

European Software
Skills Alliance.

Train the Trainer Programme

Annex VI Solution Designer EQF 6

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Train the Trainer Programme – Annex VI– Solution Designer EQF 6, 2024

Deliverable 13: “ESSA Train the Trainer Programme & Materials”– Annex VI

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.

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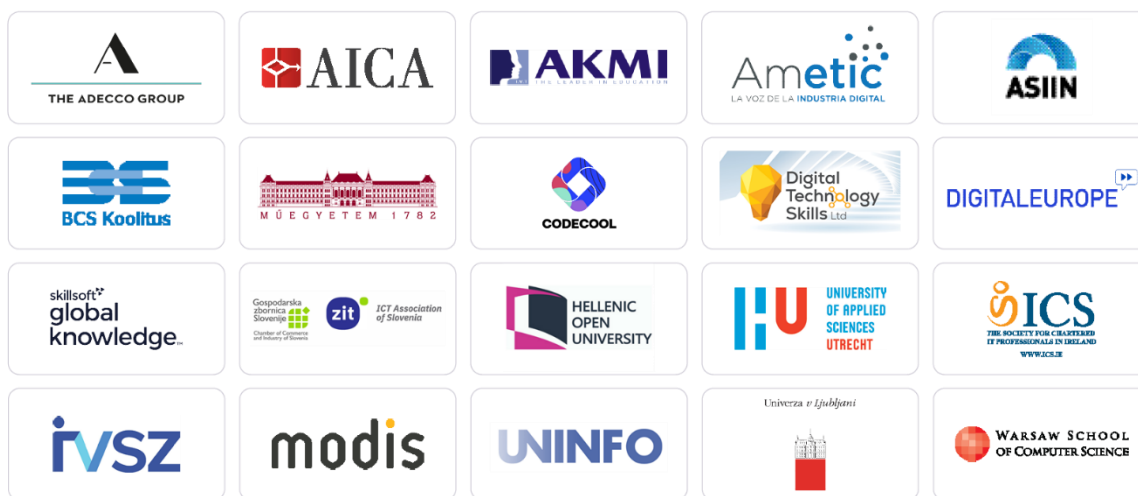


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List of abbreviations and acronyms

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. Executive Summary

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 6 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 for Learning Programme - Objective, Total number of Programme 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 **IT-oriented students**.

2. How to deliver the ESSA Solution Designer EQF 6 profile

2.1 IT-oriented students

2.1.1 Overall Information about the Learning Programme

Objective	<i>The Learning programme proposed aims at training university students to become an ICT specialist. Students learn smart and devise creative ICT solutions for business issues. The students don't get lessons nor exams but work fully on challenging projects for real clients from the start of the studies – it is therefore a practice based learning approach. The students are coached in their learning, both on skills and competencies. The learning outcomes of the Open-ICT training program are based on the HBO-I professional tasks (elaborated by the HBO-I Foundation). This foundation is a partnership between the universities of applied sciences in the Netherlands that provide ICT education and the business community. The curriculum leverages a blended learning model, combining the presence classroom and virtual classroom. HBO Open-ICT lasts 8 semesters.</i>
Total number of PLOs concerned	3
Total Learning Units (LU)	22
Duration	+48 hours
Total number of ECTS	3
Targeted Institutions	<i>Higher Education Institutions</i>

2.1.2 Learning Programme PLO 2 – Architecture Design [e-3]

Overall information PLO 2 – Architecture Design [e-3]	
N. of Learning Units	8
Learning Outcomes	<ul style="list-style-type: none"> - Describes architecture frameworks and standards such as TOGAF - Explains system architecture requirements (e.g., performance, maintainability, extendibility, scalability, availability, security, accessibility) - Aligns an IT solution with a certain architecture and formulates (relevant parts of) an IT architecture design, for a relatively

	<i>straightforward situation applying common design techniques and tools</i>				
Duration	<i>10,5 hours</i>				
Total number of ECTS	<i>starting from n. 0,5 ECTS</i>				
Recommendations for Micro-credentials	<i>This PLO is currently deployed in a 4-year bachelor programme and delivered for students in the first year.</i>				
Often integrated with studies of PLO	- PLO3				
Recommended Didactical Approach	Presence Classroom Work placement				
Additional comments	<p><i>Continuous feedback is given on the learning and creation process by other students, senior students, teachers in the role of coach and experts from the field. This takes place during the planning of the sprint, the execution of the work, the peer review of products, the delivery to the client, coaching sessions and knowledge sharing. We have continuous contact with the student from within the program and during the final assessment that takes place every ten weeks. As a result, we know exactly how the student is doing.</i></p> <p><i>In the final assessment, we look at the complete development of the student. We mainly ask ourselves whether the student is ready for the next phase. The complexity of projects increases every six months and students must be able to successfully fulfil their own role in a team more independently. Together with the development that the student has gone through in his general and substantive skills, we make a decision whether the student is allowed to continue to the next phase.</i></p>				
Recommended Delivery methods	<table> <tr> <td><i>Lecture</i></td> <td><i>20%</i></td> </tr> <tr> <td><i>Case study. Individual/team project</i></td> <td><i>80+%</i></td> </tr> </table>	<i>Lecture</i>	<i>20%</i>	<i>Case study. Individual/team project</i>	<i>80+%</i>
<i>Lecture</i>	<i>20%</i>				
<i>Case study. Individual/team project</i>	<i>80+%</i>				
Additional comments	-				
Work Based Learning Task (If foreseen) and Follow-up, learning reinforcement	<p><i>Open-ICT training program are based on the HBO-I professional tasks (elaborated by the HBO-I Foundation). This foundation is a partnership between the universities of applied sciences in the Netherlands that provide ICT education and the business community.</i></p> <p><i>Open-ICT is characterized by agile project-driven education. Students therefore always work on real projects for our clients. Agile stands for short cyclical. Every two weeks the team thinks about what will be made and each student in the team looks at what he or she needs to learn for this. During the two weeks, making and learning alternate and at the end of each two weeks the work is delivered and you receive feedback on your work and your learning ability. Through this form of education, you learn new general and ICT skills every two weeks and deliver real products every two weeks. With this working method we</i></p>				

	<i>are 100% in line with how a company works and learns later. The materials are supporting the students learning.</i>
Important (new) approaches and technologies to consider	<p><i>Open ICT is based on new approaches to education, based on intrinsic motivation. The intrinsic motivation is maximal when students are allowed to make their own choices: autonomy, when students feel included in a learning community: connectedness, and when they develop self-confidence by learning in challenging tasks: feeling competent. Every semester the student chooses a professional role they want to deepen in line with the HBO-I professional tasks. In a development team, together with the client, they determine what they will make.</i></p> <p><i>Students work incorporating ways of working implemented in companies such as agile methods. The work and learning process of Open-ICT comes from the agile method of the software development industry, called SCRUM. Every two weeks, students think about what they are going to create as a team, by user stories. They will think of the necessary tasks for their own contribution within the team and what they have to learn in order to be able to perform a certain task (learning stories). By dividing this into 'sprints' and properly guiding students, they can achieve learning objectives every two weeks and deliver working products. These quick results boost confidence and motivation.</i></p>
Training facilities (Link to ESSA learning material Platform)	<i>https://learn.softwareskills.eu/</i>

2.1.2.1 Learning Units PLO 2 – Architecture Design [e-3]

LU1	MaO - 01 Introduction & BPMN
Duration	<i>1 hour and 30 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>BPMN part 1</i>

LU2	MaO - 02 BPMN deel 2
Duration	<i>1 hour and 30 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>

Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>BPMN part 2</i>

LU3	MaO - 03 Feedback BPMN
Duration	<i>45 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Feedback BPMN</i>

LU4	MaO - 03 requirements & use cases afleiden
Duration	<i>45 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Requirements & Use case diagram</i>

LU5	MaO - 04 UML & Use case descriptions
Duration	<i>1 hour and 30 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>UML & Use case descriptions</i>

LU6	MaO - 05 Introduction data modelling
Duration	<i>1 hour and 30 minutes</i>

Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Introduction data modelling</i>

LU7	MaO - 06 Business Rules & UI Design
Duration	<i>1 hour and 30 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Business Rules & UI Design</i>

LU8	MaO - 07 Classes & Sequence diagram
Duration	<i>1 hour and 30 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Classes- & Sequence diagram</i>

2.1.3 Learning Programme PLO 3 – Application Design [e-3]

Overall information PLO 3 – Application Design [e-3]	
N. of Learning Units	9
Learning Outcomes	<ul style="list-style-type: none"> - Explains and distinguishes principles and terminology of software design (e.g., phases in the design process, techniques, deliverables) - Describes principles of usability, UI/UX design, accessibility, privacy, security - Creates functional and data modelling diagrams, using common languages and techniques (e.g., DFD, IDEF0, ERD, and UML)

	<ul style="list-style-type: none"> - Designs a simple system architecture and interfaces using familiar technologies - Compares alternatives for a design and selects the most promising alternative(s), optimising the balance between cost and quality - Specifies a design for a software application or component, taking into account certain constraints/ requirements (e.g., the development environment, programming language, technology, requirements related to performance, security, accessibility, usability, privacy, ethics, safety, IS policy, cost, quality) - Designs and organises the overall plan for the design of an application or software component
Duration	+10,5 hours
Total number of ECTS	starting from n. 1 ECTS
Recommendations for Micro-credentials	This PLO is currently deployed in a 4 year bachelor programme and delivered for students in the first year.
Often integrated with studies of PLO	PLO 2
Recommended Didactical Approach	Presence Classroom Work placement
Additional comments	-
Recommended Delivery methods	Lecture up to 20% Case study. Individual/team project 80+%
Additional comments	-
Work Based Learning Task (If foreseen) and Follow-up, learning reinforcement	<p>Open-ICT training program are based on the HBO-I professional tasks (elaborated by the HBO-I Foundation). This foundation is a partnership between the universities of applied sciences in the Netherlands that provide ICT education and the business community.</p> <p>Open-ICT is characterized by agile project-driven education. Students therefore always work on real projects for our clients. Agile stands for short cyclical. Every two weeks the team thinks about what will be made and each student in the team looks at what he or she needs to learn for this. During the two weeks, making and learning alternate and at the end of each two weeks the work is delivered and you receive feedback on your work and your learning ability. Through this form of education, you learn new general and ICT skills every two weeks and deliver real products every two weeks. With this working method we are 100% in line with how a company works and learns later. The materials are supporting the students learning.</p>
Important (new) approaches and	Open ICT is based on new approaches to education, based on intrinsic motivation. The intrinsic motivation is maximal when students are allowed to

<p>technologies to consider</p>	<p><i>make their own choices: autonomy, when students feel included in a learning community : connectedness, and when they develop self-confidence by learning in challenging tasks : feeling competent. Every semester the student chooses a professional role they want to deepen in line with the HBO-I professional tasks. In a development team, together with the client, they determine what they will make.</i></p> <p><i>Students work incorporating ways of working implemented in companies such as agile methods. The work and learning process of Open-ICT comes from the agile method of the software development industry, called SCRUM. Every two weeks, students think about what they are going to create as a team, by user stories. They will think of the necessary tasks for their own contribution within the team and what they have to learn in order to be able to perform a certain task (learning stories). By dividing this into 'sprints' and properly guiding students, they can achieve learning objectives every two weeks and deliver working products. These quick results boost confidence and motivation.</i></p>
<p>Training facilities (Link to ESSA learning material Platform)</p>	<p>https://learn.softwareskills.eu/</p>

2.1.3.1 Learning Units PLO 3 – Application Design [e-3]

<p>LU1</p>	<p>MaO - 01 Introduction & BPMN</p>
<p>Duration</p>	<p><i>1 hour and 30 minutes</i></p>
<p>Didactical Approach and delivery method</p>	<p><i>Lecture and practical exercises</i></p>
<p>Additional information</p>	<p><i>Live classes</i></p>
<p>Assessment</p>	<p><i>Practical assessment & Portfolio</i></p>
<p>Title of the Learning material</p>	<p><i>BPMN part 1</i></p>

<p>LU2</p>	<p>MaO - 02 BPMN deel 2</p>
<p>Duration</p>	<p><i>1 hour and 30 minutes</i></p>
<p>Didactical Approach and delivery method</p>	<p><i>Lecture and practical exercises</i></p>
<p>Additional information</p>	<p><i>Live classes</i></p>
<p>Assessment</p>	<p><i>Practical assessment & Portfolio</i></p>
<p>Title of the Learning material</p>	<p><i>BPMN part 2</i></p>

LU3	MaO - 03 Feedback BPMN
Duration	<i>45 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Feedback BPMN</i>

LU4	MaO - 03 requirements & use cases afleiden
Duration	<i>45 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Requirements & Use case diagram</i>

LU5	MaO - 04 UML & Use case descriptions
Duration	<i>1 hour and 30 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>UML & Use case descriptions</i>

LU6	MaO - 05 Introduction data modelling
Duration	<i>1 hour and 30 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>

Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Introduction data modelling</i>

LU7	MaO - 06 Business Rules & UI Design
Duration	<i>1 hour and 30 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Business Rules & UI Design</i>

LU8	MaO - 07 Classes & Sequence diagram
Duration	<i>1 hour and 30 minutes</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Classes- & Sequence diagram</i>

LU9	MaO - 7 Documentation for testing
Duration	<i>Self-pacing</i>
Didactical Approach and delivery method	<i>e-learning and case study</i>
Additional information	<i>Document</i>
Assessment	<i>Practical assessment & Portfolio</i>
Title of the Learning material	<i>Documentation for testing</i>

2.1.4 Learning Programme PLO 10 – Functioning in organisation [EQF6]

Overall information PLO 10 – Functioning in organisation [EQF6]	
N. of Learning Units	5
Learning Outcomes	<ul style="list-style-type: none"> - Explains the basics of organisation theory and behaviour - Describes the relationship between business and IT - Works in an organisational context under specific direction with limited autonomy and responsibility e.g., at the level of a trainee, junior or assistant - Manages a project, selects appropriate project management methods and tools - Writes a report on functioning in the organisation
Duration	27 hours
Total number of ECTS	starting from n.1 ECTS
Recommendations for Micro-credentials	This PLO is a part of a 4 year bachelor programme. It is aimed at students from the first year (HBO-startniveau)
Often integrated with studies of PLO	-
Recommended Didactical Approach	Presence Classroom Work placement
Additional comments	<p><i>Professional product: Description and analysis of, preferably, your own organization and its environment, translated into the design of IT based on similar elements of the CANVAS model and associated theories, models and instruments with clear conclusions and recommendations for the customer side and internally business model and a substantiated vision of a possible future, alternative business fashion model culminating in a discussion paper, i.e. advice for the entire organization.</i></p> <p><i>The student follows the work cycle for practice-oriented research (Verhoeven, 2010)</i></p> <ol style="list-style-type: none"> 1. <i>Problem analysis: preliminary investigation and determining the problem definition, question, objective and definition</i> 2. <i>Research design: choice of the research strategy and the research methods</i> 3. <i>Data collection: collecting data /information you need to make your answer research questions</i> 4. <i>Data analysis: analyzing the data obtained data / information to draw conclusions</i> 5. <i>Conclusions & recommendations: providing a answer (conclusion) to the question basis of the data analysis and the interim conclusions and passing on recommendations to the client</i> 6. <i>Reporting and presentation: writing it research report and giving a presentation to stakeholders.</i>

Recommended Delivery methods	<i>Lecture up to 20%</i> <i>Case study. Individual/team project 80+%</i>
Additional comments	<p>The module discusses organization and management aspects that are relevant for IT professionals to understand their environment and organization. The student can describe the current business model of the organization, analyze it and based on it. the conclusions of this analysis provide advice on a possible future business model for the organization and more specifically for the (business) ICT domain.</p> <p>Flow of the sessions:</p> <ul style="list-style-type: none"> • Preparation: studying literature and creating assignment meeting (upload reflection / case study results of assignment (ppt format) via Canvas) • Plenary introduction by teachers (depending on content 1 or 2 hours) • Break (15') • Collecting feedback on homework in learning teams • Presentations and feedback from fellow students and teacher • Questions / theory • Assignment for the next session
Work Based Learning Task (If foreseen) and Follow-up, learning reinforcement	<i>During the 4 sessions, there is a combination of lecture and practical cases and exercises. Before each session, students must prepare (homework) working on the business case and reading relevant literature</i>
Important (new) approaches and technologies to consider	<i>n/a</i>
Training facilities (Link to ESSA learning material Platform)	<i>https://learn.softwareskills.eu/</i>

2.1.4.1 Learning Units PLO 10 – Functioning in organisation [EQF6]

LU1	External and internal environment organizations
Duration	<i>6 hours</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Professional product</i>
Title of the Learning material	<i>External and internal environment organizations</i>

LU2	Strategy - SWOT, BCG, T&W and Ansoff
Duration	<i>6 hours</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Professional product</i>
Title of the Learning material	<i>Strategy - SWOT, BCG, T&W and Ansoff Article: business model navigator</i>

LU3	Business model canvas
Duration	<i>6 hours</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Professional product</i>
Title of the Learning material	<i>Business model canvas</i>

LU4	Business model patterns & Blue Ocean strategy
Duration	<i>6 hours</i>
Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
Additional information	<i>Live classes</i>
Assessment	<i>Professional product</i>
Title of the Learning material	<i>Business model patterns & Blue Ocean strategy</i>

LU5	Extra - Modelling and orientation	
<i>Modelling and Orientation - 03 requirements & use cases</i>	Duration	<i>1 hour and 30 minutes</i>
	Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
	Additional information	<i>Live classes</i>
	Assessment	<i>-</i>
	Title of the Learning material	<i>Requirements & Use case diagram</i>

<i>Modelling and Orientation - 06 Business Rules & UI Design</i>	Duration	<i>1 hour and 30 minutes</i>
	Didactical Approach and delivery method	<i>Lecture and practical exercises</i>
	Additional information	<i>Live classes</i>
	Assessment	-
	Title of the Learning material	<i>Business rules & UI Design</i>

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