

European Software Skills Alliance.

EDUCATIONAL PROFILE

ESSA Junior solution designer EQF 6

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

Solution designers specify appropriate **IT solutions for a specific business or organisation context**, based on a thorough understanding of the **business, processes, technology, and needs and requirements** of the customer, thus **providing the translation of business requirements into IT solutions**. Solution designers do this in such a way that these solutions fit well in the landscape of the business (in line with e.g., strategy, mission, organisation, needs, requirements) as well as ICT. Solution designers are well-informed about the latest developments and trends in the IT field, as well as the services the market offers. They operate in between business and IT.

Solution designers at Bachelor level are aware of the interests and needs of different stakeholders and carefully balance these in the proposal for an IT solution. They communicate and cooperate with customers, users, and specialists, supporting them and guarding the IT solution in the different stages of development and implementation.

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



About this profile



This profile is for educating people with or without previous ICT knowledge to propose and design ICT-solutions taking into account business requirements and ICT architecture.

The profile has an EQF 6 level No prior knowledge of the topic is required.

This level requires:

- **Autonomy:** Works independently under broad direction to solve problems. Has a positive effect on team performance.
- **Context:** Structured – unpredictable context, vague problems, open approach and solution space.
- **Content:** Combination of multiple concepts for advancement and innovation in the local situation.

Competences

e-CF competences (incl. e-CF level)	General competences (incl. EQF level)
D.11. Needs Identification [e-3] A.5. Architecture Design [e-3] A.6. Application Design [e-3] A.9. Innovating [e-3] E.3. Risk management [e-2] A.8. Sustainability Management [e-3] D.10. Information and Knowledge Management [e-3]	P. Profession-related competences (EQF6) I.S. Interpersonal soft competences (EQF6) P.S. Personal soft competences (EQF6) F.O. Functioning in organisations (EQF6)

Deliverables

Learners should master the following deliverables:

- Functional and non-functional requirements
- Solution design description
- (Relevant parts of) an IT architecture design, related to IT solution
- Functional and data modelling diagrams
- Simple system architecture and interfaces
- Design for an application or software (component) (e.g., UI/UX design)
- Overall plan for the design
- Idea proposal
- Documented idea generation process
- Risk analysis
- Proposed actions to handle risks/ (parts of) a risk management plan
- Analysis of ICT solutions in terms of sustainability
- Recommendations on sustainable options
- Analysis of business processes and information
- Recommendations and technical solutions on effective handling of information and knowledge
- Report on the application of a method, technique or tool related to a new technology
- Overall project plan for the design/development of an application or software component

- Self-reflection report
- Report on functioning in an organisation

Professional perspectives

Upon completing this programme, the learner is eligible to apply **for junior positions** related to the combination between business & IT, such as Junior Solution designer - Junior Business & IT Consultant

Educational perspectives

The learner may continue in a **Master's Developer programme** with a focus on more complex and specific application technologies and architectures.

The learner also has a proper base for more advanced training and certification such as IT management.

Programme Learning Outcomes (PLO)

1. PLO Needs identification [e-3]

The learner has demonstrated capability
 → to translate customer needs into requirements
 → to propose different ICT solutions

Unit learning outcomes	Analyses a business context, by using common methods and tools (e.g., SWOT)
	Identifies, clarifies and analyses customers' needs and formulates functional and non-functional requirements , applying appropriate methods, tools and techniques (e.g., customer needs analysis techniques, communication techniques)
	Proposes different, relatively common, ICT solutions in a well-considered manner, resulting in a solution design description (e.g., make-or-buy; by comparing different alternatives, considering relevant conditions; costs, benefits, risks)

2. PLO Architecture Design [e-3]

The learner has demonstrated capability
 → to identify and align relevant ICT technology and specifications

Unit learning outcomes	Describes architecture frameworks and standards such as TOGAF
	Explains system architecture requirements (e.g., performance, maintainability, extendibility, scalability, availability, security, accessibility)
	Aligns an IT solution with a certain architecture and formulates (relevant parts of) an IT architecture design , for a relatively straightforward situation applying common design techniques and tools

3. PLO Application Design [e-3]

The learner has demonstrated capability
 → to specify a design for a software application or component that meets requirements
 → to organize the planning of the design of an application or software component

Unit learning outcomes	Explains and distinguishes principles and terminology of software design (e.g., phases in the design process, techniques, deliverables)
	Describes principles of usability, UI/UX design, accessibility, privacy, security
	Creates functional and data modelling diagrams , using common languages and techniques (e.g., DFD, IDEF0, ERD, and UML)
	Designs a simple system architecture and interfaces using familiar technologies
	Compares alternatives for a design and selects the most promising alternative(s), optimising the balance between cost and quality
	Specifies a design for a software application or component , taking into account certain constraints/ requirements (e.g., the development environment, programming language, technology, requirements related to performance, security, accessibility, usability, privacy, ethics, safety, IS policy, cost, quality)
	Designs and organises the overall plan for the design of an application or software component

4. PLO Innovating [e-3]

The learner has demonstrated capability
 → to propose ideas on the application of novel technologies
 → to document the idea generation process

Unit learning outcomes	Explains and distinguishes innovation and idea generation practices, processes, techniques, and tools
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Describes new technological developments and implications for businesses and organisations
Proposes ideas on the application of novel technologies in a practical context – formulates an idea proposal , applying appropriate innovation and idea generation practices, processes, techniques, and tools
Documents idea generation process
Analyses different vendor solutions related to a certain novel or emerging technology or tool

5. PLO Risk management [e-2]

The learner has demonstrated capability
 → to apply risk management principles
 → to perform common risk analysis of ICT solutions and services
 → to propose actions to handle risks

Unit learning outcomes	Applies practices, principles, methods, tools and techniques related to risk management
	Performs a risk analysis with identification and assessment of risks of IT solutions and services
	Proposes appropriate actions to handle risks and/or formulates (parts of) a risk management plan

6. PLO Sustainability management [e-3]

The learner has demonstrated capability
 → to analyse different IT solutions in terms of sustainability
 → to recommend sustainable options

Unit learning outcomes	Explains and distinguishes concepts related to sustainability as well as different metrics and indicators related to sustainable ICT operation and development (e.g., green IT, carbon footprint, environmental regulations and standards)
	Performs analysis of ICT solutions in terms of sustainability , e.g., energy consumption, waste treatment and environmental policy
	Provides recommendations on sustainable options in IT development, operations, services, and solutions

7. PLO Information and knowledge management [e-3]

The learner has demonstrated capability
 → to identify relevant information and knowledge
 → to propose practices and means for an effective use of information and knowledge

Unit learning outcomes	Makes an analysis of business processes and identifies associated information, applying common tools and techniques
	Provides recommendations and technical solutions on effective handling of information and knowledge (exploitation, storing, retrieval, and sharing), taking into account relevant practices, methods, standards, tools, and regulations (e.g., GDPR, IPR; collaboration principles, tools for communication and information sharing, FAIR principles)
	Makes an analysis of business processes and identifies associated information, applying common tools and techniques

8. PLO Profession related competences [EQF6]

The learner has demonstrated capability
 → to apply profession related skills

Unit learning outcomes	Masters common ICT knowledge
	Explains the principles, related concepts, advantages, disadvantages, limitations and possible societal, environmental, and ethical issues related to the application of a new technology . Applies and reports on basic methods, techniques and tools related to a new technology.

Applies, evaluates, reports and provides advice on security standards, regulations, measures, methods, tools, and techniques
Applies, evaluates and provides advice on appropriate methods, tools and techniques related to software lifecycle processes
Applies, evaluates, reports and provides advice on sustainability standards, regulations, measures, and methods.
Is aware of ethical considerations and issues and applies these in professional context and activities. Forms and communicates an opinion based on considerations of relevant social, professional, scientific and ethical aspects

9. PLO Soft competences [EQF6]

*The learner has demonstrated capability
→ to apply soft skills*

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

10. PLO Functioning in organisations [EQF6]

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

Unit learning outcomes	Explains the basics of organisation theory and behaviour
	Describes the relationship between business and IT
	Works in an organisational context under specific direction with limited autonomy and responsibility e.g., at the level of a trainee, junior or assistant
	Manages a project, selects appropriate project management methods and tools

| Writes a report on functioning in the organisation

Assessments

Unit learning outcome	Assessment method	Validation of prior acquired competences (skills and knowledge)
1.1	Practical assignment	Assessment (of skills)
1.2	Practical assignment	Assessment (of skills)
1.3	Practical assignment	Assessment (of skills)
2.1	Exam	Certification
2.2	Exam	Certification
2.3	Practical assignment	Assessment (of skills)
3.1	Exam	Certification
3.2	Exam	Certification
3.3	Exam	Certification
3.4	Practical assignment	Assessment (of skills)
3.5	Practical assignment	Assessment (of skills)
3.6	Practical assignment	Assessment (of skills)
3.7	Practical assignment	Assessment (of skills)
4.1	Exam	Certification
4.2	Exam	Certification
4.3	Practical assignment	Assessment (of skills)
4.4	Practical assignment	Assessment (of skills)
4.5	Practical assignment	Assessment (of skills)
5.1	Practical assignment	Assessment (of skills)
5.2	Practical assignment	Assessment (of skills)
5.4	Practical assignment	Assessment (of skills)
6.1	Exam	Certification
6.2	Practical assignment	Assessment (of skills)
6.3	Practical assignment	Assessment (of skills)
7.1	Practical assignment	Assessment (of skills)
7.2	Practical assignment	Assessment (of skills)
8.1	Exam	Certification
8.2	Practical assignment	Assessment (of skills)
8.3	Report	Assessment (of report)
9.1	Exam	Certification
9.2	360° assessment	360° assessment
9.3	Practical assignment	Assessment (of skills)
9.4	Practical assignment	Assessment (of skills)
9.5	Practical assignment	Assessment (of skills)
9.6	Exam	Certification
10.1	360° assessment	360° assessment
10.2	360° assessment	360° assessment
10.3	Exam	Certification
10.4	Practical assignment	Assessment (of skills)
10.5	Practical assignment	Assessment (of skills)
10.6	Self-reflection report	Assessment (of report)
11.1	Exam	Certification
11.2	Exam	Certification
11.3	360° assessment	360° assessment
11.4	Report	Assessment (of report)