



# **ASIIN Certification Report**

**Course**

***Junior Software Developer***

Provided by

**Digital Technology Skills Limited (DTSL)**

Version: 20 September 2024

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## A About the Certification Process

Title of the Course	Previous certification
Junior Software Developer	–
<p><b>Date of the contract:</b> Originated within the ESSA Erasmus+ Project</p> <p><b>Submission of the final version of the self-assessment report:</b> 24.05.2024</p> <p><b>Date of the remote audit visit:</b> 27.06.2024</p>	
<p><b>Peer panel:</b></p> <p>Prof. Dr. Olaf Zukunft; University of Applied Sciences Hamburg;</p> <p>Dr. Natalie Culligan, Maynooth University and Maynooth International Engineering College;</p> <p>Martin G. Staib, Professional expert Axians Infoma Schweiz AG;</p> <p>Martin Stoeckner, Master student at University of Applied Sciences Rosenheim.</p>	
<p><b>Representative of the ASIIN headquarter:</b> Siegfried Hermes</p>	
<p><b>Responsible decision-making committee:</b> Certification Commission</p>	
<p><b>Criteria used:</b></p> <p>General Criteria and Procedural Guidelines for the Accreditation of Educational Programmes for Software Professionals as of January 2023 (ESSA General Criteria).</p> <p>Subject-Specific Criteria for the Accreditation of Educational Programmes for Software Professionals</p> <p>Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) as of 15 May 2015.</p>	

In order to facilitate the legibility of this document, only masculine noun forms will be used hereinafter. Any gender-specific terms used in this document apply to both women and men.

## B Characteristics of the Course

a) Name of the (short-cycle) 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 Software Developer	Certificate of Completion	5	part time	22 weeks of delivery / no credit point system in use yet	March 2024 / twice a year	20 students (minimum intake)	free of charge

For the Course Junior Software Developer, both the Self-Assessment Report (SAR) and the “Programme and Module Descriptors & Learning Outcomes” document (Annex E to the SAR) state the following **intended learning outcomes**:

### Programme Learning Outcomes:

1. Analyse and Synthesise Software Development Concepts
  - Students will analyse various software development methodologies, synthesise information to design and implement application software, and apply coding and integration techniques proficiently using industry standard tools.
2. Evaluate and Construct Software Testing and Documentation
  - Students will evaluate software testing methodologies and gain an understanding of testing strategies that ensure the functionality and reliability of code. They will also comprehend the value of technical documentation to support the development and use of software applications.
3. Formulate Problem-solving Strategies and Integrate Cutting-edge Technologies
  - Students will formulate strategies to systematically resolve or escalate technical issues using appropriate diagnostic tools and techniques. They will integrate and leverage emerging technologies, articulating their implications and potential applications in the work environment.
4. Apply and Demonstrate Professional and Interpersonal Competencies
  - Students will apply project management and ethical IT practices in a professional setting. They will demonstrate interpersonal and communication skills, work effectively in team settings, and engage in self-directed learning to solve software problems creatively and efficiently.

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

## ESSA Junior Developer Timeline

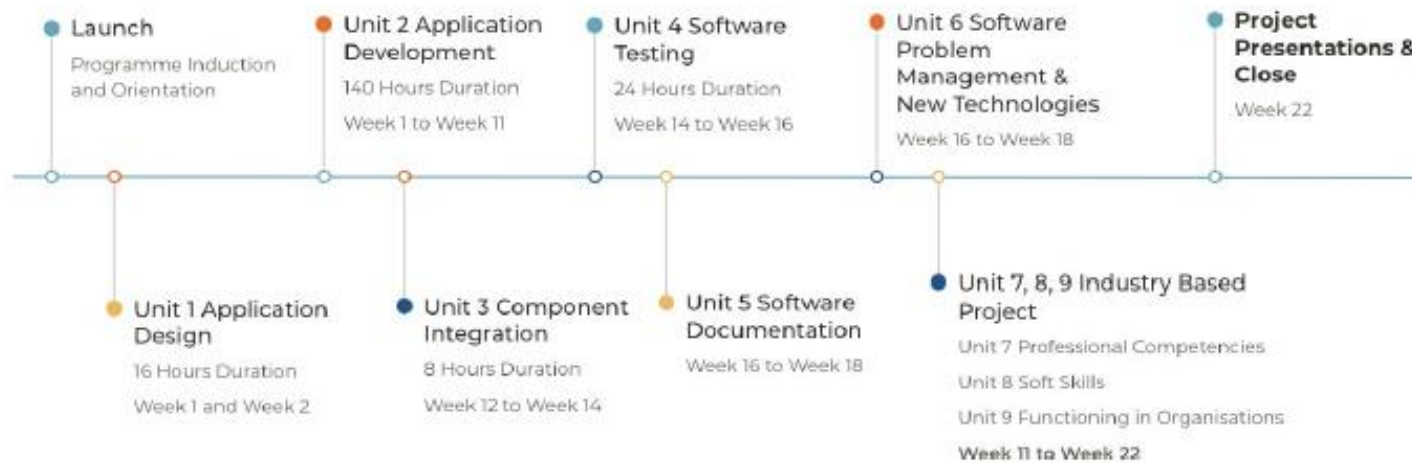


Figure 1: Indicative ESSA Junior Developer Timeline and Programme Units

## B Characteristics of the Course

ESSA Junior Developer Programme			No Class in Red	6.3.2024	13.3.2024	20.3.2024	27.3.2024	3.4.2024	10.4.2024	17.4.2024	24.4.2024	1.5.2024	8.5.2024	15.5.2024	22.5.2024	29.5.2024	5.6.2024	12.6.2024	19.6.2024	26.6.2024	3.7.2024	10.7.2024	17.7.2024	24.7.2024	31.7.2024	7.8.2024	14.8.2024	21.8.2024	28.8.2024	4.9.2024	11.9.2024	18.9.2024	25.9.2024	Duration for Classroom & Own Work																							
Module	Topic	Hours	Week→	1	2	3	4	OFF	5	6	7	8	OFF	OFF	9	10	11	12	13	OFF	14	15	16	17	18	19	SUPPORT	SUPPORT	20	21	22	SUPPORT	Presentations																								
1	Application Design Classes Student own work	18		4 14																															4																						
2	Classes Student own work	140			4 10	4 10	4 10		4 10	4 10	4 10	4 10			4 10	4 10	4 10																			40																					
3	Component Integration Classes Student own work	8																4	3																7																						
4	Software Testing Classes Student own work	24																			4 8	4 8													8																						
5	Software Documentation Classes Student own work	12																					4 2	4 2											4																						
6	Problem Management Classes Student own work	12																							4 2	3 3									7																						
7/8/9	Project Classes Student own work	60																	1															14																							
<b>Total Hours</b>		<b>274</b>		18	14	14	14		14	14	14	14			14	14	14	4	5		12	12	6	11	11	13			14	14	14			Average hrs / wk 12	<b>274</b>																						
22 Weeks of 4 hour lectures		88	hours																																																						
22 Weeks of Student independent work/study		186	hours																																																						
<b>274</b>																																																									

# C Peer Report for the ASIIN Certificate

## 1. Concept, Structure and Implementation

<b>Criterion 1.1 Learning outcomes</b>
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**Evidence:**

- Respective chapter of the SAR
- Programme and Module Descriptors & Learning Outcomes, Annex E to the SAR
- ESSA document “Curriculum Guidelines Junior Developer”, Annex I to the SAR
- Audit discussions

**Preliminary assessment and analysis of the peers:**

The experts note that the Junior Software Developer programme has been developed in the European Software Skills Alliance (ESSA) framework – a project funded by the EU’s Erasmus+ programme. In this framework project framework, as part of the internal division of labour a group of mostly higher education training providers has formulated exemplary learning outcomes and developed model curricula for different professional roles related to software engineering at different levels of the European Qualification Framework (levels 4/5, 6 and 7 EQF). The Junior Software Developer programme is one of them. Partners such as Digital Technology Skills Limited (DTSL) – an organization with expertise in identifying and developing future skills in a range of areas, and in co-developing training courses/programmes with industry, academic, vocational and commercial partners – take responsibility for delivering the course and providing the necessary arrangements. It is the explicit aim of DTSL to include the Junior Software Developer course in its portfolio of programmes after the EU project has ended. The experts appreciate the clear objective of the programme in terms of learners’ career prospects, not least because it can be seen as an appropriate response to both the needs of industry and the requirements of lifelong learning (‘up-skilling’, ‘reskilling’).

It can therefore be said that although DTSL is involved in the collaborative process of formulating learning outcomes and subsequently designing corresponding curricula, it has not defined the relevant LOs and designed the corresponding curricula on its own. This conclusion, which is directly related to the design of the ESSA project, is of great concern to the

experts. Amongst other things, it raises the question of who will be responsible for the adaptation of the role-specific programme/unit learning outcomes and the further development of the curriculum beyond the horizon of the ESSA project (see also criterion 1.2 below).

However, as far as the intended learning outcomes are concerned, these have been duly formulated both at programme/course level and at unit level. In general, the programme learning outcomes comprehensively summarise the intended unit learning outcomes, which in turn correspond directly to the SSC for the Junior Software Developer, or to the various skills and competence areas addressed there (Application Design, Application Development, Component Integration, Testing, Documentation in Production, Problem Management, New Technologies, Profession Related Competences, Soft Competencies, Functioning in Organisations). Similarly, the four umbrella programme LOs: “Analyse and Synthesise Software Development Concepts”, 2) Evaluate and Construct Software Testing and Documentation, 3) Formulate Problem-solving Strategies and Integrate Cutting-edge Technologies, and 4) Apply and Demonstrate Professional and Interpersonal Competencies, cover the essence of the intended learning achievements and are well aligned with the unit LOs reasonably.<sup>1</sup>

This is the case even though, at times, the wording of both the programme and the unit LOs – as presented at the beginning of the SAR – appears (at the very least) demanding or even inappropriate. For example, when graduates of the programme are said to be able to “integrate and leverage emerging technologies, articulating their implications and potential applications in the work environment”, this reflects the content of the LOs presented for unit 6.1. However, it obviously contrasts with the more cautious formulation of the SSC at this qualification level (“Learners are able to apply basic methods, techniques and tools related to a new technology.”). Similarly, PLO 4 and related ULOs 7-9 appear in part to envisage exaggerated outcomes compared with the level of qualification and related competence formulations in the SSC. For instance, PLO 4 states: “They will demonstrate interpersonal and communication skills, work effectively in team settings, and engage in self-directed learning to solve software problems creatively and efficiently”. In contrast, the level-specific formulations in the SSC for Junior Software Developers are very specific about the basic or foundational level of the competencies acquired in each competency area.

However, the experts consider that the PLOs and ULOs are essentially the same as the exemplary LOs of the SSC. If one refers to the document “Programme and Module Descriptors & Learning Outcomes” (Annex E) or to the PLOs and ULOs as stated in the “ESSA Curriculum

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<sup>1</sup> Cf. SAR, pp. 8-13: PLO 1 – ULO 1-3; PLO 2 – ULO 4-5; PLO 3 – ULO 6-6.1; PLO 4 – 7-9.

– Junior Developer” (Annex I), the discrepancy disappears, which indicates an inconsistent presentation of programme and unit learning outcomes. It is assumed that the latter documents present the valid versions of the LOs. In any case, due consideration should be given to the coherence and consistency of PLOs and ULOs. DTSL is expected to ensure that published and readily available versions of the LOs are accessible to relevant stakeholders in case of programme iterations.

<b>Criterion 1.2 Contents and structure</b>
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**Evidence:**

- Relevant chapters of the SAR
- ESSA document “Curriculum Guidelines Junior Developer”, Annex I to the SAR
- ESSA Junior Developer Timeline, graph in SAR, p.7
- ESSA document “Junior Developer Weekly Schedule V2”, provided after the audit process
- ESSA document “Programme and Module Descriptors & Learning”, Annex E to the SAR
- Document “ESSA Trainer Lecturer Evaluation Guide and ESSA Student Evaluation Form”, Annex G to the SAR
- Audit discussions

**Preliminary assessment and analysis of the peers:**

The review team recognises that the Junior Software Developer programme can be seen as a reasonable response to DTSL’s ongoing and intensive gap analysis across industry sectors and companies. In the audit interviews, industry representatives confirm that the programme meets market demand and serves as a career guidance tool. They emphasise the importance of reskilling and upskilling for career changes and evolving labour markets, particularly in STEM. They believe that the programme prepares graduates for a variety of roles in the IT industry, bridging the gap between business and technology. Industry representatives consider it a notable strength of the programme that it emphasises the human aspect of technology, making it suitable for professionals from diverse backgrounds. Therefore, from the perspective of company representatives, the programme is suitable for a diverse target audience, including both graduates and experienced professionals. In other words, the programme is seen as an opportunity for companies to integrate graduates into their talent pipeline, thereby improving collaboration between industry and education. At

the same time, industry representatives leave no doubt that the programme is a foundation course that needs to be built upon, both in terms of the overall learning outcomes of the foundation programme and the level classification of the programme.

To start with, the intended level 5 EQF of the Junior Software Developer programme, the correspondence between the programme and unit LOs, and the equivalence of these LOs with those considered in the ESSA level 5 SSC is obvious and has already been noted. Similarly, the unit contents as exemplified in the discussion with the teaching staff as well as their structuring, which was graphically demonstrated after the audit, are considered to be consistent with the EQF level 5 LOs.

Otherwise, the documentation in the SAR, particularly in the initial LO matrix (pp. 8ff.) and in the "Curriculum Guidelines" (Annex I), raises doubts regarding the list of topics and the depth of their treatment in the lectures. The learning material and literature list of the "Curriculum Guidelines" include high-profile topics such as software architecture, Kubernetes and others, which are not aligned with the scope of this programme. It is questionable then why these topics are included and what their role is within the curriculum. In the case of Kubernetes, for example, the lecturer makes it clear that, in line with business requirements, learners/graduates are expected to work on a simple database, design and code a form, and only connect it to a database. However, they should also be aware that they will require the input of more senior colleagues to complete the assignments. Similarly, the lecturer emphasises that the user interface design and database management components of the curriculum are aligned with the requirements of junior software developers, rather than those of software designers. The time investment and limitations to the theoretical depth of advanced topics would therefore be aligned to a qualification profile at the lower end of the base scale in the software system pyramid.

Upon request, the lecturer provides further clarification that students are expected to master one programming language after 22 weeks. This will focus on Python, with no use of C#. It is clear that the reference to C# in the module overview for the Industry-based Project (Annex A) is incorrect and should have been to Python instead. Such inconsistencies prompt experts to question whether the curriculum outlined in the SAR aligns with the actual curriculum taught in the pilot course. However, the inconsistencies may result from the review team's reliance on the information provided in the SAR and the "Curriculum Guidelines," which may be limited due to the lack of more detailed unit descriptions. Unit descriptions exist according to the SAR, and be made accessible to stakeholders through a hosted Google Docs environment (SAR, p. 26). However, these unit descriptions have not been submitted with the SAR and, consequently, could not be consulted for the experts' assessment. The experts therefore strongly require providing the unit descriptions together with the statement of DTSL to the report.

The review team notices that the curriculum of the programme has been established in the framework of the ESSA project and developed by the partners of this project, with the Estonian ICT continuing training company BCS Koolitus playing a major part in the process. The lecturer engaged by DTSL to deliver the programme has not involved in the curriculum development process. As DTSL is not responsible for the development of the programme, there is no direct link between the curriculum designers and the teaching staff. It should be noted that the quality assurance mechanism for the programme includes the feedback of the teaching team to the study accomplishments and the opportunity for an exchange of experiences between lecturers of different pilots developed and run in the ESSA project framework. However, the review team deems these instruments inadequate to rectify the initial issue. It is their view that the participation of a lecturer, or at the very least a close connection to the curriculum developers, is crucial for ensuring a common understanding of the programme's objectives and how they are to be achieved. Furthermore, any perspective beyond the scope of the ESSA project raises the question of how the curriculum should be developed in the longer term and who should be responsible for this task. Consequently, the experts have concluded that the lecturer/s of the programme should be included in the curriculum design process in an appropriate manner, not least with a view to the programme's longevity.

The experts commend the application-oriented teaching approach underlying the curriculum design, with group work, hands-on assignments and collaborative projects as key didactical means. They are convinced that re- or upskilling courses such as the Junior Software Developer programme, which are designed for a wide target audience, must integrate theoretical lectures with practical experiences for learners. It is only then that the desired learning outcomes can be achieved. The students have indicated their support for the approach of combining theoretical lectures with intensive practical learning sessions. Despite their general content, some respondents, depending on their educational and professional background, recommend that the practical components be reinforced in relation to the theoretical aspects. The experts stress the importance of this consideration and strongly advise DTSL to include more supervised practical sessions in the programme.

In this context, the review team considers the industry-based project to be a significant strength of the programme. It provides learners with the opportunity to engage with companies in the field and participate in collaborative working experiences that reflect the challenges faced in the professional world. The experts commend the meticulous planning that has gone into this aspect of the programme, as evidenced in the module overview for the "Industry-based project" (Annex A). It is deemed particularly reasonable to include an industry panel in the assessment of the project, as this not only utilises the expertise of the industry but also ensures that the projects and, ultimately, the programme are relevant

and aligned to the demands of the companies. It is therefore particularly regrettable that the pilot course projects are conducted primarily under the guidance of the lecturer, without input from industry partners. However, DTSL has demonstrated a clear commitment to involving industry partners more effectively in the planning, execution and assessment of the projects.

### Criterion 1.3 Didactics

**Evidence:**

- Relevant chapter to the SAR
- ESSA document “Curriculum Guidelines Junior Developer”, Annex I to the SAR
- Document “ESSA Trainer Lecturer Evaluation Guide and ESSA Student Evaluation Form”, Annex G to the SAR
- Audit discussions

**Preliminary assessment and analysis of the peers:**

The review team acknowledges DTSL’s efforts to deliver the programme in a way that is consistent with both the intended (unit) LOs and the course content. Thus, a number of different forms of teaching and learning are envisaged, depending on the LOs and the module/unit content (e.g. interactive lectures, practical workshops, homework and self-study group exercises and projects, seminars led by external guest speakers). The experts note that all courses are primarily online, with some on-site options. The only exception to this rule is the final face-to-face session. There is a lecturer who is responsible for the delivery of the programme and a teaching assistant who supports and guides the teaching process and the learning experience. The experts also learn that the weekly timetable includes the lecturer’s office on Wednesdays and tutorials on Saturdays, as well as some demonstration sessions. According to the lecturer, students are generally encouraged to participate in peer programming and to form groups.

DTSL reports that the planned Learning Management System as the basic infrastructure for the online delivery of the programme is still under construction and could not be used to pilot the programme within the ESSA project. As a result, course materials are stored in Google Drive folders, according to the experts. In addition, W3Schools Online Web Tutorials are used as an online resource for learners. The DTSL and the teacher told the experts that the online sessions are not recorded at present in order to foster a sense of community

among the students. In addition, there are currently two sessions led by industry partners and a third is planned.

However, one of the key learning experiences of this programme is the industry-based software development project, which requires groups of 4-5 learners to work together to develop a software application from start to finish. According to the module outline (Annex A/B to the SAR), this should include all aspects of software development, from understanding the requirements, participating in the analysis and design, to implementing, testing and documenting the application. During the pilot phase, these projects had to be organised internally. However, DTSL is committed to expanding project collaboration with industry in order to translate theoretical knowledge and skills more directly into real-world professional solutions.

The experts consider the online provision of the programme as a major strength, as it provides more flexibility for learners with different backgrounds. At the same time, they regret the currently dysfunctional learning management system, which represents the infrastructure of the programme delivery. The review team acknowledges the providers interim solution during the piloting phase, but similarly is convinced that the learning management system is an important condition for the medium- and long-term success of the programme. Therefore, the successful implementation of the learning management system must be demonstrated in the course of this certification procedure.

With regard to the literature listed in the unit information of the “Curriculum Guidelines” (Annex I), the experts discussed with the DTSL and the lecturer the high-level material provided there, taking into account its pedagogical relevance and complexity. The experts were informed that the ESSA consortium had compiled these lists. In addition, DTSL argues that high-level citations could also stimulate the self-directed learning process of students. The experts consider this argument to be valid for advanced learners from the field, but doubt its relevance for learners from other fields and with lower educational backgrounds. Irrespective of the question of future revisions and adaptations of the recommended literature beyond the ESSA project, the experts suggest reconsidering the approach. As student feedback also indicates a need for additional reading material at an appropriate level, it may be advisable to reflect on the level, complexity and application of the reading material provided for students on the programme.

In discussion during the review, students positively highlighted the demos, which were valued as an important collaborative experience, and suggested that they should be introduced earlier in the course. The review team notes this positively and advises DTSL to consider the learners’ suggestion. Regarding the decision not to record the sessions, the ex-

perts understand DTSL's argument ("community building"). In the case of the Saturday tutorial sessions, this argument was clearly supported by the learners, who considered them crucial for collaborative learning. At the same time, students felt that recording these sessions could improve the accessibility of learning content and support. Reflecting on the conflicting comments, the experts felt that the added value of recorded sessions, particularly for working learners, was not limited to the Saturday sessions and therefore recommended a wider use of recordings.

It is understandable that at this early stage of programme implementation, the interaction with industry is not yet sufficiently developed to be used for more systematic collaboration in the design and implementation of the software development projects. Strengthening the links with industry in the future, particularly with regard to the software engineering project, would therefore be a valuable exercise in the view of the experts.

#### **Criterion 1.4 Admission requirements**

##### **Evidence:**

- Relevant chapter of the SAR
- ESSA document "Curriculum Guidelines Junior Developer", Annex I to the SAR
- Audit discussions

##### **Preliminary assessment and analysis of the peers:**

It is understood that applicants for this course need to comply with the following requirements:

- must be at least 18 years old and be in employment or unemployed.
- must be in a position to complete the entire programme attending lectures each Wednesday online from 1:30pm to 5:30pm
- should have no previous knowledge of software development.
- must be Irish or EU/EEA nationals and must be resident in the Republic of Ireland.

According to the SAR, in the pilot admission process, suitable candidates were shortlisted and 40 of them were invited for an interview. Finally, 32 candidates were selected for enrolment in the pilot programme. The experts were told that this would also be the procedure for the iterative admissions process for the Junior Software Developer programme.

Although the description of the process indicates a very careful procedure that ensures a relatively broad access of applicants with no prior knowledge in the field of software engineering, it also became clear in the discussions that most of the applicants already had a

first and in some cases even a second cycle higher education degree. And even if this previous bachelor's or master's degree was not in software engineering or computer science, these applicants are learners who are familiar with a range of advanced learning methods and techniques, especially with regard to the acquisition of theoretical knowledge of any kind.

In addition, DTSL states that successful applicants must have at least a pass in ordinary mathematics and an entry level of B1 in English (B2 should be achieved by the end of the programme). It is clear that a mixture of learners with Bachelor's and Master's degrees and those with the minimum entry requirements would make for a very diverse group of participants. Nevertheless, the experts agree with the argument that the interview round can contribute to an appropriate composition of the learner cohorts. But even then it will remain a challenge to create cohorts with similar starting conditions.

The initial impetus to offer a programme that could be used to test whether a transition to an alternative technological field within the company or on the labour market could be a realistic option is well noted by the experts. However, the achievement of the intended LOs depends not least on the composition of essentially homogeneous cohorts. The basis for this is a clear and transparent definition of the technical and linguistic requirements for admission to the programme.

As the programme will be delivered in a blended learning mode (with online delivery at the centre), it is also essential to adequately communicate the e-learning and digital literacy requirements, as well as the necessary technical requirements. Neither of these has yet been demonstrated. Linked-in adverts cannot replace an official and publicly visible version of the entry requirements. The review team sees the clear and unambiguous definition and transparent communication of the entry requirements as a prerequisite for the further process.

At the same time, the reviewers consider it helpful for the programme's target groups if the provider's expectations of learner availability, attendance and engagement are openly communicated. In the view of the review team, such a policy will in itself help to recruit suitable learners to the programme.

<b>Criterion 1.5 Workload</b>
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**Evidence:**

- Relevant chapters of the SAR
- "ESSA Junior Developer Weekly Schedule V2", submitted after the audit process

- “DTSL Evaluation Guide – Student”, Annex F to the SAR
- ESSA document “Curriculum Guidelines Junior Developer”, Annex I to the SAR
- Document “ESSA Trainer Lecturer Evaluation Guide and ESSA Student Evaluation Form”, Annex G to the SAR
- Audit discussions

### **Preliminary assessment and analysis of the peers:**

The experts notice that DTSL at present does not use the ECTS or ECVET credit scheme to express and calculate the learner’s workload. However, in the “ESSA Junior Developer Weekly Schedule V2” document they can see the expected workload of learners, exemplified for the pilot programme delivered between April and September 2024. According to this, the maximum workload per week would be 14 hours (including lectures, tutorials and self-study hours) and 6 hours the minimum workload. As learners should be able in advance to decide whether their weekly availability in terms of time and collaborative engagement would allow them to enrol in the programme, such graphical study plan should be made available for interested learners and other stakeholders publicly.

However, discussions with students suggest that the provider’s underlying calculation of workload does not correspond to reality. Students on the pilot programme admit that it depends very much on the prior knowledge and skills of the learners, which in itself indicates a perceived heterogeneity (see above Criterion 1.4 Admission Requirements and Procedure). Nevertheless, most learners claim to spend 10-20 additional hours per week. Full-time and part-time workers in particular therefore find it difficult to complete the units within the allotted time. This contrasts somewhat with DTSL’s interim summary that no discrepancies were to be expected from the learners’ feedback, as no indication of this had been given by the learners so far. The main reason for these slightly conflicting assessments may be that the first unit evaluations have only recently been carried out (see Appendix F: DTSL Evaluation Guide). Otherwise, the learner evaluation form, which includes questions on the learners’ assessment of the total workload and the distribution of the workload between learning units, is to be distributed after the end of the programme. Therefore, the experts consider it necessary for DTSL to establish and implement a systematic and regular monitoring of the learners’ workload in order to identify discrepancies and, if necessary, to adjust the unit content.

In total, the workload of the 22-week programme, as declared by the provider, results in 274 working hours for the learners. In the context of a more precise monitoring of the

workload to be invested for the individual teaching units and the units as a whole, the experts consider it advisable to introduce the ECTS or ECVET credit system.

The basis for workload assessment by the DTSL, as well as the potential need for adjustments identified in learner and/or teacher feedback, could thus be based on an agreed standard. This in turn will have an impact on the recognition of programme outcomes in the learner's progression.

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

*See final assessment of the review team section F.*

## **2. Examination: System, Policy and Implementation**

**Criterion 2 Exams: System, policy and implementation**

**Evidence:**

- Relevant chapter of the SAR
- ESSA document "Curriculum Guidelines Junior Developer", Annex I to the SAR
- Document "ESSA Trainer Lecturer Evaluation Guide and ESSA Student Evaluation Form", Annex G to the SAR
- ESSA document "Industry Based Project and Evaluation", Annex A to the SAR
- ESSA document "Industry Based Project Evaluation & Questions", Annex B to the SAR
- Audit discussions

**Preliminary assessment and analysis of the peers:**

According to the SAR, a continuous assessment approach has been put in place for the Junior Software Developer programme. This approach is based on regular assignments, application of theory, participation in tutorials and the final industry-based software development project. The different forms of assessment will be tailored to the unit LOs and coursework to continuously show the learner's progress and identify areas for improvement. It is important that learners are also required to present their work orally at various stages to demonstrate their correct understanding of the theory and their ability to apply newly acquired theoretical knowledge to practical tasks. The review team considers that the industry-based project work that groups of 5-6 learners are required to undertake at

the end of the programme provides adequate evidence of learners' ability to apply their knowledge and skills in industry-related mini-projects and to work collaboratively in small development teams. However, as each learner is required to present their contribution to the project, the individual learning curve remains the focus of assessment and the "Certificate of Completion" awarded at the end of the programme.

The experts have reviewed the provided samples of learning material, sample assignments and quizzes submitted with the SAR. They concluded that the materials and tasks are appropriate for the intended level of qualification of the Junior Software Developer programme.

The reviewers note positively that guidance and support is provided to learners at each stage by the lecturer and/or teaching assistant, as appropriate. The review team also appreciates that there are clear rules for a number of assessment-related situations, such as medical conditions, exceptional circumstances or the unforeseen need to withdraw from the programme. It is also appreciated that grading criteria are to be applied consistently, that there are criteria for re-submission in case of failed assessments and that the lecturer is responsible for the reliable record keeping of all assessments and grades.

However, with the exception of the industry-based project (Appendices A and B), there is no clear indication of where these rules and criteria are collected and communicated to learners in advance. There is also a lack of transparency about how DTSL would deal with any disputes about results or grading.

The experts are confident that DTSL will provide the relevant information and guidelines on its website for programme iterations. However, as this is not yet visible, DTSL needs to demonstrate in the ongoing certification process that learners are adequately made aware of the rules and grading criteria that apply to the assessments.

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

*See final assessment of the review team section F.*

### **3. Resources: Staff and Infrastructure**

<b>Criterion 3.1 Staff</b>
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**Evidence:**

- Relevant chapter of the SAR

- CVs of lecturers
- “Mid programme Review Questions” and “End-Programme Review Questions” Annex F to the SAR
- Document “ESSA Trainer Lecturer Evaluation Guide and ESSA Student Evaluation Form”, Annex G to the SAR
- Audit discussions

**Preliminary assessment and analysis of the peers:**

The experts understand that DTSL conducts national and European projects focused on ICT skills, bringing together industry and academic partners. It organizes the development of programmes commissioned by the European Commission or the Irish government without delivering these programmes itself. Based on robust needs analysis and proven labor market expertise, DTSL develops skills pathways in cooperation with industry and academia.

The review team is confident that the single lecturer and teaching assistant, who are engaged to run the programme, are fully qualified for their task. The lecturer’s academic qualification and industry background, expertise ranging from software development, software architecture, cloud computing, blockchain, and cybersecurity, coupled with significant consulting work in these areas and proven teaching excellence, make it clear that he is very well suited to the demands of this programme. However, there is only one lecturer, which raises concerns among experts about what would happen if the lecturer were unavailable for any reason during the programme. DTSL representatives have addressed these concerns by confirming that they are prepared to re-staff the programme at any time. Given DTSL’s yearlong experience in operating programmes such as this one, the review team holds this argument to be valid.

Similarly, the teaching assistant appears to be a good choice for the programme. Versed in utilizing a variety of interactive tools, the assistant is particularly familiar with the learning styles and technological skills needed to provide effective online support and guidance for learners. In the audit discussions, the learners have positively pointed out these capabilities and competences of the lecturer and the teaching assistant.

The expert team is particularly impressed by the learner-centric approach adopted in the programme, which encompasses assignments/assessments, group work and efforts to enhance learners’ practical experience in software development. This is reinforced by the comprehensive support and counselling services provided by the lecturer and teaching assistant.

<b>Criterion 3.2 Institutional environment, financial and material resources</b>
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**Evidence:**

- Relevant chapter of the SAR
- Document “DTS - Sustainability (Short & Long-term Funding)”, provided after the audit process
- Document “ESSA Trainer Lecturer Evaluation Guide and ESSA Student Evaluation Form”, Annex G to the SAR
- Audit discussions

**Preliminary assessment and analysis of the peers:**

The review team recognises the role and more than two decades of experience of DTSL in re-skilling and up-skilling the Irish and European workforce, working closely with industry and academic partners. It also notes DTSL’s successful fundraising activities to establish and fund these programmes on a sustainable basis. In this respect, the experts see DTSL’s multi-national board as a major strength of the organisation, providing it with global industry insight to keep the organisation up to date with industry needs and its programmes to meet those needs. The reported 12 academically accredited programmes in collaboration with academic institutions and over 5000 graduates from its programmes are impressive testimony to this.

However, based on the information provided in the SAR, the experts are still not sure about the medium and long-term financial security and sustainability of the programme. In a post-audit statement, DTSL explains in more detail the framework in which the agency operates, the portfolio it manages for retraining and upskilling purposes, and the government funding structure for the implementation of the programmes. For example, DTSL manages a large government-funded skills project in Ireland called Technology Ireland ICT Skillnet (TIICTS). As a long-term project (since 2005), DTSL sees its viability primarily in the industry relevance of the training courses within its portfolio. DTSL also points out that software development is one of the twelve technology pillars covered by TIICTS. As such, DTSL sees itself able to seamlessly integrate the Junior Software Developer programme into the portfolio under this pillar to continue its longevity. In addition, while the pilot of the programme was offered free of charge to participants, DTSL is considering sustainable pricing of the programme for subsequent iterations in 2025, with subsidies available to ensure accessibility to a wide and diverse intake.

The review team accepts this clarification and is confident that DTSL will be able to secure sustainable funding for the Junior Software Developer Course. Similarly, the experts are

confident that DTSL, with its long management experience and strong links with industry and academic partners will be able to secure sustainable delivery of the programme.

The funding to cover the essential costs includes, but is not limited to, the remuneration of the lecturer and teaching assistant, room hire for the opening and closing sessions at the university, the Zoom license for online sessions. The review team notes that for the pilot programme, DTSL has provided funding for a Zoom environment to facilitate the delivery of tutorials, breakout rooms for students to work collaboratively, and whiteboard functionality.

However, the Learning Management System, which was to be set up as part of the ESSA project and which is considered to facilitate the learning process, is still under construction. The experts consider this Learning Management System as a central element for the implementation of a programme that is mainly delivered online. Therefore, they are of the opinion that demonstrating its availability to the programme is a prerequisite for adequate programme delivery.

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

*See final assessment of the review team section F.*

## **4. Quality Management: Monitoring and Continuous Improvement**

<b>Criterion 4 Quality assurance and enhancement</b>
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**Evidence:**

- Relevant chapter of the SAR
- “Mid programme Review Questions” and “End-Programme Review Questions” Annex F to the SAR
- Document “ESSA Trainer Lecturer Evaluation Guide and ESSA Student Evaluation Form”, Annex G to the SAR
- Audit discussions

**Preliminary assessment and analysis of the peers:**

The review team recognizes that quality management instruments are systematically described and followed by DTSL to ensure the programme’s compliance with educational

standards and industry demands. Feedback mechanisms are put in place to capture relevant data from current educational trends, technological advancements and industry feedback to inform necessary updates to the programme content and structure. This is particularly convincing with respect to the ESSA project framework, as the ESSA consortium includes a wide range of academic and industry partners. Additionally, several ESSA partners have been piloting the Junior Software Developer programme as well as Software Developer programmes at higher qualification levels, which facilitates pinpointing best practices and addressing programme wide challenges or deficiencies. It is worthwhile in this regard, that the lecturers of the programmes are invited to participate in a collaborative focus group with peers who have taught ESSA pilot programmes across the ESSA project partners.

Without underestimating a potentially lasting impact of the ESSA project eco-system in terms of future collaborations and exchange of the partnering institutions, the experts are reluctant to consider the ESSA-related part of the quality management of the programme as sustainable and forward-looking.

In the medium and long term, the participatory quality assurance approach and its instruments, such as mid-term and end-of-programme evaluations, surveys with industry partners, student and teacher evaluations, will prove to be the more reliable mechanisms for ensuring the continuous quality development of the programme. The “Evaluation Guide” (Annexes F and G) provides a valuable set of questions covering all key aspects of the programme to collect quality-related data from the various stakeholders and to identify shortcomings and opportunities for improvement.

Overall, the experts are satisfied with DTSL’s sensitivity to the quality assurance dimension of its programme and with the mechanisms in place or planned to benchmark its programme against peer institutions and industry standards.

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

*See final assessment of the review team section F.*

## 5. Documentation & Transparency

<b>Criterion 5.1 Learning unit descriptions</b>
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**Evidence:**

- Relevant chapter in the SAR
- ESSA document “Curriculum Guidelines Junior Developer”, Annex I to the SAR

- Audit discussions

**Preliminary assessment and analysis of the peers:**

In the SAR, DTSL states that unit descriptions are made available to stakeholders, in particular students and lecturers, through a hosted Google Docs environment. It also states that the unit descriptions contain all relevant information about each unit, such as the unit learning outcomes, the content of the unit, the teaching and assessment methods, the names of those responsible for the unit, etc. Students confirmed this during the audit session.

However, this version of the unit descriptions was apparently not submitted with the SAR and was therefore not available to the reviewers. Instead, the review team relied on the document “Educational Profile and Curriculum Guidelines” (Annex I to the SAR) for meaningful information about each unit, unit structure and unit content. As stated in crit. 1.2, the experts consider that the presentation of unit content in this document does not appear, at least in part, to reflect what was actually taught in the units of the pilot course. Consequently, the experts do not know whether the unit descriptions available to students inherit the same discrepancy or whether they reflect a more accurate picture, particularly of the unit content.

The review team expects to see the relevant version of the unit descriptions, together with the DTSL statement, in order to assess whether the discrepancies still exist or are inadvertently caused by inconsistent documentation. If necessary, the unit descriptions will need to be adjusted in terms of content and possibly other relevant information. The experts understand that DTSL has decided to wait until the completion of the project, its first delivery and the external review before publishing meaningful information about the programme. Nevertheless, it must be demonstrated that this information is publicly available to stakeholders and those interested in participating in the programme. This applies in particular, although not exclusively, to the programme LOs and unit descriptions.

<b>Criterion 5.2 Relevant documents</b>
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**Evidence:**

- Template “Certificate of Completion”, Annex C to the SAR
- Student Consent Form Programme Participation, Annex D to the SAR
- Industry Based Project Evaluation & Questions, Annex B to the SAR

- “Mid programme Review Questions” and “End-Programme Review Questions” Annex F to the SAR
- Document “ESSA Trainer Lecturer Evaluation Guide and ESSA Student Evaluation Form”, Annex G to the SAR

**Preliminary assessment and analysis of the peers:**

The experts note that DTSL has provided a range of relevant documents together with the SAR including, for example, guidelines for the implementation of the industry based project, programme and unit descriptors and learning outcomes, curriculum guidelines, evaluation guidelines and sample question sets, as well as a sample “Certificate of Completion”. In view of the decision to withhold all publicly available information until the ESSA project has been completed and a pilot programme has been run, the experts believe it is essential for DTSL to demonstrate that key sources of information about the programme are accessible to all stakeholders, in particular learners, potential employers, and teaching staff.

As already mentioned in crit. 2, guidelines and provisions for assessment appear to be in place but have not yet been set out in a written document. Such a document would serve not only as a source of information but also as a basis for any study-related claims by participants, teaching staff and management. In the opinion of the experts, DTSL still needs to summarise and publicly communicate the guiding principles and rules for study and assessment.

**Final assessment of the peers after the comment of the Provider regarding criterion 7:**

*See final assessment of the review team section F.*

## 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:

- D 1. Provide a revised schedule for the programme, which clearly indicates the timeline of the teaching/learning process / *submission after the audit process*
- D 2. Provide more information about the mid- and long-term funding of the programme / *statement submitted after the audit process*
- D 3. Provide module/unit descriptions referred to in chapter 4.1 of the SAR (ESSA/ASIIN 1.2, 5.1)

## **E Comment of the Provider (05.09.2024)**

The institution provided a statement as well as additional documents on the following issues:

- ESSA Junior Developer Programme – Entry Requirements (document providing related information)
- ESSA Junior Developer Programme LMS (Correspondence with and confirmation of availability of LMS by ESSA programme management)
- ESSA Junior Developer Programme Unit Aims & LOs (document providing related information)
- ESSA Junior Software Developer - Assignments - Marking Rubrics (Excel sheet summary on assignments and grading rubrics)
- ESSA Junior Software Developer – Assignments (document summarizing information on assignments and grading weights)
- ESSA Junior Software Development Programme – Guiding Principles (document giving an overview over the guiding principles and rules of participation in the programme)

## **F Final assessment and recommendations of the experts (24.09.2024)**

### *Curriculum / Contents / unit descriptions [ASIIN/ESSA 1.2, 5.1]*

The experts are thankful for the provision of the unit/course specifications for the programme under review. However, the descriptions submitted as additional information (*file ESSA Junior Developer Programme Unit Aims & LOs*) do not meet the expectations of the expert team. In particular, the experts miss any detailed information of the contents of the individual units, and some additional information, which is usually presented in these descriptions (requirements, student workload, credit volume, if applicable, teaching methods and forms, assessment forms, unit related literature for orientation of learners).

The experts were confident that the course/unit descriptions would address their concerns about the apparent discrepancy between the curriculum as presented in the "Curriculum Guidelines" document (*file Annex I to the SAR: ESSA Junior Developer Educational Profile and Curriculum*) on the one hand, and the programme as it appears to be taught in practice on the other. In summary, however, the impression of a significant discrepancy remains and, according to the experts, needs to be mitigated, as clarity on the programme subject to this certification is essential. The review team confirms its initial judgement that this should be a condition for the further course of the procedure.

### *Curriculum development [ASIIN/ESSA 1.2]*

The experts acknowledge that DTSL is not involved in the curriculum development within the framework of ESSA, but is merely a provider of the programme. It is positively noted that iterations are to be carried out in close consultation with the ESSA consortium, including all curricular modifications, and that the lecturers employed by DTSL are to be involved in particular. The experts also appreciate the planned transfer of corresponding tasks to the lecturers who, in cooperation with the industry, will adapt the curriculum to the needs of technical developments and the labour market. They therefore propose to change the condition originally envisaged for this purpose into a (potential) requirement, so that DTSL can demonstrate and/or substantiate how responsibility for the (further) development of the programme is being exercised in practice within the one-year period provided for the fulfilment of the requirement.

*Practical learning units [ASIIN/ESSA 1.2]*

The experts welcome DTSL's announcement that it will significantly improve learners' practical experience by integrating more practical sessions into the programme. This will need to be demonstrated in the course of the ongoing process and therefore remains a requirement to be met.

*Learning system [ASIIN/ESSA 1.3, 3.2]*

The experts note that the LMS will be available soon. This way, they are confident that DTSL will be able to integrate the system into the delivering of the next iteration of the programme and thus be able to demonstrate this on short notice. In view of this prospect, the review team decides to address the issue as a (potential) requirement rather than as a condition for the resumption of the procedure. The information of the LMS submitted by DTSL together with its comments is worthwhile, but not sufficient to establish the fulfilment of this requirement.

*Collaboration with industry partners [ASIIN/ESSA 1.3, 3.2]*

The experts appreciate the increased efforts of DTSL to involve industry more in the design and implementation of development projects. The achievements in this respect should be visited in a possible re-certification procedure. The experts therefore decide to make a recommendation accordingly.

*Didactical methods [ASIIN/ESSA 1.3]*

The expert team appreciates that DTSL is willing to provide recordings of all lectures in the next iteration of the programme. Moreover, the experts consider it highly supportive that DTSL also announces to evaluate the impact of these recordings in order to collect relevant information for strengthening the quality of programme/support structure. The results should be observed in a potential re-certification of the programme.

*Admission requirements [ASIIN/ESSA 1.4]*

The experts note positively DTSL's announcement to '*develop and publish a comprehensive and easily accessible set of entry requirements for the programme on our website and other appropriate platforms*'. Indeed, DTSL has submitted a proposal to this effect. However, the paper states that no formal educational qualifications or professional experience in the field will be required. The experts are convinced that this approach, although well-intentioned in terms of opening up the course to the widest possible audience, is not conducive to student success and could lead to disappointment and early withdrawal of a significant number of applicants. It is therefore strongly felt by the experts that appropriate basic

knowledge in the field of software development should be a prerequisite for enrolment in the programme and should be formulated accordingly in the admission requirements.

The team of experts also welcomes DTSL's proposal to provide appropriate information about the effort expected of learners wishing to enrol in the programme. This will contribute to a clear communication of the expectations of learners and the commitment required of them at the start of the programme. Understandably, this announcement could not be fully implemented in the short time since the report was submitted. The experts' suggestion therefore remains to remind DTSL of this issue.

*Student workload [ASIIN/ESSA 1.5]*

The intention of DTSL to establish and implement a regular process for monitoring the student workload is noted positively. As the establishment and implementation of this mechanism remains to be demonstrated, the experts propose to address a related requirement.

In addition, DTSL's plan to explore the feasibility of introducing a credit point system is noteworthy. The experts consider that this decision and any further results should be left to the assessment of the review team in a possible follow-up certification process and make a recommendation accordingly.

*Examinations [ESSA/ASIIN 2]*

The experts note that detailed information on the assessments foreseen in the programme and the grading criteria to be applied is already available. They expect this information to be disseminated to all relevant stakeholders, in particular learners. As this has not yet been demonstrated, a related requirement remains.

Furthermore, it is not clear from DTSL's comments whether and how learners are entitled to lodge complaints or appeals against DTSL in the context of this programme. The experts consider that at least basic guidelines should be established and propose a requirement to this effect.

*Unit/module descriptions [ESSA/ASIIN 5.1]*

DTSL indicates measures to tailor the literature recommendations in the module/unit descriptions more to the demands and educational backgrounds of the learners. This is noted positively. However, the results of these efforts still need to be demonstrated in the course of this certification procedure.

*Relevant regulations/documents [ESSA/ASIIN 5.2]*

The experts welcome the fact that DTSL has produced concise summaries of the guiding principles and rules for participation, study and evaluation. They also acknowledge DTSL's

willingness to provide all stakeholders with appropriate access to relevant study information. This remains to be validated in the further course of the certification process.

Taking into account the additional information and the comments given by DTSL, 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 Software Developer	<i>Suspension</i>		4/5

### **Condition**

- C 1. (ESSA/ASIIN 1.2) The topics and depth of the curriculum as it is taught in practice need to be clarified and consistent with the information about the programme that is communicated to the public.

### **Possible Requirements**

- A 1. (ESSA/ASIIN 1.2) Make sure that the teaching staff is closely involved in the (further) development of the curriculum. In addition, it must be demonstrated that DTSL has taken ownership of the further development of the programme.
- A 2. (ESSA/ASIIN 1.2) Include more supervised practical sessions in the programme to achieve a better balance between theory and practice
- A 3. (ESSA/ASIIN 1.3, 3.2) Provide evidence of the implementation of the learning management system used for delivering the programme.
- A 4. (ESSA/ASIIN 1.4) Make appropriate basic knowledge in the field of software development a mandatory requirement and formulate the entry requirements accordingly. The latter should be made publicly available, e.g. in the manner suggested by DTSL.
- A 5. (ESSA/ASIIN 1.5) Ensure a systematic and regular monitoring of the learners' workload to identify discrepancies and, if necessary, adapt the unit content.

- A 6. (ESSA/ASIIN 2) Establish a basic set of guidelines for learners on how to lodge complaints or appeals and for the programme provider on how to deal with them.
- A 7. (ESSA/ASIIN 1.2, 5.1) Revise and, if necessary, adapt the unit descriptions according to the annotations in the report (e.g. learning outcomes, content, literature).
- A 8. (ESSA/ASIIN 1.1, 1.2, 5.1, 5.2) Make the programme-related information accessible to the relevant stakeholders (module/unit descriptions, rules and guidelines pertaining to the programme).

### **Possible Recommendations**

- E 1. (ESSA/ASIIN 1.3, 4.3) It is recommended to collaborate more systematically with industry partners in designing and implementing the Software Development Projects.
- E 2. (ESSA/ASIIN 1.3) It is recommended to provide recordings of the lectures and tutorial sessions.
- E 3. (ESSA/ASIIN 1.4) It is recommended that the proposed information on the requirements and expected effort of learners who are willing to enrol in the programme is put in place. This will help to ensure that learners' expectations and commitment are clearly communicated at the start of the programme.
- E 4. (ESSA/ASIIN 1.5) It is recommended to apply the ECVET or ECTS scheme as a practical tool to systematically surveying the learners' workload.

## **G Decision of the Certification Commission (20.09.2024)**

*Assessment and analysis for the award of the ASIIN Certificate:*

The Certification Commission discussed the procedure.

It considers the experts' concerns to be understandable and shares the view that the discrepancies between the curriculum content as presented in the audit and the available curriculum information from the SAR are not acceptable.

However, given that DTSL is a highly reputable provider of education, the Commission is at the same time convinced that the programme is and will be delivered at the required EQF level, provided that the following requirements are satisfactorily met. This applies in particular to the issue of consistency of information on curriculum content, which the Commission is confident can be achieved in a relatively short period of time. The Certification Commission therefore downgrades the proposed condition to an additional requirement (requirement 1). Accordingly, it considers that a suspension of the procedure would be an unnecessary burden for DTSL and decides to certify the programme with reservations for one year.

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

<b>Course</b>	<b>ASIIN Certificate</b>	<b>Maximum duration of certification</b>	<b>Alignment to a Qualification Framework Level</b>
Junior Software Developer	With requirements for one year	30.09.2029	5

### **Requirements**

- A 1. (ESSA/ASIIN 1.2) The information/documentation about the programme that is made available publicly and internally needs to be modified to reflect the curriculum that is taught in practice.
- A 2. (ESSA/ASIIN 1.2) Make sure that the teaching staff is closely involved in the (further) development of the curriculum. In addition, it must be demonstrated that DTSL has taken ownership of the further development of the programme.

- A 3. (ESSA/ASIIN 1.2) Include more supervised practical sessions in the programme to achieve a better balance between theory and practice
- A 4. (ESSA/ASIIN 1.3, 3.2) Provide evidence of the implementation of the learning management system used for delivering the programme.
- A 5. (ESSA/ASIIN 1.4) Make appropriate basic knowledge in the field of software development a mandatory requirement and formulate the entry requirements accordingly. The latter should be made publicly available, e.g. in the manner suggested by DTSL.
- A 6. (ESSA/ASIIN 1.5) Ensure a systematic and regular monitoring of the learners' workload to identify discrepancies and, if necessary, adapt the unit content.
- A 7. (ESSA/ASIIN 2) Establish a basic set of guidelines for learners on how to lodge complaints or appeals and for the programme provider on how to deal with them.
- A 8. (ESSA/ASIIN 1.2, 5.1) Revise and, if necessary, adapt the unit descriptions according to the annotations in the report (e.g. learning outcomes, content, literature).
- A 9. (ESSA/ASIIN 1.1, 1.2, 5.1, 5.2) Make the programme-related information accessible to the relevant stakeholders (module/unit descriptions, rules and guidelines pertaining to the programme).

## **Recommendations**

- E 1. (ESSA/ASIIN 1.3, 4.3) It is recommended to collaborate more systematically with industry partners in designing and implementing the Software Development Projects.
- E 2. (ESSA/ASIIN 1.3) It is recommended to provide recordings of the lectures and tutorial sessions.
- E 3. (ESSA/ASIIN 1.4) It is recommended that the proposed information on the requirements and expected effort of learners who are willing to enrol in the programme is put in place. This will help to ensure that learners' expectations and commitment are clearly communicated at the start of the programme.
- E 4. (ESSA/ASIIN 1.5) It is recommended to apply the ECVET or ECTS scheme as a practical tool to systematically surveying the learners' workload.