-*
Total number of ECTS	*starting from n.2 ECTS*
Recommendations for Micro-credentials	*Recommended as an independent micro-credential for upskilling Solution Designers*
Often integrated with studies of PLO	*-*
Recommended Didactical Approach	e-learning work placement
Additional comments	*-*
Recommended Delivery methods	*Lecture* *up to 50%* *Case study. Individual/team project* *50+%*
Additional comments	*E-learning is recommended for learning the basic principles, terminology, and models of how to use new technologies as a Solution Designer. These should be reinforced through practical tasks, case studies, individual/team-projects.*

Work Based Learning Task *(If foreseen) and* Follow-up, learning reinforcement	*After learning the basic principles, terminology, the study should focus on analysing and simulating real work-life-like tasks as, for example:* • *Case Study Analysis: Assign students real-life case studies of businesses that have implemented a new technology. Have them analyze the impact, challenges, ethical considerations, and overall effectiveness, and then write a report on their findings.* • *Technology Adoption Proposal: Task students with identifying a new technology relevant to their field of interest. They should write a report recommending how an organization could adopt this technology, what impact it could have on the business and broader society, and what security and ethical issues need to be considered.* • *Ethical Impact Assessment: Students could write a report on a proposed solution involving a new technology that has potential ethical implications. They should identify the ethical considerations and propose mitigation strategies, relating their discussion to ethical theories and frameworks.*
Important (new) approaches and technologies to consider	• *Sustainable and Green Technologies: With the growing emphasis on environmental sustainability, it's important to consider the environmental impact of new technologies and how they can be used to support green initiatives.* • *5G Technology: The rollout of 5G brings improved connectivity and opens the door to new applications, but also brings about considerations in terms of infrastructure, health, and security.*

2.1.8.1 Learning Units EXTRA CURRICULAR PLO: New Technology [EQF7]

LU1	Architectural Reliability Considerations
Duration	*1 ECTS*
Didactical Approach and delivery method	Lecture/Project
Additional information	e-Learning
Assessment	*Assessment (of report)*
Title of the Learning material	*Architectural Reliability Considerations.docx*

LU2	Operational Excellence Considerations
Duration	*1 ECTS*
Didactical Approach and delivery method	Lecture/Project

Additional information	e-Learning
Assessment	*Assessment (of report)*
Title of the Learning material	*Operational Excellence Considerations.docx*

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