OCCUPATIONAL QUALIFICATION STANDARD

Information and Telecommunications Technology Engineer, EstQF Level 7

An occupational qualification standard is a document which describes the set of skills, knowledge and attitudes, i.e. competence requirements, needed to successfully accomplish duties. Occupational qualification standards are used for compiling curricula and awarding qualifications.

Occupational title	**Level of Estonian Qualifications Framework (EstQF)**
Information and Telecommunications Technology Engineer, EstQF Level 7	7

Part A
DESCRIPTION OF WORK

A.1 Description of work

Information and Telecommunications Technology Engineers (hereafter ICT engineers) design, implement, manage and update information and communications technology (ICT) networks (cable networks and the wide and local area networks based on them) and systems (including infrastructure). ICT engineers have extensive knowledge and the ability to manage the design and construction of ICT systems and networks.

ICT engineers design ICT systems and networks, analyse the resilience of ICT systems, identify the need for changes and initiate and implement changes. ICT engineers choose the optimal technical solution based on the organisation's strategic objectives and limitations.

ICT engineers work independently and in teams, developing procedures to implement and manage ICT networks and systems and preparing project documentation.
They carry out risk analysis across ICT systems, analysing the cumulative impact of risks, and plan and implement measures to mitigate risks.

ICT engineers systematically engage in their professional development and enhance their competence. They supervise the work of senior specialists and specialists according to their existing knowledge and skills.
The job of an ICT engineer has a heightened electrical, EMF and laser radiation hazard; the job must be performed outdoors and at heights, where necessary. Duties may require working and/or responding outside usual office hours, on weekends and public holidays and/or at night.

The European ICT Competence Framework (e-CF) is the basis for describing ICT occupations.

A.2 Tasks

A.2.1 Information System and Business Strategy Alignment (e-CF competence A.1)
A.2.2 Service Level Management (e-CF competence A.2)
A.2.3 Business Plan Development (e-CF competence A.3)
A.2.4 Product/Service Planning (e-CF competence A.4) and Project and Portfolio Management (e-CF competence E.2)
A.2.5 Architecture Design (e-CF competence A.5)
A.2.6 Application Design (e-CF competence A.6)
A.2.7 Sustainable Development (e-CF competences A.8 & A.7)
A.2.8 Design and Development and System Integration (e-CF competences B.1 & B.2)
A.2.9 Testing (e-CF competence B.3)
A.2.10 Solution Implementation/Installation/Adoption (e-CF competence B.4)
A.2.11 Documentation Production (e-CF competence B.5)
A.2.12 User Support (e-CF competence C.1)
A.2.13 Change Management (e-CF competence C.2)

A.2.14 Service Delivery (e-CF competence C.3)
A.2.15 Problem Management (e-CF competence C.4)
A.2.16 Information Security Strategy Development (e-CF competence D.1) and Information Security Management (e-CF competence E.8)
A.2.17 ICT Quality Strategy Development (e-CF competence D.2) and ICT Quality Management (e-CF competence E.6)
A.2.18 Purchasing (e-CF competence D.4)
A.2.19 Sales Proposal Development (e-CF competence D.5)
A.2.20 Information and Knowledge Management (e-CF competence D.10)
A.2.21 Risk Management (e-CF competence E.3)

A.3 Professional preparation
ICT engineers are usually people with a professional Master's degree or higher education equivalent to it.

A.4 Most common occupational titles
ICT senior specialist, ICT network or system architect, wireless network senior specialist, optical network senior specialist, IP network senior specialist, network manager, network designer, data management expert, service manager.

A.5 Regulations governing profession
There are no regulations governing the occupation.

Part B
COMPETENCY REQUIREMENTS

B.1 Structure of occupation
All competences must be certified when applying for the qualification.

B.2 General skills of Information and Telecommunications Technology Engineer, EstQF Level 7
1) makes proposals to improve the performance of others; 2) monitors and analyses processes and organises problem-solving; 3) complies with legislation; 4) values their own work and that of their team and recognises it as part of the country's critical information infrastructure; 5) works responsibly to manage and develop information and communication systems; 6) creates new and maintains existing communication networks; 7) monitors the information sources considered trustworthy in the field and assesses their relevance; 8) expresses their opinion in a well-argued way and is able to identify the key points of a discussion; 9) is guided rationally by the customer's needs and sets realistic expectations; 10) presents written materials that are structured, logical and linguistically accurate; 11) takes into account the objectives of the organisation when setting personal professional goals and uses the organisation's resources responsibly and prudently; 12) takes responsibility for their own actions and those of their team or field within the limits of their competence; 13) processes the information entrusted to them in accordance with the existing procedure and legislation; 14) considers ethical beliefs and values important and draws attention to unethical practices; 15) leads the team's work and recognises the contributions of others; 16) assesses the impact on the environment of their actions and those of their team, tries to lessen this impact and avoids harming the environment; 17) speaks Estonian or English at the C1 level and at least one other language at the B1 level (see Annex 1).

B.3 Competences	
B.3.1 Information system and business strategy alignment (e-CF competence A.1)	**EstQF Level 7**
Performance indicators:	

1. provides input to develop ICT strategies and policies taking into consideration the organisation's strategic objectives and technological trends; 2. analyses the opportunities, risks (including security and economic risks and environmental impact) and applicability of outsourcing services; 3. defines the requirements for ICT services based on business and ICT strategies, business processes and long-term user needs.	
B.3.2 Service Level Management (e-CF competence A.2)	**EstQF Level 7**
Performance indicators: 1. provides input to achieve the results envisaged by service level agreements based on the analysis of relevant data; 2. analyses deviations and assesses service level compliance with key service indicators; 3. implements corrective and preventive measures to eliminate, mitigate or avoid service level non-compliance.	
B.3.3 Business plan development (e-CF competence A.3)	**EstQF Level 7**
Performance indicators: 1. provides input for the development of a business plan for the ICT system based on strategic objectives; 2. assesses the value of a product or service from the point of view of both the organisation and the customer; 3. compiles the service cost model and calculates the cost of the service; 4. prepares a SWOT analysis.	
B.3.4 Product/Service Planning (e-CF competence A.4) and Project and Portfolio Management (e-CF competence E.2)	**EstQF Level 7**
Performance indicators: 1. prepares the project plan based on business objectives, the budget and deadlines; 2. manages projects or programmes, including interaction with other projects based on established project management principles.	
B.3.5 Architecture design (e-CF competence A.5)	**EstQF Level 7**
Performance indicators: 1. designs ICT systems taking into account the technology and equipment in use, the latest technological developments and business objectives and influences; 2. adheres to widespread design principles (e.g. network planning principles), thereby ensuring that key indicators (including availability, maintainability, scalability, security and accessibility) comply with requirements.	
B.3.6 Application Design (e-CF competence A.6)	**EstQF Level 7**
Performance indicators: 1. designs ICT applications based on the customer's communication needs, technological options, legal and security requirements, economic aspects and the organisation's strategies and taking into account the performance of the application throughout its life cycle; 2. analyses information about the customer's communication needs; 3. assesses the impact of the infrastructure on the continuity of the application and/or service.	
B.3.7 Sustainable Development (e-CF competences A.8 & A.7)	**EstQF Level 7**
Performance indicators: 1. analyses the sustainability of the ICT system in line with the organisation's strategic objectives, using knowledge of new and emerging technologies; 2. implements green solutions for designing and handling ICT systems; 3. identifies the market leaders among ICT manufacturers and suppliers.	
B.3.8 Design and Development and System Integration (e-CF competences B.1 & B.2)	**EstQF Level 7**
Performance indicators: 1. prepares customer solutions using known technical solutions or creating new ones and being guided by predetermined requirements; 2. develops standard procedures and architecture, thereby ensuring the maintenance and sustainability of solutions; 3. ensures interoperability with related systems, using standard interfaces or creating new, additional interfaces; 4. explains the capabilities, possibilities and implementation process of the solution to interested parties.	

B.3.9 Testing (e-CF competence B.3)	**EstQF Level 7**

Performance indicators:
1. prepares and maintains a test plan;
2. analyses the test results and prepares the corresponding reports.

B.3.10 Solution Implementation/Installation/Adoption (e-CF competence B.4)	**EstQF Level 7**

Performance indicators:
1. plans the implementation of the solution based on existing rules, requirements, best practice and the set schedule;
2. organises information exchange;
3. organises the implementation workflow and activities related to product distribution;
4. organises and plans the testing of the solution;
5. configures the system to ensure overall interoperability;
6. identifies the expertise needed to ensure interoperability and gets experts involved.

B.3.11 Documentation Production (e-CF competence B.5)	**EstQF Level 6**

Performance indicators:
1. prepares and adapts documents as specified in the documentation management;
2. prepares document templates for common use.

B.3.12 User Support (e-CF competence C.1)	**EstQF Level 7**

Performance indicators:
1. plans support processes and their implementation based on service level requirements, related processes and business objectives;
2. finds ways to improve support services;
3. collects information on incidents so as to identify the causes of errors/non-conformities.

B.3.13 Change Management (e-CF competence C.2)	**EstQF Level 7**

Performance indicators:
1. plans system changes in cooperation with related parties to ensure system integrity and continuity and the implementation of functional innovations and service tasks, taking into account budgetary requirements;
2. analyses the impact of functional/technical changes on the system.

B.3.14 Service Delivery (e-CF competence C.3)	**EstQF Level 7**

Performance indicators:
1. ensures continuity of service by implementing preventive and corrective actions, including budget management;
2. analyses the adequacy of technical conditions to ensure the required level of service;
3. analyses the service delivery process by assessing the value of the service's key indicators.

B.3.15 Problem Management (e-CF competence C.4)	**EstQF Level 7**

Performance indicators:
1. leads the problem-management process;
2. analyses non-conformities and identifies their root causes, implementing corrective measures;
3. analyses potential non-conformities in critical components and implements preventive measures;
4. compiles a procedure and ensures that competent personnel and the necessary general and diagnostic tools are available in the event of the emergence of non-conformities.

B.3.16 Information Security Strategy Development (e-CF competence D.1) and Information Security Management (e-CF competence E.8)	**EstQF Level 7**

Performance indicators:
1. provides input for the development of an information security strategy based on expertise, standards and best practice;
2. develops and analyses the organisation's information security strategy within their area of responsibility;
3. maps information about information assets and their owners and keeps it updated within their area of responsibility;
4. assesses the potential impact of the materialisation of information security risks on business processes;
5. develops procedures needed for implementing information security policies within their area of responsibility;

6. implements information security procedures, being guided by the objectives defined in the organisation's information security policy and the requirements set out in legislation.	
B.3.17 ICT Quality Strategy Development (e-CF competence D.2) and ICT Quality Management (e-CF competence E.6)	**EstQF Level 7**
Performance indicators: 1. provides input to define and formulate the company's quality objectives based on its overall objectives and best practice; 2. prepares and implements quality control procedures within their area of responsibility; 3. analyses key process indicators and monitoring and measurement results; 4. assesses the efficiency and effectiveness of the processes for which they are responsible; 5. implements improvement actions in order to ensure that quality objectives are met.	
B.3.18 Purchasing (e-CF competence D.4)	**EstQF Level 7**
Performance indicators: 1. follows the organisation's procurement procedures and provides input for the preparation of a procurement plan and the improvement of procurement procedures; 2. provides input for the selection of suppliers, products and services by assessing delivery terms and the key indicators of the product or service being procured; 3. participates in the procurement process as a member of the evaluation committee; 4. prepares technical requirements for the product/service being procured.	
B.3.19 Sales Proposal Development (e-CF competence D.5)	**EstQF Level 6**
Performance indicators: 1. provides input for the compilation of a sales offer by cost component of the service, proposing alternative solutions.	
B.3.20 Information and knowledge management (e-CF competence D.10)	**EstQF Level 7**
Performance indicators: 1. complies with and develops requirements for obtaining, using, transmitting and storing information; 2. provides input to create and add to knowledge management procedures.	
B.3.21 Risk management (e-CF competence E.3)	**EstQF Level 7**
Performance indicators: 1. carries out risk analysis across their areas of responsibility, being guided by predetermined methodology and standards; 2. assesses the potential impact of the materialisation of residual risks based on the risk analysis results and makes proposals to manage and mitigate risks.	

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Part C
GENERAL INFORMATION AND ANNEXES

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C.1 Information concerning compilation and certification of occupational qualification standard and reference to classification of occupations	
1. ID of occupational qualification standard in register of occupational qualifications	08-23092024-1.3/3k
2. Occupational qualification standard compiled by:	Andres Eek, TalTech Joonas Heiter, Riigi Infosüsteemi Amet Laur Lemendik, TalTech Sven Pärand, Telia Eesti AS Urmas Ruuto, Ericsson Eesti AS Heiki Tähis, AS Atea
3. Occupational qualification standard approved by:	Information Technology and Telecommunication
4. No. of decision of Sectoral Council	29
5. Date of decision of Sectoral Council	23.09.2024

6. Occupational qualification standard valid until	22.09.2026
7. Occupational qualification standard version no.	3
8. Reference to International Standard Classification of Occupations (ISCO 08)	2153 Telecommunications Engineers
9. Reference to European Qualifications Framework (EQF)	7
C.2 Occupational title in foreign language	
English:	ICT Engineer
English:	Information and Telecommunications Technology Engineer, EstQF Level 7
C.3 Annexes	
Lisa 1 Language skills level descriptions	