



ASIIN Certification Report

Programme

Junior DevOps Expert programme

Provided by

University of Ljubljana

Version: 13 December 2024

Table of Content

A About the Certification Process	3
B Characteristics of the Programme	4
C Peer Report for the ASIIN Certificate	6
2. Concept, Structure and Implementation	6
2. Examination: System, Policy and Implementation	15
3. Resources: Staff and Infrastructure	17
4. Quality Management: Monitoring and Continuous Improvement	20
5. Documentation and Transparency.....	22
D Additional Documents	26
E Comment of the Provider (04.12.2024)	27
F Summary: Peer recommendations (10.12.2024)	28
G Decision of the Certification Commission (13.12.2024)	30

A About the Certification Process

Title of the Programme	Previous certification
Junior DevOps Expert programme	–
<p>Date of the contract: ESSA Project Framework</p> <p>Submission of the final version of the self-assessment report: 08.07.2024</p> <p>Date of the ONLINE audit: 23.09.2024</p>	
<p>Expert panel:</p> <p>Prof. Dr.-Ing. Sandro Leuchter, University of Applied Sciences Mannheim;</p> <p>Dipl.-Wirtsch.-Inf. Dirk Linke, D. Swarovski KG;</p> <p>Thomas Keuthen, Master student at University of Applied Sciences Zürich.</p>	
<p>Representative of the ASIIN headquarter: Dr. Siegfried Hermes</p>	
<p>Responsible decision-making committee: Certification Commission</p>	
<p>Criteria used:</p> <p>Standards for the Certification of (Further) Education and Training for courses and modules related to Computer Sciences, Technology, Natural Sciences and Business Economics as of 26.06.2020.</p> <p>ESSA General Criteria & Procedural Guidelines for the Accreditation of Learning Programmes for Software Professionals as of 30.11.2022.</p> <p>Standards and Guidelines for Quality Assurance in the European Higher Education Area as of 15 May 2015.</p>	

B Characteristics of the Programme

a) Name of the programme	b) Degree awarded upon conclusion	c) Corresponding level of the European Qualifications Framework	d) Mode of Study	e) Duration & Credit Points	f) First time of offer & Intake rhythm	g) Number of students per intake	h) Fees
Junior DevOps Expert programme	Certificate "Junior DevOps Expert"	6	part time	1 Semester 11 ECTS	tbd (pilot in ESSA)	15 – 20 students	2000 EUR

For Junior DevOps Expert programme, the self-assessment report states the following **intended learning outcomes**:

1. The learner has demonstrated capability to creatively develop software applications and components, by interpreting the software design to optimise the application development.
2. The learner has demonstrated capability to integrate efficiently a software application or component into an existing system, compliant with standards and procedures to document the installation activities.
3. The learner has demonstrated capability to construct and execute tests for solutions, software applications or components to document test outcomes.
4. The learner has demonstrated capability to implement solutions and services to complete release documentation.
5. The learner has demonstrated capability to create a system infrastructure that meets requirements to ensure interoperability of system components.
6. The learner has demonstrated capability to oversee and control system changes to take into account procedures, requirements and restrictions.
7. The learner has demonstrated capability to apply profession related skills.
8. The learner has demonstrated capability to apply soft skills.
9. The learner has demonstrated capability to function in an organisational context.

B Characteristics of the Programme

The following **curriculum/teaching design** is presented:

Timetable of training

The Week	Content	Date	Provided by Scope	Location
Week 1	Lectures and tutorials	4. 3. 2024	4 school hours	FRI
		5. 3. 2024	4 school hours	
		6. 3. 2024	4 school hours	
		7. 3. 2024	4 school hours	
		8. 3. 2024	4 school hours	
Week 2	Independent project work on selected and pre-approved topics through communication with the lecturer via electronic channels	11. - 15. 3. 2024		Work from home
Week 3	Review and evaluation of tasks/projects and implementation written tests	18. - 22. 3. 2024		FRI

C Peer Report for the ASIIN Certificate

2. Concept, Structure and Implementation

Criterion 1.1 Learning outcomes
--

Evidence:

- Relevant chapter of the SAR
- Programme learning outcomes, see section A of this report
- Survey results, Annex 5 to the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

The short-cycle programme under review aims to prepare DevOps professionals with the knowledge, skills, and competences necessary to excel in bridging the gap between software development and IT operations. By fostering efficient cooperation and workflows, the programme equips graduates to accelerate the delivery of high-quality solutions and services, thereby reducing the time needed for changes to reach the production environment. Core methodologies emphasized in the programme include agile ways of working, shared ownership, and workflow automation, which align with contemporary industry standards and practices.

The programme's intended learning outcomes reflect a clear alignment with the descriptors of Level 6 under the European Qualifications Framework (EQF). Graduates are expected to demonstrate autonomy by working independently under broad direction, solving complex problems, and positively influencing team performance. They are prepared to operate in structured but unpredictable contexts, where they can address vague problems with innovative and multidisciplinary approaches. This capacity for autonomous problem-solving is reinforced by the programme's emphasis on integrating multiple concepts to advance and innovate within local and organizational contexts.

The technical knowledge and skills imparted through the programme provide learners with advanced proficiency in software application development. Graduates are adept at designing, creating, and optimizing software solutions using programming languages such as Java

and Python. Their adherence to best practices, such as clean coding and continuous integration, ensures that the solutions they develop are scalable, high performing, and secure. These competences are further enhanced by the ability to navigate constraints, including privacy legislation and intellectual property laws, demonstrating their readiness to operate within legal and regulatory frameworks.

The programme also addresses practical application by equipping learners with the ability to seamlessly integrate software solutions into existing systems. This involves adherence to relevant standards and procedures, comprehensive documentation of installation activities, and ensuring compliance with quality and security regulations. Graduates are well-versed in monitoring system performance, designing and executing tests using appropriate methods and tools, and configuring test environments to ensure the reliability and efficiency of deployed solutions. These skills are complemented by their proficiency in solution deployment, release planning, and the implementation of systems, with a focus on ensuring component interoperability.

A notable strength of the programme is its emphasis on multidisciplinary collaboration and ethical practices. Graduates are prepared to contribute to infrastructure enhancements and management support while upholding security regulations and respecting budget constraints. The inclusion of sustainability and security standards underscores the programme's commitment to producing professionals who prioritize responsible and ethical decision-making. This is further reinforced by the development of effective communication skills, which enable graduates to collaborate seamlessly within organizations and engage stakeholders across diverse teams and disciplines.

In terms of complexity and context, the programme succeeds in preparing learners to operate in environments characterized by unpredictability and open-ended challenges. By encouraging innovation and the integration of emerging technologies, the curriculum fosters the ability to address ambiguous problems with creative and effective solutions. This capability is further supported by the emphasis on ethical conduct and strategic thinking, ensuring that graduates are not only technically proficient but also capable of contributing to organizational goals in a meaningful and sustainable manner.

Based on the evidence provided in the self-assessment report and the minutes of the online audit, it is evident that the programme's learning outcomes align with the requirements. The competences imparted through the curriculum reflect a balanced integration of autonomy, knowledge, and practical expertise, fulfilling the expectations of EQF Level 6. The programme successfully prepares graduates to address the complex and evolving demands of the DevOps field, equipping them with both technical mastery and a broader understanding of multidisciplinary collaboration and ethical responsibility.

In conclusion, the expert team finds that the short-cycle programme demonstrates strong compliance with the standard. Its alignment with EQF Level 6 descriptors, combined with a clear focus on producing technically skilled, ethically responsible, and multidisciplinary professionals, positions the programme as a robust and forward-looking educational offering.

Criterion 1.2 Contents and structure

Evidence:

- Relevant chapter of the SAR
- Curriculum structure, see section A of this report
- Brochure_DevOps Academy ESSA, Annex 4 to the SAR
- Survey results, Annex 5 to the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

The Junior DevOps Expert EQF6 programme, developed under the European Software Skills Alliance (ESSA), is a short-cycle course aimed at addressing industry needs for upskilling and reskilling in IT software. While the programme demonstrates clear strengths, particularly its alignment with industry demands, certain deficiencies in the module descriptions indicate that the programme does not yet fully comply with the standard.

Key findings

The Junior DevOps Expert programme effectively addresses an industry-identified gap by preparing learners for junior-level roles in DevOps teams. Its modular structure is practical, progressive, and aligned with work-life scenarios. The curriculum emphasizes key technical and soft skills, including software development, system integration, and testing for automation. The inclusion of 220 learning hours distributed across six modules underscores the programme's commitment to adhering to academic and professional standards. On the other hand, 220 hours of student workload would be equivalent to 7 or 8 ECTS, rather than 6 ECTS as indicated in the SAR (see section 1.5 of this report).

A notable strength is the hands-on nature of the programme. Participants undertake practical tasks, such as designing models, interpreting application designs, and developing integrated DevOps pipelines. The programme also progressively builds learners' skills, from

backend development in the initial modules to software testing and automation in cloud environments. This structure ensures a well-rounded preparation for junior DevOps roles. Additionally, the programme is conducted by experienced senior lecturers and teaching assistants, ensuring a high level of expertise in delivery. It also offers the potential for future scalability, with plans to expand its language offerings through real-time translation technologies.

While the programme displays a robust structure, the Brochure_DevOps Academy ESSA lacks meaningful detail in the module descriptions. Although the brochure provides an overview of topics, it does not adequately specify the module contents, learning outcomes, or methodologies used. Key information, such as the ECTS breakdown, recommended literature, and detailed content descriptions, is missing.

For instance, the description of Module 6 (Software Testing) raises concerns about whether its scope aligns with the programme's learning objectives and target audience. The audit discussions suggest that this module's complexity may exceed the intended level for a junior programme.

Another critical gap lies in the integration of security topics. Although security is a vital aspect of DevOps practices, the programme lacks a dedicated focus or clear explanation of how these aspects are addressed. Audit feedback also indicates a need for clearer alignment of the module contents with the programme's overall learning outcomes.

To achieve full compliance with the standard, the expert team sees the necessity to revise the module descriptions and make them available to the relevant stakeholders. This revision should, among others,

- a) facilitate a clear correlation of the learning outcomes of each module with its content,
- b) specify the tools, technologies, and methodologies taught in each module,
 - provide a breakdown of the ECTS load for each module and clearly outline the assessment criteria, and
 - include recommended literature and resources to support learning.

Particular attention should be given to Module 6 "Software Testing" to ensure its complexity aligns with the junior-level scope of the programme. Additionally, information security topics should be better integrated into the curriculum, either as a standalone module or as a dedicated component within existing modules.

Summary assessment

The Junior DevOps Expert programme is a valuable initiative that addresses an evident demand in the IT industry. Its focus on practical, real-world applications and its modular design make it an attractive option for learners and employers alike. However, the lack of detailed module descriptions and the insufficient integration of key topics, such as security, indicate a not fully satisfied judgement regarding compliance with the standard. A necessary revision of the module descriptions is crucial to ensuring clarity, transparency, and alignment between learning outcomes and module contents.

In conclusion, while the programme's potential is undeniable, addressing the identified gaps will strengthen its credibility, enhance its alignment with academic and professional standards, and ensure its continued relevance in meeting industry needs.

Criterion 1.3 Didactics

Evidence:

- Relevant chapter of the SAR
- Brochure_DevOps Academy ESSA, Annex 4 to the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

Key findings

The Junior DevOps Expert programme employs a variety of teaching and learning methods, which are constructively aligned to achieve the intended learning outcomes. The programme design integrates theoretical instruction with practical applications, offering learners a structured progression from foundational concepts to independent, real-world projects. Specific knowledge units are presented in a clear format, with objectives, schedules, tasks, and assessments introduced at the beginning of each module. Furthermore, the use of diverse instructional approaches, such as group exercises, seminars, and research activities, enhances the learning experience by accommodating different learning styles.

Despite these strengths, the programme does not fully meet the standard due to missing clarity of its language policy. It is not explicitly stated in the available programme information whether the courses are delivered in Slovenian, English, or both languages. This lack of transparency poses challenges for learners in determining the accessibility of the programme based on their language proficiency.

Additionally, the absence of this crucial information in the primary teaching language/s further limits the programme's accessibility and inclusivity for a broader audience.

Summary assessment

The expert team finds that while the didactic methods employed in the programme are well-conceived and aligned with the learning outcomes, the standard is not yet fully met due to the insufficient communication of the programme's teaching language/s in the available information. This deficiency should be addressed to ensure compliance with the standard.

Criterion 1.4 Admission requirements

Evidence:

- Relevant chapter of the SAR
- Brochure_DevOps Academy ESSA, Annex 4 to the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

The Junior DevOps Expert programme demonstrates potential in addressing industry needs by offering a targeted upskilling opportunity for participants from diverse backgrounds. However, the programme does not yet fully comply with Standard 1.4: Admission Requirements, as the admission criteria are not clearly defined or transparently communicated in the available materials.

Key findings

The programme's enrolment policy is intended to be publicly accessible through the admissions website and supporting documents such as the Learner Handbook and brochure. However, as this is a pilot programme, detailed information regarding publicity and admission requirements is not yet available online, with content expected to be published by the end of summer 2024.

Currently, the programme does not impose prior ICT knowledge as a prerequisite for admission, making it accessible to a broad range of learners. While this openness is commendable for inclusivity, feedback from the pilot phase suggests that clearer guidelines for prerequisites may be necessary to ensure participants can meet the demands of the course.

The absence of defined requirements has resulted in a highly heterogeneous group of participants, some of whom struggled with specific modules such as virtualization.

In the pilot phase, participants were selected on a first-come, first-serve basis for a cohort limited to 15–20 learners, creating concerns about scalability and resource allocation should demand increase. The lack of formal criteria for assessing applicants' qualifications, such as programming skills or technical familiarity, has contributed to challenges in meeting the diverse needs of participants. Additionally, there is no current mechanism to evaluate applicants' language proficiency, which could impact the delivery of the programme, especially in an international or multilingual context.

Audit feedback also highlights the need to define module-specific prerequisites more precise, as some participants encountered difficulties due to a lack of foundational technical knowledge. Moving forward, introducing a pre-assessment process or a questionnaire – as obviously planned by the programme coordinators at UL – could help determine applicants' suitability and improve the overall quality of learning outcomes.

Summary assessment

The expert team finds that the programme's admission requirements are insufficiently defined and not yet transparently communicated. To comply with the standard, the programme must clearly outline the admission criteria, including prerequisites for both the overall programme and specific modules, as well as expectations regarding language proficiency. This information should be prominently featured in all promotional and informational materials to ensure accessibility and transparency for prospective learners.

While the inclusive nature of the programme is a strength, the lack of structured admission requirements risks affecting the programme's effectiveness, particularly as it scales beyond the pilot phase. Establishing clearer admission criteria will help ensure a more homogeneous and prepared cohort, ultimately enhancing the quality and success of the learning experience.

Criterion 1.5 Workload

Evidence:

- Relevant chapter of the SAR
- Brochure_DevOps Academy ESSA, Annex 4 to the SAR
- Survey results, Annex 5 to the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

The Junior DevOps Expert programme outlines the expected workload for students through resources such as the student brochure and introductory lectures at the start of the programme. These materials offer a structured overview of the curriculum, highlighting the division of time between lectures, project work, and assessments.

Key findings

Principally, the inclusion of more detailed syllabi for each module – in the DevOps Academy ESSA brochure – could provide an additional layer of transparency, as they could help prospective learners gain a sense of the time commitment required for the programme. However, as mentioned above, this detailed information is missing from the module descriptions provided in the DevOps Academy brochure, which only states the total attendance hours that students will need to invest in the module.

Apart from this, there are additional gaps in how the institution addresses the monitoring and alignment of workload with actual student experiences. The programme is designed to accommodate a range of activities, beginning with an intensive week of onsite lectures, followed by project work and concluding with assessments. However, beyond this outlined structure, there is limited evidence of a systematic approach to calculating or verifying the total workload, particularly in relation to self-study hours. While the programme offers an estimated workload consistent with the 11 ECTS credits assigned, there is no formal mechanism/process to ensure that these estimates reflect the realities of learners' experiences.

Feedback from participants in the programme also suggests that the workload can be a challenge, particularly for students who are coordinating work commitments with their studies. This dual demand on learners' time raises concerns about whether the workload is realistically balanced to enable students to achieve the intended learning outcomes effectively.

Currently, the institution relies on informal feedback collected by individual lecturers to make improvements to course delivery. While this approach allows for some responsiveness to learner needs, it does not replace a more comprehensive monitoring that systematically evaluates whether the workload is manageable and aligns with expectations. A survey conducted to assess learner satisfaction has also been found lacking questions that specifically address students' workload, thus limiting the institution's ability to identify and address discrepancies between planned and actual time commitments. This adds to the need for a more structured and transparent approach to workload management, as the pilot phase provides an opportunity to test and refine these elements before scaling the programme further.

Summary assessment

Overall, while the programme demonstrates a commitment to informing students about the expected workload, it does not yet provide sufficient evidence that the actual workload is regularly monitored or adjusted based on feedback. To address this shortcoming, the institution must implement a workload monitoring mechanism/process capable of identifying significant discrepancies between estimates and realities. Such a mechanism/process would enable the institution to make informed adjustments to module content or credit allocation as necessary, ensuring that students can achieve the intended learning outcomes within the designated study period. Until this is established, the programme cannot be considered fully compliant with the (sub-)standard.

Final assessment of the peers after the comment of the Provider regarding criterion 1:

The expert team thanks the programme designers for the comments and additional information. They are aware of the fact that the programme in its present state has served the peculiar conditions of the ESSA project from which it originates. However, the experts base their assessment on the confirmed assumption that the programme shall be offered and even expanded to a wider audience beyond the project horizon, which ends in 2024. They appreciate measures planned to address their concerns. However, the requirements of the standard are *not yet considered to be fully met*.

Information Security (ASIIN/ESSA 1.2)

The experts appreciate the announcement of the curriculum designers to integrate a new security course into the programme that follows DevOps best practices. This should be checked in the process of a (possible) re-certification, which is pointed out in a respective recommendation (see below, Section F, Recommendation 2).

Module "Software Testing" (ASIIN/ESSA 1.2)

The experts confirm their suggestion that the programme designers should reconsider the structure and level of this module to ensure its proper alignment with the intended learning outcomes and junior-level scope (see below, Section F, Recommendation 1).

Teaching Language (ASIIN/ESSA 1.3)

The review team understands that the programme was initially designed for implementation with Slovenian institutions at the local level, and notes positively that the university intends to widen its future scope to attract an international audience. For reasons of im-

proved transparency and in the best interest of the university's internationalization strategy on micro-credentials, it is considered necessary that the information on the teaching language/s must be adequately communicated to all potential stakeholders, particularly to possible applicants (see below, Section F, Requirement 1).

Admission requirements (ASIIN/ESSA 1.4)

The expert team appreciates the university's announcement to define, establish and implement policies and procedures for admissions to the programme as pinpointed by the expert team. Until evidence has been provided for this, the experts consider the issue to be addressed and highlighted in a corresponding requirement (see below, Section F, Requirement 2).

Workload (ASIIN/ESSA 1.5)

The experts welcome the programme designers' comment that the multiple feedback channels for learner will be created following proven procedures at the University of Ljubljana. As the workload issue is not explicitly mentioned in the Institution's statement, the experts underline their expectation that the workload issue needs to be specifically addressed in the QA mechanisms to be adapted for this programme. They reiterate the requirement originally proposed to this effect (see below, Section F, Requirement 3).

2. Examination: System, Policy and Implementation

Evidence:

- Relevant chapter of the SAR
- Sample examinations, Annex 2 to the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

The Junior DevOps Expert programme demonstrates a comprehensive approach to assessment and examination, aligning closely with the requirements of the standard. The programme has established mechanisms to evaluate learning outcomes through varied and well-structured assessment methods, ensuring that the intended learning outcomes are individually and comparably assessed for all learners.

Key findings

The examination system is thoughtfully designed to reflect the programme's learning objectives and outcomes. Assessment methods are constructively aligned with the intended learning outcomes, encompassing theoretical knowledge, practical application, and communication skills. This is achieved through a combination of multiple-choice and short-answer exams, project assignments, and presentations. Each assessment method is geared towards a specific set of skills and competencies, providing a holistic evaluation of the learners' capabilities.

The assessment process begins with a detailed introduction to the syllabus and assessment methods during the first class of each module. This ensures transparency and sets clear expectations for the students from the outset. The weightage of each assessment component is communicated, allowing students to understand the distribution of effort required across different sections of the course. Detailed feedback is provided to help students identify strengths and areas for improvement, further supporting their learning journey.

The programme also includes policies and procedures to address issues such as non-attendance, make-up exams, and accommodations for students with disabilities or special needs. These provisions are clearly outlined to promote fairness and equity. Students who miss exams for valid reasons, such as illness or emergencies, are eligible for make-up exams upon submission of appropriate documentation. Similarly, students with disabilities or special needs receive necessary accommodations, such as extended time for exams, alternative formats for assignments, or access to assistive technologies. These measures ensure that all students have an equitable opportunity to succeed.

In addition to physical and procedural accommodations, the programme prioritizes fairness and standardization through the use of rubrics and consistent grading policies. This mitigates biases and supports the reliability of assessments. Furthermore, the confidentiality of students with special needs is maintained, ensuring their privacy and dignity throughout the learning process.

Summary assessment

Based on the information provided, the Junior DevOps Expert programme complies with the requirements of the standard. The assessment methods are well-aligned with the intended learning outcomes, and the policies surrounding examinations are clear, equitable, and consistently applied. The inclusion of accommodations for students with disabilities or special needs further underscores the programme's commitment to fairness and accessibility. These measures collectively ensure that the examination system is robust, transparent, and effective in evaluating students' achievements.

Final assessment of the peers after the comment of the Provider regarding criterion 2:

The expert team considers the requirements of this standard *to be satisfactorily met*.

3. Resources: Staff and Infrastructure

Criterion 3.1 Staff

Evidence:

- Relevant chapter of the SAR
- Lecturer CVs, Annex 1 to the SAR
- Survey results, Annex 5 to the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

The University of Ljubljana and the Faculty of Computer Science have established robust procedures to ensure that the composition and expertise of the teaching staff support the achievement of the intended learning outcomes in the Junior DevOps Expert programme.

Key findings

The recruitment process for teaching staff is systematic and aligns with the programme's goals. The selection criteria are comprehensive, focusing on specialization in the teaching field, possession of a Ph.D., proficiency in advanced teaching techniques, and adequate language skills. This ensures that staff members possess the subject-matter expertise and didactic competencies necessary for the effective delivery of the programme. Additionally, all instructors for the Junior DevOps Expert programme are from the University of Ljubljana, Faculty of Computer Science, further underscoring the quality of teaching staff.

Mechanisms are in place to support continuous improvement in teaching quality. The Strategy and Quality Management department oversees key aspects such as lecture quality and time management, providing comprehensive evaluations to programme coordinators. This process is bolstered by post-course student surveys, which assess facets like lesson planning, teaching methods, and instructor conduct. Feedback from these evaluations informs adjustments and support measures for staff, enabling them to refine their teaching approaches.

Professional development opportunities for teaching staff are available and actively utilized, particularly in the area of didactic skill enhancement. This commitment to ongoing development ensures that instructors are equipped to address the diverse needs of learners, including those in multicultural classrooms or with varying educational backgrounds. Staff are also trained to integrate information and communication technologies into their teaching, meeting the demands of modern, digital education environments.

While the teaching staff demonstrate high qualifications and capabilities, there are concerns about resource allocation. Audit discussions indicate that the teaching staff already have obligations in regular programmes, and additional commitments to the Junior DevOps Expert programme are contingent on adequate financial support. Current funding, while partially sufficient, requires ongoing negotiation with the Chamber of Commerce and Industry to ensure sustainability.

Summary assessment

Based on the information provided, the Junior DevOps Expert programme complies with the standard. The teaching staff are highly motivated and qualified, supported by a well-structured recruitment process, rigorous evaluation mechanisms, and access to professional development opportunities. These measures ensure that the instructors have the necessary expertise and didactic skills to deliver the intended learning outcomes effectively.

However, challenges regarding resource allocation must be addressed to ensure sustained compliance. The teaching staff currently balance obligations from regular programmes, and their continued involvement in the micro-credential depends on adequate financial support. The current funding framework, while partially sufficient, is reliant on ongoing negotiations with the Chamber of Commerce and Industry. This situation raises concerns about the long-term availability and stability of staff resources.

To ensure sustainability, the University of Ljubljana must establish a reliable concept for the continued provision of staff resources for the micro-credential programme. This plan should address both financial and logistical requirements to guarantee that the programme can maintain its high standards of teaching and learner support over time.

Criterion 3.2 Institutional environment, financial and material resources
--

Evidence:

- Relevant chapter of the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

The institutional environment and resources provided by the University of Ljubljana for the Junior DevOps Expert EQF6 programme generally align with the requirements of the standard. The Faculty of Computer Science and Informatics ensures that the infrastructure and facilities support the delivery of the programme, but concerns about staff funding temper the assessment of long-term sustainability.

Key findings

The programme benefits from access to the Faculty's extensive infrastructure, including well-equipped lecture halls, laboratories, computer labs, and study areas. These facilities are outfitted with modern technologies such as projectors, smart boards, and media systems, which support an engaging and interactive learning environment. Additionally, the library provides a combination of physical and digital resources, including books, journals, conference proceedings, and subject-specific databases. The inclusion of digital teaching support, such as templates, online scripts, and access to a campus learning management system (LMS), ensures that both in-person and digital teaching requirements are met.

The collaboration with the Chamber of Commerce and ICT Association Slovenia has been instrumental in shaping the programme to align with industry needs. These partnerships ensure that the curriculum remains relevant and targeted to skills gaps identified through focus groups and feedback from industry stakeholders. This connection enhances the credibility and demand for the programme while providing a sustainable link between academic expertise and professional application.

However, long-term financial sustainability presents a significant concern. Currently, the programme relies on a fee of 2,000 EUR per participant, which is supplemented by contributions from the Chamber of Commerce to make the course more affordable. While this funding model is functional for the pilot phase, public funding is not yet available, raising questions about the programme's viability beyond the certification period. Efforts to establish the programme as part of a regular curriculum may alleviate some of these concerns, but this remains a future goal rather than a secured outcome.

The programme also demonstrates awareness of accessibility and inclusivity, offering measures to support students with disabilities, such as accommodations for hearing-impaired learners. This reflects the institution's commitment to equitable access, which strengthens the overall quality of the learning environment.

Summary Assessment

The Junior DevOps Expert programme complies with the standard, as the infrastructure and facilities provided meet the qualitative and quantitative requirements of the course.

However, the compliance judgement is cautioned due to uncertainties surrounding staff funding and the financial sustainability of the programme in the long term.

To fully ensure compliance with the standard, the University of Ljubljana must develop a robust and reliable concept for securing sustained financial and staff resources for the programme, particularly if it remains structured as a micro-credential. Addressing these concerns will be critical to maintaining the programme's quality and ensuring its continued alignment with institutional and industry goals.

Final assessment of the peers after the comment of the Provider regarding criterion 3:

The review team thanks the University of Ljubljana for providing additional information to the staffing of the programme. However, the comment of the programme coordinators is not considered a robust basis of the staff resources of the micro-credential in years to come.

Staff resources (ASIIN/ESSA 3.1)

The experts note the close link of the university to the Slovenian Chamber of Commerce as well as to the Industry in Slovenia. It is also noted that the industrial sector plays a major role in supporting and ensuring the logistical requirements of the programme. It is understandable that the university takes this as a manifest expression of interest of the companies/businesses to cover the fees for their employees' participation in the programme, which, in turn, would be fully used to fund training staff engaging in the programme delivery. However, the experts do not consider this optimistic assumption as a reliable "concept" for sustainably staffing the programme. While they do not doubt the university's capacity to operate micro-credentials such as the Junior DevOps programme in general, they would like to see a robust concept for the sustained provision of staff resources for the programme (see below, Section F, Requirement 4).

4. Quality Management: Monitoring and Continuous Improvement

Quality assurance and enhancement
--

Evidence:

- Relevant chapter of the SAR
- Survey results, see Annex 5 to the SAR

- Audit discussions

Preliminary assessment and analysis of the peers:

The University of Ljubljana demonstrates initial efforts to establish a quality assurance (QA) framework for the Junior DevOps Expert programme, but the current measures do not yet meet the requirements of the standard. While some quality assurance activities have been initiated, such as feedback collection after the pilot phase, a comprehensive and systematic QA framework has not yet been defined or fully implemented.

Key findings

The programme has made positive strides in involving stakeholders in its quality assurance processes. After the pilot phase, feedback was gathered from students to inform potential improvements in the curriculum, teaching methods, and overall learning experience. The QA team has shown a commitment to analyzing this feedback and working with instructors to make iterative enhancements. This approach has already led to positive responses from learners and strong support from the Chamber of Commerce, which recognizes the programme's relevance for upskilling and advocates for its continuation in 2025.

Despite these promising elements, the programme lacks a structured and systematic QA framework. The current quality assurance mechanisms, such as learner feedback and informal consultation with stakeholders, are insufficiently defined to ensure the continuous monitoring and improvement of the programme. While the Faculty of Computer Science and Informatics at the University of Ljubljana follows internal approval and review processes for degree programmes, these processes have not been tailored specifically to the needs of the Junior DevOps Expert programme. Additionally, the absence of clear mechanisms and responsibilities for QA hinders the systematic evaluation of critical areas such as student workload, alignment with learning outcomes, and overall programme effectiveness.

One significant gap in the QA approach is the lack of regular monitoring of student workload. Audit findings highlight that workload intensity and distribution are areas of concern, but no formal mechanism has been established to assess and address these issues on an ongoing basis. Regular workload monitoring is essential to ensure that learners can achieve the intended learning outcomes within the allocated time and that adjustments can be made when discrepancies arise.

Furthermore, while stakeholder involvement in QA has been initiated, the programme lacks a comprehensive strategy for periodic external quality assurance reviews. Such reviews are critical to ensuring that the programme maintains high standards, aligns with evolving industry needs, and meets the expectations of both learners and employers.

Summary assessment

The expert team concludes that the Junior DevOps Expert programme does not yet fully comply with the standard. Although feedback from the pilot phase has been used to make initial improvements, the programme needs a clearly defined and systematically implemented QA framework. This framework should include mechanisms for continuous monitoring and improvement, stakeholder involvement, and regular external reviews.

Of particular importance is the need for the QA framework to encompass the regular monitoring of student workload to identify and address discrepancies that may hinder the achievement of learning outcomes. By implementing these measures, the University of Ljubljana can ensure the programme's long-term quality and effectiveness, fostering a culture of continuous improvement and excellence.

Final assessment of the peers after the comment of the Provider regarding criterion 4:

The expert team welcomes the institutions comments on the future Quality Assurance of the micro-credential. The team understands that dedicated and tailored QA instruments will be adapted and implemented after the completion of the testing phase in the framework of the ESSA project. The experts take this announcement for granted, but propose holding on a corresponding requirement until the implementation is evidenced (see below, Section F, Requirement 5).

5. Documentation and Transparency

Criterion 5.1 Module descriptions
--

Evidence:

- Relevant chapter of the SAR
- Brochure_DevOps Academy ESSA, Annex 4 to the SAR
- Audit discussions

Preliminary assessment and analysis of the peers:

The module descriptions provided for the Junior DevOps Expert programme in the DevOps Academy ESSA brochure are insufficient to meet the requirements outlined in the standard. While the SAR states that detailed module descriptions are available and include learning outcomes, content, and other relevant details, the descriptions found in the brochure do not align with this claim. The review team notes a significant gap in the information provided, raising doubts about whether the module descriptions referenced in the SAR are the same as those made available to learners and stakeholders.

Key findings

The module descriptions in the brochure provide brief overviews of module content but fail to comprehensively address the required elements of the standard. For example, the learning outcomes of the modules are not clearly outlined, making it impossible to establish a direct link between the content and the intended outcomes, as previously highlighted in section 1.3 of this audit report. This lack of connection undermines the transparency and coherence of the module descriptions, which are essential for learners to understand how the modules contribute to the overall programme goals.

Additionally, critical information required by the standard is missing:

- Credits and workload are not specified, leaving learners without a clear understanding of the time investment required for each module.
- Assessment criteria are not mentioned, nor is there information on how module grades are composed. This lack of detail creates uncertainty about how learners will be evaluated.
- Recommended literature and resources are absent, leaving learners without guidance on supporting materials for achieving the intended outcomes.

The SAR suggests a more detailed framework for the module descriptions, but this framework does not appear to be implemented in the brochure. The discrepancies between the SAR and the available descriptions indicate that the QA processes for the programme need strengthening to ensure alignment and completeness of the documentation.

Summary assessment

The expert team concludes that the module descriptions in the DevOps Academy ESSA brochure do not fulfill the requirements of the standard. The absence of critical information and the lack of alignment between learning outcomes and module content undermine the descriptions' utility as a resource for learners, instructors, and other stakeholders.

By addressing these shortcomings, the University of Ljubljana can ensure that the module descriptions provide a transparent, comprehensive, and reliable foundation for the programme, meeting both academic standards and the needs of learners.

Criterion 5.2 Relevant documents

Evidence:

- Relevant chapter of the SAR
- Brochure_DevOps Academy ESSA, Annex 4 to the SAR
- Certificate of Completion / Slovenian language
- Survey results, Annex 5 to the SAR

Preliminary assessment and analysis of the peers:

The available information for the Junior DevOps Expert programme does not yet meet the requirements of the standard. The programme currently lacks formal rules and regulations governing admission, progression, and completion, and the sample Certificate of Completion provided with the SAR does not comply with expectations for language accessibility.

Key findings

The absence of formalized rules and regulations is a notable gap in the programme documentation. The institution has not yet established comprehensive policies that outline the criteria for admission, progression, and successful completion of the programme. These rules are essential for ensuring transparency and consistency in the management of the programme, as well as for setting clear expectations for learners and other stakeholders.

Additionally, the sample Certificate of Completion provided with the SAR is only available in Slovenian. While the certificate includes relevant details such as the programme title, course content, credit points, and acquired competences, its language restricts accessibility for non-Slovenian speakers, particularly international stakeholders or learners. This limitation poses a barrier to the broader applicability and recognition of the certificate beyond Slovenia.

The absence of English-language documentation generally undermines the programme's ability to communicate effectively with a diverse audience, including prospective learners, employers, and accreditation bodies. As the programme aims to address industry needs and attract a potentially international cohort, it is highly recommended that programme-related documents, including the certificate, are also available in English.

Summary assessment

The expert team concludes that the programme does not yet fully comply with the standard. The lack of established rules and regulations, combined with the absence of English-language documentation for critical materials such as the Certificate of Completion, limits the programme's transparency, accessibility, and international relevance.

By addressing these deficiencies, the programme will enhance its transparency, credibility, and appeal to both local and international stakeholders.

Final assessment of the peers after the comment of the Provider regarding criterion 5:

The experts are grateful for the provision of the "Certificate of Completion" in English, which they consider to be well designed. They assume that it will be regularly issued to future learners, who successfully complete the programme.

Still, the requirements of this standard are not considered to be fully met yet. The module/unit descriptions of the programme must be revised in accordance with the indications provided in the experts' preliminary assessment (see below, Section F, Requirement 6). In addition, the University of Ljubljana is required to establish, implement and adequately communicate rules/regulations for the admission, progression, and completion of the programme (see below, Section F, Requirement 7).

Furthermore, the experts abide by their initial recommendation that study-related documents should be revised for consistency and made available in English generally (see below, Section F, Recommendation 3).

D Additional Documents

Before preparing their final assessment, the panel ask that the following missing or unclear information be provided together with the comment of the provider on the previous chapters of this report:

- 1 Sample of Certificate *in English* [ASIIN/ESSA 5.2]

E Comment of the Provider (04.12.2024)

The institution provided a brief statement to the report. A specimen of the certificate in English has also been provided.

The expert team considers the statement of the University of Ljubljana and the named document. Their final recommendation to the Certification Commission can be found in the grey boxes at the end of the assessment of each standard.

F Summary: Peer recommendations (10.12.2024)

Taking into account the additional information and the comments given by the University of Ljubljana, the experts summarize their analysis and **final assessment** for the award of the ASIIN certificate as follows:

Course	ASIIN Certificate	Maximum duration of certification	Alignment to a Qualification Framework Level
Junior DevOps Expert programme	awarded with requirements	30.09.2030	6

Requirements

- A 1. (ASIIN/ESSA 1.3) It must be clearly communicated, whether the programme is delivered in Slovenian or in English or in both languages. The related information needs to be provided in the major teaching languages.
- A 2. (ASIIN/ESSA 1.4) Admission requirements for the programme must be adequately defined and transparently communicated – as announced in the statement of the institution. Pre-requisite knowledge of each module, as outlined in the module descriptions, should be reviewed and sharpened as necessary.
- A 3. (ASIIN/ESSA 1.5) Evidence must be provided that a workload monitoring mechanism/process has been established and implemented to identify significant discrepancies and adapt module content and/or credit allocation accordingly.
- A 4. (ASIIN/ESSA 3.1) A reliable concept for the sustained provision of staff resources for the micro-credential must be provided.
- A 5. (ASIIN/ESSA 4) The tailor-made QA framework and QA instruments for the programme must be implemented in accordance with the announced solution in the university's statement. The framework must particularly encompass a monitoring of the student workload on a regular basis.
- A 6. (ASIIN/ESSA 5.1) The module descriptions must be revised taking into account the relevant indications in the report (learning outcomes and content, workload and credits, assessment criteria, recommended literature and resources to support learning).

- A 7. (ASIIN/ESSA 5.2) Rules/regulations for the admission, progression, and completion of the programme must be established and put into force. All programme-related information needs to be communicated to the relevant stakeholders.

Recommendations

- E 1. (ASIIN/ESSA 1.2) It is recommended to reconsider the structure and level of Module 6 “Software Testing” in order to ensure that its complexity aligns with the intended learning outcomes and the junior-level scope of the programme.
- E 2. (ASIIN/ESSA 1.2) It is recommended to integrate information security topics better into the curriculum, either as a standalone module or as a dedicated component within existing modules.
- E 3. (ASIIN/ESSA 5.2) It is recommended that study-related documents be revised for consistency and made available in English.

G Decision of the Certification Commission (13.12.2024)

Assessment and analysis for the award of the ASIIN Certificate:

The Certification Commission discusses the procedure. It decides to make minor editorial corrections to requirements 1 (“in the major languages” > “in both languages”) and 2 (“prerequisite knowledge of each module” > “prerequisite knowledge *for* each module”) for the sake of clarity. Furthermore, the Commission notes that requirement 2 on admission requirements deals with two different issues, namely admission requirements for the programme/course and those for each module.

In addition, the Commission notes that the second sentence of this requirement, which refers to the knowledge required for each module, does not, according to its wording and the assessment of the experts, constitute a serious problem requiring immediate action by the university. It therefore decides to transform this paragraph into an additional recommendation (Recommendation 3).

Otherwise, the Certification Commission agrees with the experts’ assessment and recommended decision.

The Certification Commission decides to award the ASIIN certificate as follows:

Course	ASIIN Certificate	Maximum duration of certification	Alignment to a Qualification Framework Level
Junior DevOps Expert programme	awarded with requirements for one year	30.09.2030	6

Requirements

- A 1. (ASIIN/ESSA 1.3) It must be clearly communicated, whether the programme is delivered in Slovenian or in English or in both languages. The related information needs to be provided in both languages.
- A 2. (ASIIN/ESSA 1.4) Admission requirements for the programme must be adequately defined and transparently communicated – as announced in the statement of the institution.

- A 3. (ASIIN/ESSA 1.5) Evidence must be provided that a workload monitoring mechanism/process has been established and implemented to identify significant discrepancies and adapt module content and/or credit allocation accordingly.
- A 4. (ASIIN/ESSA 3.1) A reliable concept for the sustained provision of staff resources for the programme must be provided.
- A 5. (ASIIN/ESSA 4) The tailor-made QA framework and QA instruments for the programme must be implemented in accordance with the announced solution in the institution's statement. The framework must particularly encompass a monitoring of the student workload on a regular basis.
- A 6. (ASIIN/ESSA 5.1) The module descriptions must be revised taking into account the relevant indications in the report (learning outcomes and content, workload and credits, assessment criteria, recommended literature and resources to support learning).
- A 7. (ASIIN/ESSA 5.2) Rules/regulations for the admission, progression, and completion of the programme must be established and put into force. All programme-related information needs to be communicated to the relevant stakeholders.

Recommendations

- E 1. (ASIIN/ESSA 1.2) It is recommended to reconsider the structure and level of Module 6 "Software Testing" in order to ensure that its complexity aligns with the intended learning outcomes and the junior-level scope of the programme.
- E 2. (ASIIN/ESSA 1.2) It is recommended to integrate information security topics better into the curriculum, either as a standalone module or as a dedicated component within existing modules.
- E 3. (ASIIN/ESSA 5.1) It is recommended that the prerequisite knowledge for each module, as outlined in the module descriptions, is reviewed and, if necessary, sharpened.
- E 4. (ASIIN/ESSA 5.2) It is recommended that study-related documents be revised for consistency and made available in English.