European Software Skills Alliance.

EDUCATIONAL PROFILE
ESSA DevOps expert
EQF 7

This educational profile belongs to the field of Software Engineering and is covered by relevant references in EN 16234-1:2019 (e-CF) and ISO/IEC/IEEE 90003:2018.

DevOps experts create an efficient cooperation and workflow between software development and IT operations to accelerate delivery and enhance quality of solutions and services. In this way, time is reduced between committing a change to a system and the change being placed into the production environment. DevOps experts strive for a continuous deployment and apply specific methods, practices, and tools, such as agile ways of working, shared ownership, and workflow automation.

DevOps experts at Master level create and manage the integration and testing lifecycle of hardware, software, or sub-system components into an existing or a new system.

Learn more:

The Erasmus+ project ESSA (European Software Skills Alliance) aims to skill, upskill, and reskill individuals into high-demand software roles across the EU.

About this profile

This profile is for educating people with prior obtained ICT knowledge at EQF 6 level to implement processes and tools to successfully deploy advanced DevOps techniques across the entire solution development lifecycle.

The profile has an EQF 7 level. Specific ICT knowledge and skills related to the role of DevOps expert obtained at EQF 6 level are required.

This level requires:
- **Autonomy:** Coordinates and directs. Addresses issues with many interacting factors.
- **Context:** Unstructured multidisciplinary and/or specialist context.
- **Content:** New concepts for deepening and innovation that are transferable to other situations.

Competences

e-CF competences (incl. e-CF level)	General competences (incl. EQF level)
B.2. Component Integration [e-4] B.3. Testing [e-4] B.6. ICT Systems Engineering [e-4]	P. Profession-related competences (EQF7) I.S. Interpersonal soft competences (EQF7) P.S. Personal soft competences (EQF7) F.O. Functioning in organisations (EQF7)

Deliverables

Learners should master the following deliverables:

- A process for continuous integration of an advanced/ innovative solution
- (Advisory) Report/ paper/ research article on integration of a solution or software application in an innovative/ advanced/ complex situation
- Process for continuous testing of an advanced/ innovative solution, software application or component
- (Advisory) Report/ paper/ research article on a topic related to testing of an innovative/ advanced/ complex solution, software application or component or on issues regarding testing in specific situations
- Proposal for a cohesive and efficient system infrastructure
- Full DevOps pipeline
- Report with recommendations or an advice on a solution that involves the application of a new technology
- Critical reflection on a new technology
- Project plan for the design and development of an advanced/ innovative solution, application or software component
- Self-reflection report
- Report on functioning in organisation

Professional perspectives

Upon completing this programme, the learner is eligible to apply for developer positions such as DevOps engineer - ICT Change and Configuration Manager - ICT Quality Assurance Manager

Educational perspectives

After completing this programme, the learner may continue in **a related Master programme, in a Ph.D. programme, or an (in-service) postgraduate study programme.**

The learner also has a proper base for specialised training and certification such as Software Quality - Change Management in Cloud Computing - Cloud-native DevOps

Programme Learning Outcomes (PLO)

1. PLO Component Integration [e-4]	
The learner has demonstrated capability → *to provide expert guidance or advice on integration of an advanced/ innovative solution, software application or component*	
Unit learning outcomes	Creates and guides **a process for integration of an advanced/ innovative solution,** software application or component (e.g., proposes standards of practice; for a solution related to e.g., machine learning, cloud, big data, blockchain, IoT)
	Writes **a report/ advisory report/ paper/ research article** on integration of a solution or software application in an innovative/ advanced/ complex situation (e.g., an analysis of software integration challenges related to a particular technology or method, a process/HR/internal standards design for an integration cycle, a resource assignment plan)

2. PLO Testing [e-4]	
The learner has demonstrated capability → *to provide expert guidance or advice on testing of an advanced/ innovative solution, software application or component*	
Unit learning outcomes	Creates and guides **a process for testing an advanced/ innovative solution,** software application or component (e.g., proposes standards of practice; for a solution related to e.g., machine learning, cloud, big data, blockchain, IoT)
	Writes **a report/ advisory report/ paper/ research article** on a topic related to testing of an innovative/ advanced/ complex solution, software application or component or on issues regarding testing in specific situations (e.g., agile testing, a process design for an entire testing activity, specification of internal standards of practice for testing, test management plan for CI testing)

3. PLO ICT systems engineering [e-4]	
The learner has demonstrated capability → *to propose and design a cohesive and efficient system infrastructure*	
Unit learning outcomes	Writes **a proposal for a cohesive and efficient system infrastructure** (e.g., incorporating advanced/ innovative solutions, methods, tools and/or technologies, e.g., focusing on practices, procedures, system requirements, security, data protection, energy efficiency) (e.g., architecture and design of complex systems, application of agile software development lifecycle methodologies, managing infrastructure engineering implications in system design, managing continuous delivery in systems integration, application of test specifications methodologies in systems integration)
	Designs **a full DevOps pipeline**, by formulating a set of practices and tools that the development and operations teams may implement to build, test, and deploy software

4. PLO Profession related competences [EQF7]	
The learner has demonstrated capability → *to apply profession related skills*	
Unit 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 context 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

5. PLO Soft competences [EQF7]

The learner has demonstrated capability
→ to apply soft skills

Unit 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.

6. PLO Functioning in organisations [EQF7]

The learner has demonstrated capability
→ to function in an organisational context

Unit 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**

Assessments

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
1.1	Practical assignment	Assessment (of skills)
1.2	Report	Assessment (of report)
2.1	Practical assignment	Assessment (of skills)
2.2	Report	Assessment (of report)
3.1	Practical assignment	Assessment (of skills)
3.2	Practical assignment	Assessment (of skills)
4.1	Report	Assessment (of report)
4.2	Report	Assessment (of report)
5.1	360º assessment	360º assessment
5.2	Practical assignment	Assessment (of skills)
5.3	Practical assignment	Assessment (of skills)
5.4	360º assessment	360º assessment
6.1	Practical assignment	Assessment (of skills)
6.2	Self-reflection report	Assessment (of report)
7.1	Exam	Certification
7.2	Exam	Certification
7.3	360º assessment	360º assessment
7.4	Report	Assessment (of report)