European Software
Skills Alliance.

ESSA Learning Programmes

ANNEX II
Developer EQF 6

30 November 2024

Status: Final version

Co-funded by the
Erasmus+ Programme
of the European Union

ESSA Learning programme – Developer EQF 6, 2024

Deliverable 10 – ESSA Learning Programmes & Materials – ANNEX II

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

Authors: Adecco/Mylia

softwareskills.eu

Legal Disclaimer

Co-funded by the Erasmus+ Programme of the European Union

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 | ESSA Associated Partners

Table of Contents

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 Developer EQF 6 – ESSA Learning Programme

1.1 People without ICT knowledge who want to reskill quickly

Executive summary

This learning programme is designed by Global Knowledge France (GK FR). The main objective of the programme is to reskill people to become all-round software developers at EQF6 level. The programme's target audience are people without ICT knowledge who want to reskill quickly. The programme is well suited to be offered by VET institutes, both in more traditional settings and in alternative settings, e.g. those that are time- and place-independent, such as distance learning institutes. As the programme is aimed at rapid reskilling and a short route to the labour market, cooperation can be sought with labour market intermediaries. In order to maximise the flow to business and employment and make the programme as attractive as possible for jobseekers, it is also highly recommended to work closely with companies or other institutions that can mediate in this process.

The programme has a compact design and runs over a 3-month period, during which participants are actively engaged full-time. The advice is to keep the group of participants very small to ensure intensive guidance. The programme is made up of 11 learning units for a total duration of appr. 406 hours, 16 ECTS, which can be delivered face-to-face, remotely or in a mix of the 2 modalities. By offering the programme in these different ways, flexibility and accessibility are maximised. The programme itself is a mix of theory and practical assignments, in which the participants have to work together to achieve results. the programme concludes with an overall team project in which all the knowledge and skills learned must be applied.

The programme starts by explaining the role of software development and IT in projects and organisations. It then follows a logical structure with basic programming skills such as SQL, OO, and Java, followed by front-end development with UX, HTML, CSS and Javascript and backend development with the development of web applications, web services, Spring and Hibernate. Testing and requirements gathering are also covered. Also, more profession-related competences are addressed with project management, team working and time management. The programme concludes with an overarching assignment requiring teamwork to deliver a working application.

The programme that is offered by Global Knowledge France is part of employability and reskilling programs in France and is financed by Pôle emploi, the CPF (Compte Professionnel de Formation) and public funding bodies. Pôle emploi is the leading player in the French employment market, operating as an intermediate between companies and jobseekers. Global Knowledge France works closely together with Pôle emploi, assuring that the job guarantee of its learners in selected programmes is almost 100%. Besides this, offering programmes in-company, as a private class for a specific organisation adds to the attractiveness of the programme as well.

Learning units	PLO		Duration in hours (ECTS)	% Practice
Work in project situation	9	Introduction to project management	8 (0,32 ECTS)	Theoretical
		Introduction to Agile	16 (0,64 ECTS)	40%
Team working	8	Integration and teamwork	8 (0,32 ECTS)	80%
		Communication	8 (0,32 ECTS)	80%
		Assertiveness and place in a team	8 (0,32 ECTS)	80%
		Preventing and managing difficult situations	8 (0,32 ECTS)	80%
Get trained and informed	7,8	Managing time and priorities	8 (0,32 ECTS)	80%
		Developing creativity	8 (0,32 ECTS)	80%
		Technology watch	8 (0,32 ECTS)	Theoretical
Place of development in an organisation	1,2,9	The role of development in IT projects	16 (0,64 ECTS)	Theoretical
Understanding the need	1,5	Collecting requirements	24 (0,96 ECTS)	Theoretical
Development basics [OO, SQL, JAVA]	1,2	Object design	16 (0,64 ECTS)	60%
		SQL basics	24 (0,96 ECTS)	40%
		Java Programming: the fundamentals	40 (1,6 ECTS)	60%
Testing basics	4	Selenium 2: how to test web services	8 (0,32 ECTS)	30%
Front End development [UX, HTML, CSS, Javascript]	1,2	Introduction to UX Design	8 (0,32 ECTS)	Theoretical
		HTML 5 programming with JavaScript and CSS	24 (0,96 ECTS)	50%
Back End development	2	Developing Web applications	40 (1,6 ECTS)	50%
		Developing Web services	24 (0,96 ECTS)	50%
		Spring and Hibernate	40 (1,6 ECTS)	60%
Software factory: DevOps	3,6	Implementing the software factory	40 (1,6 ECTS)	50%
Team project: Banking application	1,2,4,7,8,9	Putting things into practice	80 (3,2 ECTS)	100%

Curriculum Developer EQF6 Global Knowledge France

1.1.1 PLO 1. Application Design [e-3][1]

1. PLO Application Design [e-3]	
The learner has demonstrated capability *→ to specify a design for a software application or component that meets requirements* *→ to organise the planning of the design of an application or software component*	
Unit learning outcomes	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
	Identifies needs of customers, users, stakeholders and formulates requirements and functional specifications
	Creates functional and data modelling diagrams, using common languages and techniques (e.g., DFD, IDEF0, ERD, and UML)
	Creates a database design
	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)

1.1.1.1 Duration of Study

Recommended duration: starting from 5 ECTS as an absolute minimum. If bigger and more complex practical assignments are used such as groupwork and a team project, then 7 ECTS is a minimum.

Often integrated with studies of PLOs: PLO 2. Application Development and PLO 4. Testing, and if there are practical assignments, groupwork and a team project involved also PLO's: 6. Profession related competences, 7. Soft competences and 8. Functioning in organisations may be involved.

1.1.1.2 Recommendations for Micro-credentials

This PLO and its subsequent parts can be offered as a micro-credential as part of a modular (re)skilling programme for learners with no prior knowledge of software design. This PLO is also recommended as an independent stand-alone micro-credential for skilling and reskilling (ICT)

[1] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

professionals that are interested in learning the basics of application development. Parts of this PLO are also good candidates for micro-credentials, such as:

- Object design
- SQL basics
- UX design

1.1.1.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

- F2F classroom ☒
- Virtual classroom ☒
- Blended ☒
- e-Learning ☒
- In-company ☒

Additional comments

To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

Recommended delivery methods:

- Lectures F2F ☒
- Lectures virtual ☒
- Lectures blended ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒
- Group/ teamwork ☒
- Team project ☒

Additional comments

Lectures, e-learning and virtual instructor-led training are recommended for learning the basic principles, terminology, and methods of software design. These should be reinforced through practical tasks, individual and group assignments, and if possible, a team project. The ratio between on the one hand lectures/ VILT and on the other hand practical work done by the learners should be appr. 60% - 40% respectively.

1.1.1.4 WBL and Follow-up Reinforcement

After learning the basic principles, terminology, and models of software design, the programme should focus on analysing and simulating real work-life-like tasks as, for example:

- Practical exercises, based on real life situations, e.g., case studies

- Working together in a team to design an application

1.1.1.5 Important (new) approaches and technologies to consider

n/a

1.1.1.6 Assessment

Unit learning outcome	Assessment method (summative)	Validation of prior acquired competences (skills and knowledge)
Explains and distinguishes principles and terminology of software design	Exam	-
Describes principles of usability, UI/UX design, accessibility, privacy, security	Exam	-
Identifies needs of customers, users, stakeholders and formulates requirements and functional specifications	Exam	-
Creates functional and data modelling diagrams, using common languages and techniques	Exam	-
Creates a database design	Exam	-
Designs a simple system architecture and interfaces using familiar technologies	Practical assignment (team project)	-
Compares alternatives for a design and selects the most promising alternative(s), optimising the balance between cost and quality	Practical assignment (team project)	-
Specifies a design for a software application or component, taking into account certain constraints/ requirements	Practical assignment (team project)	-

1.1.2 Learning Resources - PLO 1. Application Design [e-3]

LEARNING UNIT	EQF	Duration in hrs (ECTS)	Didactical Approach	ASSESSMENT (formative + summative)	Topic	Delivery method of the learning material	Learning material
1.1 The place of development in an organisation	5	16 (0,64 ECTS)	F2F, virtual, blended	Exam	Course materials	Virtual instructor-led training (VILT), F2F lectures	-
1.2 Understanding the need [collecting requirements]	5	24 (0,96 ECTS)	F2F, virtual, blended	Exam	Course materials	Virtual instructor-led training (VILT)	-
1.3 Development basics: -Object design -SQL basics]	6	40 (1,6 ECTS)	F2F, virtual, blended, e-learning/ videos	Practical exercises, Exam	Object design and UML_Lesson Object design - Mini Bank_Exercise Object design - Mini Bank_Exercise Solution	Training lectures, Virtual instructor-led training (VILT), Practical exercises	LU 1.3 Object design and UML_Lesson.pptx LU 1.3 Object design_Mini Bank_Exercise.pdf LU 1.3 Object design_Mini Bank_Exercise solution. pdf
1.4 Front End development: -Introduction to UX design	6	8 (0,32 ECTS)	Virtual	Practical exercises, Exam	Course materials	Training lectures, Virtual instructor-led training (VILT)	-

1.5 Team project: Banking application	6	80 (3,2 ECTS)	F2F, virtual, blended	Practical assignment, presentation	Workbook	Training lectures, Virtual instructor-led training (VILT), Team project, Solving a problem together	-

1.1.3 PLO 2. Application Development [e-3][2]

2. PLO Application Development [e-3]	
The learner has demonstrated capability *→ to creatively develop software applications and components, by interpreting the software design* *→ to optimise the application development*	
Unit learning outcomes	Organises data and creates a structured dataset
	Writes code and related documentation to it, using programming languages (e.g., Java, Javascript, PHP, Python) and tools (e.g., GitHub), applying programming principles (e.g., clean coding, green coding, secure programming) and other relevant practices, principles, or constraints (e.g., privacy legislation, intellectual property law)
	Efficiently creates a working software component/ application taking into account design requirements and other relevant constraints (e.g., architecture, efficiency, cost, quality, energy consumption) and applying relevant tools and techniques (e.g., object-oriented programming; IDE, CASE; editors, compilers; version control management and tools; multimedia integration tools; app development tools; reuse of proved solutions)
	Modifies an existing software component/ application, in order to optimize it (e.g., to improve maintenance, performance, security)
	Participates in a development process, selecting and applying appropriate methods and techniques (e.g., a software development method such as agile, prototyping)

1.1.3.1 Duration of Study

Recommended duration: starting from 5 ECTS as an absolute minimum. If bigger and more complex practical assignments are used such as groupwork and a team project, then 7 ECTS is a minimum.

Often integrated with studies of PLOs: PLO 1. Application Design and PLO 4. Testing, and if there are practical assignments, groupwork and a team project involved also PLO's: 6. Profession related competences, 7. Soft competences and 8. Functioning in organisations may be involved.

1.1.3.2 Recommendations for Micro-credentials

This PLO and its subsequent parts can be offered as a micro-credential as part of a modular (re)skilling programme for learners with no prior knowledge of software development. This PLO is also recommended as an independent stand-alone micro-credential for skilling and reskilling (ICT) professionals that are interested in learning the basics of application development. Parts of this PLO are also good candidates for micro-credentials, such as:

[2] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

- Java programming fundamentals
- HTML 5 programming with JavaScript and CSS
- Web applications development
- Web services development
- Spring and Hibernate

1.1.3.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

- F2F classroom ☒
- Virtual classroom ☒
- Blended ☒
- e-Learning ☒
- In-company ☒

Additional comments

To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

Recommended delivery methods:

- Lectures F2F ☒
- Lectures virtual ☒
- Lectures blended ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒
- Group/ teamwork ☒
- Team project ☒

Additional comments

Lectures, e-learning and virtual instructor-led training are recommended for learning the basic principles, terminology, and methods of application development. These should be reinforced through practical tasks, individual and group assignments, and if possible, a team project. The ratio between on the one hand lectures/ VILT and on the other hand practical work done by the learners should be appr. 60% - 40% respectively.

1.1.3.4 WBL and Follow-up Reinforcement

After learning the basic principles, terminology, and models of application development, the programme should focus on analysing and simulating real work-life-like tasks as, for example:

- Practical exercises, based on real life situations, e.g., case studies

- Working together in a team to develop an application

1.1.3.5 Important (new) approaches and technologies to consider

n/a

1.1.3.6 Assessment

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
Organises data and creates a structured dataset	Exam	-
Writes code and related documentation to it, using programming languages, applying programming principles and other relevant practices, principles, or constraints	Exam	-
Efficiently creates a working software component/ application taking into account design requirements and other relevant constraints and applying relevant tools and techniques	Practical assignment (team project)	-
Modifies an existing software component/ application, in order to optimize it	Practical assignment (team project)	-
Participates in a development process, selecting and applying appropriate methods and techniques	Practical assignment (team project)	-

1.1.4 Learning Resources - PLO 2. Application Development [e-3]

LEARNING UNIT	EQF	Duration in hrs (ECTS)	Didactical Approach	ASSESSMENT (formative + summative)	Topic	Delivery method of the learning material	Learning material
2.1 The place of development in an organization	4	16 (0,64 ECTS)	F2F, virtual, blended	Exam	Course materials	Virtual instructor-led training (VILT), F2F lectures	-
2.2 Development basics: -Object design -SQL basics -Java Programming Fundamentals]	6	80 (3,2 ECTS)	F2F, virtual, blended, e-learning/ videos	Practical exercises, Exam	Object design and UML_Lesson Object design_Mini Bank_Exercise Object design_Mini Bank_Exercise solution	Training lectures, Virtual instructor-led training (VILT), Practical exercises	LU 2.2 Object design and UML_Lesson.pptx LU 2.2 Object design_Mini Bank_Exercise.pdf LU 2.2 Object design_Mini Bank_Exercise solution.pdf
2.3 Front End development: -HTML 5 programming with JavaScript and CSS	6	24 (0,96 ECTS)	F2F, virtual, blended	Practical exercises, Exam	Course materials, workbook	Training lectures, Virtual instructor-led training (VILT)	-
2.4 Back End development: -Developing Web applications -Developing Web services	6	104 (4,16 ECTS)	F2F, virtual, blended	Practical exercises, Exam	Course materials, workbook	Training lectures, Virtual instructor-led training (VILT)	-

-Spring and Hibernate							
2.5 Team project: Banking application	6	80 (3,2 ECTS)	F2F, virtual, blended	Practical assignment, presentation	Workbook	Training lectures, Virtual instructor-led training (VILT), Team project, Solving a problem together	-

1.1.5 PLO 3. Component Integration [e-2][3]

3. PLO Component Integration [e-2]	
The learner has demonstrated capability *→ to integrate efficiently a software application or component into an existing system* *→ to document the installation activities*	
Unit learning outcomes	Explains and distinguishes common methods, techniques and tools related to efficient integration
	Describes the interplay between and compatibility of system components
	Carries out installation and configuration activities, applying common methods, techniques and tools related to efficient integration (e.g., packaging and distribution, virtualisation, containerisation)
	Monitors and tests the connectivity of integrated systems
	Writes an installation report

1.1.5.1 Duration of Study

Recommended duration: starting from 2 ECTS as an absolute minimum. If bigger and more complex practical assignments are used such as groupwork and a team project, then 5 ECTS is a minimum.

Often integrated with studies of PLOs: PLO 2. Application Development, PLO 4. Testing, PLO 6. Problem management and if there are practical assignments, groupwork and a team project involved also PLO's: 6. Profession related competences, 7. Soft competences and 8. Functioning in organisations may be involved

1.1.5.2 Recommendations for Micro-credentials

This PLO can be offered as a micro-credential as part of a modular (re)skilling programme for learners with no prior knowledge of software development. This PLO is also recommended as an independent stand-alone micro-credential for skilling and reskilling (ICT) professionals that are interested in learning the basics of deploying, implementing and integrating software components.

1.1.5.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

- F2F classroom ☒

[3] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

- Virtual classroom ☒
- Blended ☒
- e-Learning ☒
- In-company ☒

Additional comments

To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

Recommended delivery methods:

- Lectures F2F ☒
- Lectures virtual ☒
- Lectures blended ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒
- Group/ teamwork ☒
- Team project ☒

Additional comments

Lectures, e-learning and virtual instructor-led training are recommended for learning the basic principles, terminology, and methods of component integration. These should be reinforced through practical tasks, individual and group assignments, and if possible, a team project. The ratio between on the one hand lectures/ VILT and on the other hand practical work done by the learners should be appr. 60% - 40% respectively.

1.1.5.4 WBL and Follow-up Reinforcement

After learning the basic principles, terminology, and models of software design, the programme should focus on analysing and simulating real work-life-like tasks as, for example:

- Practical exercises, based on real life situations, e.g., case studies

1.1.5.5 Important (new) approaches and technologies to consider

n/a

1.1.5.6 Assessment

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)

Explains and distinguishes common methods, techniques and tools related to efficient integration	Exam	n/a
Describes the interplay between and compatibility of system components	Exam	n/a
Carries out installation and configuration activities, applying common methods, techniques and tools related to efficient integration	Practical exam	n/a
Monitors and tests the connectivity of integrated systems	Practical exam	n/a
Writes an installation report	Report	n/a

1.1.6 Learning Resources - PLO 3. Component Integration [e-2]

LEARNING UNIT	EQF	Duration in hrs (ECTS)	Didactical Approach	ASSESSMENT (formative+summative)	Topic	Delivery method of the learning material	Learning material
3.1 Implementing a software factory	40 (1,6 ECTS)	5 days	F2F, virtual, blended	Practical exercises, Exam	Course materials, workbook	Training lectures, Virtual instructor-led training (VILT), Practical exercises	-

1.1.7 PLO 4. Testing [e-2][4]

4. PLO Testing [e-2]	
The learner has demonstrated capability *→ to test a software application or component* *→ to document test outcomes*	
Unit learning outcomes	Explains and distinguishes principles of software testing, common testing methods, techniques, and tools
	Writes an (automated) test on a piece of code
	Performs common test activities, applying testing and debugging techniques and tools
	Records and interprets test outcomes and writes test result documentation/ test report

1.1.7.1 Duration of Study

Recommended duration: starting from 2 ECTS as an absolute minimum. If bigger and more complex practical assignments are used such as groupwork and a team project, then 5 ECTS is a minimum.

Often integrated with studies of PLOs: PLO 2. Application development, PLO 3. Component Integration, PLO 6. Problem Management and if there are practical assignments, groupwork and a team project involved also PLO's: 6. Profession related competences, 7. Soft competences and 8. Functioning in organisations may be involved.

1.1.7.2 Recommendations for Micro-credentials

This PLO and its subsequent parts can be offered as a micro-credential as part of a modular (re)skilling programme for learners with no prior knowledge of software development. This PLO is also recommended as an independent stand-alone micro-credential for skilling and reskilling (ICT) professionals that are interested in learning the basics of testing. Parts of this PLO are also good candidates for micro-credentials, such as:

- Selenium: How to test web services

1.1.7.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

[4] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

- F2F classroom ☒
- Virtual classroom ☒
- Blended ☒
- e-Learning ☒
- In-company ☒

Additional comments

To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

Recommended delivery methods:

- Lectures F2F ☒
- Lectures virtual ☒
- Lectures blended ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒
- Group/ teamwork ☒
- Team project ☒

Additional comments

Lectures, e-learning and virtual instructor-led training are recommended for learning the basic principles, terminology, and methods of software testing. These should be reinforced through practical tasks, individual and group assignments, and if possible, a team project. The ratio between on the one hand lectures/ VILT and on the other hand practical work done by the learners should be appr. 60% - 40% respectively.

1.1.7.4 WBL and Follow-up Reinforcement

After learning the basic principles, terminology, methods and techniques of testing, the programme should focus on analysing and simulating real work-life-like tasks as, for example:

- Practical exercises, based on real life situations, e.g., case studies
- Working together in a team to develop and test an application

1.1.7.5 Important (new) approaches and technologies to consider

n/a

1.1.7.6 Assessment

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
Explains and distinguishes principles of software testing, common testing methods, techniques, and tools	Exam	n/a
Writes an (automated) test on a piece of code	Practical exam	n/a
Performs common test activities, applying testing and debugging techniques and tools	Practical exam	n/a
Records and interprets test outcomes and writes test result documentation/ test report	Practical exam	n/a

1.1.8 Learning Resources - PLO 4. Testing [e-2]

LEARNING UNIT	EQF	Duration in hrs (ECTS)	Didactical Approach	ASSESSMENT (formative+summative)	Topic	Delivery method of the learning material	Learning material
4.1 Testing basics: Selenium: how to test web services	5	8 (0,32 ECTS)	F2F, virtual, blended	Practical exercises, Exam	Course materials, workbook	Training lectures, Virtual instructor-led training (VILT), Practical exercises	-
4.2 Team project: Banking application	6	80 (3,2 ECTS)	F2F, virtual, blended	Practical assignment, presentation	Workbook	Training lectures, Virtual instructor-led training (VILT), Team project, Solving a problem together	-

1.1.9 PLO 5. Documentation Production [e-3][5]

5. PLO Documentation Production [e-3]	
The learner has demonstrated capability *→ to produce different technical documents, taking into account the needs of different populations*	
Unit learning outcomes	Identifies the needs of different populations regarding software documentation.
	Provides (parts of) relevant technical documents, (e.g., required for designing, developing, and deploying applications and services), in line with identified needs of different audiences, using appropriate tools

1.1.9.1 Duration of Study

Recommended duration: starting from 1 ECTS as an absolute minimum.

Often integrated with studies of PLOs: PLO 1. Application Design, PLO 2. Application development, PLO 3 Component Integration and PLO 4. Testing

1.1.9.2 Recommendations for Micro-credentials

This PLO can be offered as a micro-credential as part of a modular (re)skilling programme for learners with no prior knowledge of software development.

1.1.9.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

- F2F classroom ☒
- Virtual classroom ☒
- Blended ☒
- e-Learning ☒
- In-company ☒

Additional comments
To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

[5] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

Recommended delivery methods:

- Lectures virtual ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒

Additional comments
Lectures, e-learning and virtual instructor-led training are recommended for learning the basic principles and techniques of different types of (technical) documentation. These should be reinforced through practical tasks, individual and group assignments, and if possible, a team project. The ratio between on the one hand lectures/ VILT and on the other hand practical work done by the learners should be appr. 60% - 40% respectively.

1.1.9.4 WBL and Follow-up Reinforcement

After learning the basic principles, terminology, methods and techniques of documentation production, the programme should focus on real work-life-like tasks as, for example:

- Writing a requirements document
- Writing functional specifications
- Making a project planning

1.1.9.5 Important (new) approaches and technologies to consider

n/a

1.1.9.6 Assessment

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
Identifies the needs of different populations regarding software documentation.	Practical exam	n/a
Provides (parts of) relevant technical documents, (e.g., required for designing, developing, and deploying applications and services), in line with identified needs of different audiences, using appropriate tools	Practical exam	n/a

1.1.10 Learning Resources - PLO 5. Documentation Production [e-3]

LEARNING UNIT	EQF	Duration	Didactical Approach	ASSESSMENT (formative + summative	Topic	Delivery method of the learning material	Learning material
5.1 Understanding the need [collecting requirements]	5	24 (0,96 ECTS)	F2F, virtual, blended	Exam	Course materials	Virtual instructor-led training (VILT)	-
5.2 Development basics: -Object design -SQL basics -Java Programming Fundamentals]	6	80 (3,2 ECTS)	F2F, virtual, blended, e-learning/ videos	Practical exercises, Exam	Object design and UML_Lesson Object design_Mini Bank_Exercise Object design_Mini Bank_Exercise solution	Training lectures, Virtual instructor-led training (VILT), Practical exercises	LU 5.2 Object design and UML_Lesson.pptx LU 5.2 Object design_Mini Bank_Exercise.pdf LU 5.2 Object design_Mini Bank_Exercise solution.pdf

1.1.11 PLO 6. Problem management [e-3][6]

6. PLO Problem management [e-3]	
The learner has demonstrated capability *→ to systematically resolve incidents and problems* *→ to optimise system performance* *→ to appraise the impact of a failure on the business*	
Unit learning outcomes	Monitors the software system (e.g., by using monitoring systems and analytical tools)
	Detects, analyses, and systematically resolves or escalates incidents and problems, resulting in a solved incident (e.g., by applying techniques and tools for troubleshooting such as diagnostic tools; interpreting incident and problem reports; by optimising overall system performance)
	Provides an impact assessment of a failure on the business
	Recommends actions to improve system or component performance

1.1.11.1 Duration of Study

Recommended duration: starting from 2 ECTS as an absolute minimum.

Often integrated with studies of PLOs: PLO 4. Testing and if there are practical assignments, groupwork and a team project involved also PLO's: 6. Profession related competences, 7. Soft competences and 8. Functioning in organisations may be involved.

1.1.11.2 Recommendations for Micro-credentials

This PLO can be offered as a micro-credential as part of a modular (re)skilling programme for learners with no prior knowledge of software development. This PLO is also recommended as an independent stand-alone micro-credential for skilling and reskilling (ICT) professionals that are interested in learning the basics of problem management in ICT.

1.1.11.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

- F2F classroom ☒
- Virtual classroom ☒
- Blended ☒
- e-Learning ☒

[6] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

- In-company ☒

Additional comments

To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

Recommended delivery methods:

- Lectures F2F ☒
- Lectures virtual ☒
- Lectures blended ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒
- Group/ teamwork ☒
- Team project ☒

Additional comments

Lectures, e-learning and virtual instructor-led training are recommended for learning the basic principles, terminology, and methods of problem management. These should be reinforced through practical tasks, individual and group assignments. The ratio between on the one hand lectures/ VILT and on the other hand practical work done by the learners should be appr. 60% - 40% respectively.

1.1.11.4 WBL and Follow-up Reinforcement

After learning the basic principles, terminology, methods and techniques of testing, the programme should focus on analysing and simulating real work-life-like tasks as, for example:

- Practical exercises, based on real life situations, e.g., case studies

1.1.11.5 Important (new) approaches and technologies to consider

n/a

1.1.11.6 Assessment

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
Monitors the software system	Practical exam	n/a
Detects, analyses, and systematically resolves or escalates incidents and problems, resulting in a solved incident	Practical exam	n/a

Provides an impact assessment of a failure on the business	Practical exam	n/a
Recommends actions to improve system or component performance	Practical exam	n/a

1.1.12 Learning Resources - PLO 6. Problem Management [e-3]

LEARNING UNIT	EQF	Duration in hrs (ECTS)	Didactical Approach	ASSESSMENT (formative+summative)	Topic	Delivery method of the learning material	Learning material
6.1 Implementing a software factory	6	40 (1,6 ECTS)	F2F, virtual, blended	Practical exercises, Exam	Course materials, workbook	Training lectures, Virtual instructor-led training (VILT), Practical exercises	-

1.1.13 PLO 7. Professional related competences [EQF6][7]

7. PLO Profession related competences [EQF6]	
The learner has demonstrated capability *→ to apply profession related skills*	
Unit learning outcomes	Masters common ICT knowledge
	Explains the principles, related concepts, advantages, disadvantages, limitations and possible societal, environmental, and ethical issues related to the application of a new technology. Applies and reports on basic methods, techniques and tools related to a new technology.
	Applies, evaluates, reports and provides advice on security standards, regulations, measures, methods, tools, and techniques
	Applies, evaluates and provides advice on appropriate methods, tools and techniques related to software lifecycle processes
	Applies, evaluates, reports and provides advice on sustainability standards, regulations, measures, and methods.
	Is aware of ethical considerations and issues and applies these in professional contexts and activities. Forms and communicates an opinion based on considerations of relevant social, professional, scientific and ethical aspects

1.1.13.1 Duration of Study

Recommended duration: starting from 5 ECTS as an absolute minimum. If bigger and more complex practical assignments are used such as groupwork and a team project, then 7 ECTS is a minimum.

Often integrated with studies of PLOs: This PLO addresses cross-cutting topics, that relate to many technical aspects in the field of software development. It is often integrated with: PLO 1. Application Design, PLO 2. Application Development, PLO 3. Component Integration, PLO 4. Testing, and if there are practical assignments, groupwork and a team project involved also PLO's: 7. Soft competences and 8. Functioning in organisations may be involved.

1.1.13.2 Recommendations for Micro-credentials

This PLO and especially its subsequent parts can be offered as a micro-credential as part of a modular (re)skilling programme for learners with no prior knowledge of software development. This PLO is also recommended as an independent stand-alone micro-credential for skilling and

[7] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

reskilling (ICT) professionals that are interested in learning the basics of these topics. Parts of this PLO are also good candidates for micro-credentials, such as:

- ICT in organisations
- New technology watch

1.1.13.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

- F2F classroom ☒
- Virtual classroom ☒
- Blended ☒
- e-Learning ☒
- In-company ☒

Additional comments

To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

Recommended delivery methods:

- Lectures F2F ☒
- Lectures virtual ☒
- Lectures blended ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒
- Group/ teamwork ☒
- Team project ☒

Additional comments

Lectures, e-learning and virtual instructor-led training are recommended for learning the basic principles, terminology, and methods related to professional competences. These should be reinforced through practical tasks, individual and group assignments, and if possible, a team project. The ratio between on the one hand lectures/ VILT and on the other hand practical work done by the learners should be appr. 60% - 40% respectively.

1.1.13.4 WBL and Follow-up Reinforcement

After learning the basic principles, terminology, and models of application development, the programme should focus on analysing and simulating real work-life-like tasks as, for example:

- Practical exercises, based on real life situations, e.g., case studies

- Working together in a team to solve specific problems

1.1.13.5 Important (new) approaches and technologies to consider

N/A

1.1.13.6 Assessment

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
Masters common ICT knowledge	Exam	n/a
Explains the principles, related concepts, advantages, disadvantages, limitations and possible societal, environmental, and ethical issues related to the application of a new technology. Applies and reports on basic methods, techniques and tools related to a new technology.	Exam	n/a
Applies, evaluates, reports and provides advice on security standards, regulations, measures, methods, tools, and techniques	Exam	n/a
Applies, evaluates and provides advice on appropriate methods, tools and techniques related to software lifecycle processes	Practical assignment	n/a
Applies, evaluates, reports and provides advice on sustainability standards, regulations, measures, and methods.	Exam	n/a
Is aware of ethical considerations and issues and applies these in professional contexts and activities. Forms and communicates an opinion based on considerations of relevant social, professional, scientific and ethical aspects	Practical assignment	n/a

1.1.14 Learning Resources - PLO 7. Profession related competence [EQF6]

LEARNING UNIT	EQF	Duration in hrs (ECTS)	Didactical Approach	ASSESSMENT (formative+summative)	Topic	Delivery method of the learning material	Learning material
7.1 The place of development/ICT in an organisation	5	16 (0,64 ECTS)	F2F, virtual, blended	Exam	Course materials	Virtual instructor-led training (VILT), F2F lectures	-
7.2 Get trained and informed: Technology watch	5	8 (0,32 ECTS)	F2F, virtual, e-learning/ videos	Practical exercises	Course materials	Virtual instructor-led training (VILT), Training lecture, F2F lectures,	-
7.3 Team project: Banking application	6	80 (3,2 ECTS)	F2F, virtual, blended	Practical assignment, presentation	Workbook	Training lectures, Virtual instructor-led training (VILT), Team project, Solving a problem together	-

1.1.15 PLO 8. Soft competences [EQF6][8]

8. PLO Soft competences [EQF6]	
The learner has demonstrated capability → *to apply soft skills*	
Unit learning outcomes	Manages teamwork processes and facilitates collaboration to reach common objectives, e.g., handles conflicts, negotiates, motivates, and persuades.
	Communicates with peers, colleagues, supervisors and or relevant others, specialists and non-specialists, and clients, appropriately to the scientific and professional community, using conventions which are relevant. Applies communication to the objective and the target group.
	Masters the English language at level B2. Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation
	Related to the occupation and knowledge domain, critically collects detailed professional and/or scientific information on a limited range of basic theories, principles and concepts, as well as limited information on some important current issues and topics. Analyses, evaluates, and combines critically this information, knowledge and insights and presents this. Critically applies/ translates/ interprets results of research (possibly executed by others) to the own context (the occupation and/or knowledge domain). Executes applied and practice-oriented research.
	Identifies and analyses complex and unpredictable problems. Solves these problems in a tactical, strategic and creative way by selecting and using data and by using one's creativity, flexibility and inventiveness.
	Exercises self-management in complex technical or professional activities or projects, taking responsibility for decision making in unpredictable work or study contexts. Is able to cope with change (positive or negative) and to adapt to a considerable level of variety in the workplace. Handles pressure and setbacks and maintains composure. Shows initiative, creativity and some 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 on one's own initiative, by reflecting on and evaluating personal (learning) results. Selects and uses training/instructional methods and procedures appropriate for the situation when learning.

1.1.15.1 Duration of Study

Recommended duration: starting from 5 ECTS as an absolute minimum.

[8] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

Often integrated with studies of PLOs: This PLO addresses competences that relate to more generic aspects in work related contexts. It is often integrated with: PLO 9. Functioning in organisations. The problem solving and critical analysis aspects of this PLO are often intertwined with PLO's 1. Application design, 2. Application development and 6. Problem Management.

1.1.15.2 Recommendations for Micro-credentials

Due to its strong intertwining with other PLOs, it may be difficult to offer this PLO in its entirety as a stand-alone micro-credential. However, this PLO can be given explicit attention in combination with other PLOs such as mentioned above. Any more theoretical parts of this PLO could be offered separately as micro-credential for skilling (ICT) professionals, such as:

- Time management
- Creativity development

1.1.15.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

- F2F classroom ☒
- Virtual classroom ☒
- Blended ☒
- e-Learning ☒
- In-company ☒

Additional comments

To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

Recommended delivery methods:

- Lectures virtual ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒
- Group/ teamwork ☒
- Team project ☒

Additional comments

Lectures, e-learning and virtual instructor-led training are recommended for learning the basic principles, terminology, and methods related to soft competences. These should be reinforced through practical tasks, individual and group assignments, and if possible, a team project. The ratio between on the one hand lectures/ VILT and on the other hand practical work done by the learners should be appr. 20% (or less) - 80% (or more) respectively.

1.1.15.4 WBL and Follow-up Reinforcement

After learning the basic principles of the different soft competences, the programme should focus on real work-life-like tasks as, for example:

- Practical exercises, based on real life situations, e.g., case studies
- Working together in a group or a team to analyse and solve specific problems

1.1.15.5 Important (new) approaches and technologies to consider

-

1.1.15.6 Assessment

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
Manages teamwork processes and facilitates collaboration to reach common objectives, e.g., handles conflicts, negotiates, motivates, and persuades.	Practical assignment	n/a
Communicates with peers, colleagues, supervisors and or relevant others, specialists and non-specialists, and clients, appropriately to the scientific and professional community, using conventions which are relevant. Applies communication to the objective and the target group.	Practical assignment	n/a
Masters the English language at level B2. Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation	Practical assignment	n/a
Related to the occupation and knowledge domain, critically collects detailed professional and/or scientific information on a limited range of basic theories, principles and concepts, as well as limited information on some important current issues and topics. Analyses, evaluates, and combines critically this information, knowledge and insights and presents this. Critically applies/ translates/ interprets results of research (possibly executed by others) to the own context (the occupation and/or knowledge domain). Executes applied and practice-oriented research.	Practical assignment	n/a
Identifies and analyses complex and unpredictable problems. Solves these problems in a tactical, strategic and creative way by selecting and using data and by using one's creativity, flexibility and inventiveness.	Practical assignment	n/a
Exercises self-management in complex technical or professional activities or projects, taking responsibility for decision making in unpredictable work or study	Practical assignment	n/a

contexts. Is able to cope with change (positive or negative) and to adapt to a considerable level of variety in the workplace. Handles pressure and setbacks and maintains composure. Shows initiative, creativity and some 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 on one's own initiative, by reflecting on and evaluating personal (learning) results. Selects and uses training/instructional methods and procedures appropriate for the situation when learning.	Practical assignment	n/a

1.1.16 Learning Resources - PLO 8. Soft competences [EQF6]

LEARNING UNIT	EQF	Duration in hrs (ECTS)	Didactical Approach	ASSESSMENT (formative +summative)	Topic	Delivery method of the learning material	Learning material
8.1 Team working: - Integration and teamwork - Communication -Assertiveness and place in a team - Preventing and managing difficult situations	6	32 (1,28 ECTS)	F2F, virtual	Practical exercises	Course materials, workbook	Virtual instructor-led training (VILT), Training lecture, practical exercises, work in groups	-
8.2 Get trained and informed: - Managing time and priorities -Developing creativity	5	16 (0,64 ECTS)	F2F, virtual, e-learning/ videos	Practical exercises	Creative thinking for professional efficiency_Trainee Booklet Creative thinking for professional efficiency_ Exercises booklet Manage your time and priorities _ Trainee Booklet	Virtual instructor-led training (VILT), Training lecture, practical exercises, work in groups	LU 8.2 Creative thinking for professional efficiency_Trainee Booklet.pdf LU 8.2 Creative thinking for professional efficiency_ Exercises booklet.pdf LU 8.2 Manage your time and priorities Trainee Booklet.pdf

					Manage your time and priorities _Exercises booklet		LU 8.2 Manage your time and priorities _Exercises booklet.pdf
Team project: Banking application	6	80 (3,2 ECTS)	F2F, virtual, blended	Practical assignment, presentation	Workbook	Training lectures, Virtual instructor-led training (VILT), Team project, Solving a problem together	-

1.1.17 PLO 9. Functioning in organisations [EQF6][9]

9. PLO Functioning in organisations [EQF6]	
The learner has demonstrated capability *→ to function in an organisational context*	
Unit learning outcomes	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 organisation

1.1.17.1 Duration of Study

Recommended duration: starting from 5 ECTS as an absolute minimum. If bigger and more complex practical assignments are used such as groupwork and a team project, then 7 ECTS is a minimum.

Often integrated with studies of PLOs: This PLO addresses topics that relate to more generic aspects in work related contexts. It is often integrated with: PLO's 7. Profession related competences and 8. Soft competences.

1.1.17.2 Recommendations for Micro-credentials

This PLO and especially its subsequent parts can be offered as a micro-credential as part of a modular (re)skilling programme for learners with no prior knowledge of software development. This PLO is also recommended as an independent stand-alone micro-credential for skilling and reskilling (ICT) professionals that are interested in learning the basics of these topics. Parts of this PLO are also good candidates for micro-credentials, such as:

- Introduction to project management
- Introduction to agile

1.1.17.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

- F2F classroom ☒

[9] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

- Virtual classroom ☒
- Blended ☒
- e-Learning ☒
- In-company ☒

Additional comments

To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

Recommended delivery methods:

- Lectures F2F ☒
- Lectures virtual ☒
- Lectures blended ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒
- Group/ teamwork ☒
- Team project ☒

Additional comments

Lectures, e-learning and virtual instructor-led training are recommended for learning the basic principles, terminology, and methods related to functioning in an organisation and project management. These should be reinforced through practical tasks, individual and group assignments, and if possible, a team project. The ratio between on the one hand lectures/ VILT and on the other hand practical work done by the learners should be appr. 60% - 40% respectively for this PLO overall as an average.
For learning units that address parts of this PLO (e.g. manages a project or works in an organizational context) this ratio should be appr. 20% (or less) - 80% (or more).

1.1.17.4 WBL and Follow-up Reinforcement

After learning the basic principles, terminology, and models of organisations and project management, the programme should focus on analysing and simulating real work-life-like tasks as, for example:

- Practical exercises, based on real life situations, e.g., case studies
- Working together in a team to solve specific problems

1.1.17.5 Important (new) approaches and technologies to consider

N/A

1.1.17.6 Assessment

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
Explains the basics of organisation theory and behaviour	Exam	n/a
Describes the relationship between business and IT	Exam	n/a
Works in an organisational context under specific direction with limited autonomy and responsibility e.g., at the level of a trainee, junior or assistant	Practical assignment	n/a
Manages a project, selects appropriate project management methods and tools	Practical assignment	n/a
Writes a report on functioning in organisation	Practical assignment	n/a

1.1.18 Learning Resources - PLO 9. Functioning in organisation [EQF6]

LEARNING UNIT	EQF	Duration in hrs (ECTS)	Didactical Approach	ASSESSMENT (formative+summative)	Topic	Delivery method of the learning material	Learning material
9.1 The place of development in an organization	5	16 (0,64 ECTS)	F2F, virtual, blended	Exam	Course materials	Virtual instructor-led training (VILT), F2F lectures	-
9.2 Work in project situation: - Introduction to project management - Introduction to Agile	5	24 (0,96 ECTS)	F2F, virtual, blended, e-learning/ videos	Practical exercises	Course materials	Virtual instructor-led training (VILT), F2F lectures, practical exercises, work in groups	-
9.3 Team project: Banking application	6	80 (3,2 ECTS)	F2F, virtual, blended	Practical assignment, presentation	Workbook	Training lectures, Virtual instructor-led training (VILT), Team project, Solving a problem together	-

1.1.19 EXTRA CURRICULAR PLO: New Technology [EQF6][10]

PLO New Technology [EQF6]	
The learner has demonstrated capability *→ to keep up to date with new technologies*	
Unit learning outcomes	Explains the principles, related concepts, advantages and disadvantages of a new technology
	Applies methods, techniques and tools related to a new technology
	Writes a report on a new technology or of a method, technique or tool related to it

1.1.19.1 Duration of Study

Recommended duration: starting from 1 ECTS

Often integrated with studies of PLOs: This PLO addresses topics that can relate to many aspects within the field of ICT, therefore also many different PLO's can be involved.

1.1.19.2 Recommendations for Micro-credentials

This PLO can be offered as a micro-credential as part of a modular (re)skilling programme for learners with no prior knowledge of software development. This PLO is also recommended as an independent stand-alone micro-credential for skilling and reskilling (ICT) professionals that are interested in learning about new technologies in the field of ICT.

1.1.19.3 Recommendations on Didactical Approach, Delivery Methods and Training Environment

Recommended didactical approach:

- F2F classroom ☒
- Virtual classroom ☒
- Blended ☒
- In-company ☒

Additional comments
To maximise accessibility and flexibility it is recommended that different didactical approaches are used as much as possible, so that the individual learner can decide what suits best. Besides this, offering in-company courses and training supports accessibility and flexibility.

[10] Unit Learning outcomes are directly sourced from the ESSA Educational Profiles developed according to different EQF levels in previous WP3. For full consultation, refer to https://softwareskills.eu/library/essa-educational-profiles-for-software-roles/

Recommended delivery methods:

- Lectures F2F ☒
- Lectures virtual ☒
- Lectures blended ☒
- Virtual instructor-led training (VILT) ☒
- Practical exercises ☒

Additional comments

Lectures and virtual instructor-led training are recommended for learning how to stay up to date with new tools and technologies. These should be reinforced through practical exercises.

1.1.19.4 WBL and Follow-up Reinforcement

n/a

1.1.19.5 Important (new) approaches and technologies to consider

n/a

1.1.19.6 Assessment

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
Staying up to date with new technologies	Exam	n/a

1.1.20 Learning Resources - EXTRA CURRICULAR PLO: New Technology [EQF6]

LEARNING UNIT	EQF	Duration	Didactical Approach	ASSESSMENT	Topic	Delivery method of the learning material	Learning material
Technology watch	5	8 (0,32 ECTS)	F2F, virtual, blended	Exam	Course materials	Virtual instructor-led training (VILT), F2F lectures	-

www.softwareskills.eu

Co-funded by the
Erasmus+ Programme
of the European Union