OCCUPATIONAL QUALIFICATION STANDARD

Diploma Mining 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)
Diploma Mining Engineer, EstQF Level 7	7

Possible specialisation and titles on occupational certificate	
Specialisation	**Title on occupational qualification certificate**
Opencast mining of mineral resources	Diploma Mining Engineer, EstQF Level 7 Opencast mining of mineral resources
Underground mining of mineral resources	Diploma Mining Engineer, EstQF Level 7 Underground mining of mineral resources
Designing opencast mining	Diploma Mining Engineer, EstQF Level 7 Designing opencast mining
Designing underground mining	Diploma Mining Engineer, EstQF Level 7 Designing underground mining
Mine surveying	Mine Surveyor, EstQF Level 7

Part A
DESCRIPTION OF WORK

A.1 Description of work
The aim of Diploma Mining Engineer, Level 7 is to ensure the safe, environmentally sustainable and efficient extraction and processing of mineral resources. A certified mining engineer is an experienced technical or technology specialist who plans and manages processes related to the extraction of mineral resources, including opencast and underground mine surveying. Their role is to maintain and develop existing technologies. They are ready to work in a team with engineers and specialists from connected fields (construction, geology and mechanics), lead work groups and/or the organisation and assume responsibility for the results of other people's work.
A.2 Tasks
A.2.1 Operation and development of technologies A.2.2 Management
Specialised areas of work
Opencast mining of mineral resources A.2.3 Opencast mining of mineral resources Underground mining of mineral resources A.2.4 Underground mining of mineral resources Designing opencast mining A.2.5 Designing opencast mining Designing underground mining A.2.6 Designing underground mining

Mine surveying A.2.7 Mine surveying
A.3 Work environment and specific nature of work
The work is performed in indoor, outdoor and/or underground conditions. They may be exposed to noise, humidity, dust, exhaust and explosive gases, etc. The workload may be distributed unevenly.
A.4 Tools
In addition to the usual office equipment and software, they use professional computer software and tools (marking and measuring tools, etc.) as well as a motor vehicle, if necessary.
A.5 Personal qualities required for work: abilities and characteristics
The work requires precision, analytical skills, decisiveness and adaptability, willingness to cooperate and communicate, spatial awareness and a way of thinking that supports innovative, environmentally friendly and sustainable development.
A.6 Professional preparation
Diploma Mining Engineer, Level 7 has obtained higher education at the Master's degree level. They have professional work experience and have completed further professional training.
A.7 Most common occupational titles
Department manager of a production unit: mine, quarry, project engineer, operations manager of mining, drilling, etc., mining engineer, head mine surveyor, mine surveyor.
A.8 Regulations governing profession
Having a Diploma Mining Engineer certificate entitles you to work as a specialist responsible for mineral extraction, mine surveying or planning within the scope of your specialisation. Basis: Earth's Crust Act.

Part B
COMPETENCY REQUIREMENTS

B.1 Structure of occupation
Competences B.2.1, B.2.2 and B.2.8 and at least one competence from options B.2.3-B.2.7 must be certified when applying for the qualification of Diploma Mining Engineer. Competence B.2.3 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in the opencast mining of mineral resources. Competence B.2.4 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in the underground mining of mineral resources. Competence B.2.5 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in the planning of opencast mining. Competence B.2.6 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in the planning of underground mining. Competence B.2.7 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in mine surveying.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 Operation and development of technologies	EstQF Level 7
Performance indicators: 1. applies knowledge of science, engineering and the field for the use of existing technology and technology being developed: a) physics, mathematics, informatics, economics, foreign languages and philosophy; b) material engineering*, visual geometry, technical drawing, mechanical engineering* and hydraulics*; c) geology, rock mechanics, mining operations, mining machinery*, basics of engineering geodesy and geology, the geographic information system (MGIS) and management of the environmental protection of mining, geological and mining risks; 2. combines general and specialisation-related engineering information to organise work and design the operation and maintenance of equipment; 3. selects the most suitable methods, technologies and procedures to perform engineering tasks; 4. finds the best solutions to complex professional problems using diagnostic methods to determine the causes of problems; 5. purposefully uses professional software and suitable information and communication technology (ICT) tools and opportunities; 6. observes professional standards and regulations, including environmental protection requirements. *optional for mine surveying specialisation	
B.2.2 Management	**EstQF Level 7**
Performance indicators: 1. plans and manages the activities of the team within their responsibility using appropriate management techniques 2. acquires the necessary resources and keeps their use in balance, ensuring that economic activities comply with legislation; 3. implements the principles of quality and environmental management of the organisation or unit and makes proposals to improve quality indicators; 4. passes on professional skills and knowledge and coordinates the work of those being supervised based on the developments in the field; 5. prepares and updates documents according to the purpose and target audience of the documentation.	

COMPETENTCES RELATED TO SPECIALISATION

Competence B.2.3 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in the opencast mining of mineral resources.

Competence B.2.4 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in the underground mining of mineral resources.

Competence B.2.5 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in the planning of opencast mining.

Competence B.2.6 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in the planning of underground mining.

Competence B.2.7 must also be certified when applying for the qualification of Diploma Mining Engineer specialising in mine surveying.

Opencast mining of mineral resources	
B.2.3 Opencast mining of mineral resources	**EstQF Level 7**
Performance indicators:	

1. manages and organises opencast mining based on the requirements of the mineral resources, the chosen methods and the technique
2. participates in studies of mineral deposits and mining fields, if necessary, based on developments in the field;
3. if necessary, organises the preparation of blasting operations in their company or its subdivision taking into account the specific nature of blasting operations and their impact on the working, natural and social environment;
4. leads and controls the organising of the mining area and the management of the environmental impact of mining based on environmental management principles;
5. leads and guides the treatment and enrichment of the extracted mineral matter based on the chosen method and technique;
6. controls the environmental impact of the processing of mineral resources and enrichment residue, guided by environmental impact management principles;
7. optimises the sale and transport of processing products to the consumer based on the principles of the economics of mineral resources.

Underground mining of mineral resources	
B.2.4 Underground mining of mineral resources	**EstQF Level 7**
Performance indicators: 1. leads and organises underground mining based on the selected methods and techniques; 2. participates in the preparation of projects to study mineral deposits and excavation fields following trends in the field; 3. organises ceiling management, airing and other specific underground processes following safety requirements; 4. organises the preparation of blasting operations in their company or its subdivision taking into account the specific nature of underground blasting operations and their impact on the working, natural and social environment; 5. leads and supervises the customisation of underground workings for secondary use taking into account geological and mining risks; 6. leads the management of environmental impact associated with mining during mining work and also during the maintenance of the excavated area, if necessary; 7. leads the processing and enrichment of the extracted mineral matter following the principles of managing the environmental impact of mineral processing; 8. optimises the sale and transport of processing products to the consumer based on the principles of the economics of mineral resources.	

Designing opencast mining	
B.2.5 Designing opencast mining	**EstQF Level 7**
Performance indicators: 1. selects the required normative documents based on the design documentation; 2. identifies and assesses opencast mining risks and risk factors and plans measures to prevent risks based on the company's risk analysis; 3. determines the volume of project documentation based on the project stages using calculation methodologies and suitable software; 4. puts together, revises and finalises project documentation using adequate software; 5. assembles the normative documents required for designing in accordance with the organisation of work.	

Designing underground mining	
B.2.6 Designing underground mining	**EstQF Level 7**
Performance indicators: 1. selects the required normative documents based on the design documentation; 2. identifies and assesses underground mining risks and risk factors and plans measures to prevent risks based on the company's risk analysis; 3. determines the volume of project documentation using calculation methodologies and suitable software; 4. puts together, revises and finalises project documentation using adequate software;	

5. assembles the normative documents required for designing in accordance with the organisation of work.

Mine surveying	
B.2.7 Mine surveying	**EstQF Level 7**
Performance indicators: 1. collects the basic data necessary for opencast and underground surveying according to the given task; 2. selects surveying equipment based on the task, checking its maintenance status; 3. measures the volume of extracted mineral matter and material covering mineral resources per array in accordance with the requirements established in legislation; 4. measures the volume of extracted and transplanted rocks and sediment by applying appropriate measurement techniques; 5. organises and guides the mine surveying carried out by subcontractors according to the task; 6. checks and analyses the conformity of measurement results with standards; 7. makes the necessary calculations and compiles drawings using the appropriate software; 8. documents measurement data and calculation results: completes, compiles and formalises the mine surveying report in accordance with the organisation of work and formatting requirements.	

RECURRING COMPETENCES

B.2.8 Recurring competences of Diploma Mining Engineer, Level 7	**EstQF Level 7**
Performance indicators: 1. is guided by the professional ethics and code of conduct of mining engineers (see Annex 1 “Mining engineer's code of ethics”). 2. complies with occupational safety and work environment requirements in their activities; 3. creates a positive environment for communication and selects the appropriate means of communication for the target group; 4. cooperates with institutions and cooperation networks associated with the profession; 5. keeps up to date with technological developments, navigates the various aspects of the occupation and makes proposals for innovative changes; 6. maintains and develops their professional skills, including professional communication skills; 7. provides information clearly, logically and in a manner understandable to the target audience; 8. uses a computer in their work according to the base modules and standard module 'Presentation' (see Annex 2 'Computer skills’); 9. in their work, uses at least one foreign language at the B2 level (see Annex 3 'Language skills level descriptions’).	
Assessment method(s): Recurring competences are evaluated as part of the assessment of the other competences listed in the occupational qualification standard.	

Part C
GENERAL INFORMATION AND ANNEXES

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	07-26042017-2.3/4k

2. Occupational qualification standard compiled by:	Allan Viil, Enefit Heini Viilup, Lemminkäinen Eesti AS Ole Sein, OÜ Inseneribüroo STEIGER Allan Koger, OÜ Inseneribüroo STEIGER Jaan Viru, OÜ Viru Markšeideribüroo Jaan Kallandi, Eesti Geodeetide Ühing Margus Kukk, Mäebüroo Nord OÜ Enno Reinsalu, TTÜ Geoloogia instituut Arno Paikles, Tehnilise Järelevalve Amet Arvi Hamburg, Eesti Inseneride Liit Andrus Stimmer, Eesti Mäeselts
3. Occupational qualification standard approved by:	Energy, Mining and Chemical Industry
4. No. of decision of Sectoral Council	6
5. Date of decision of Sectoral Council	26.04.2017
6. Occupational qualification standard valid until	19.04.2022
7. Occupational qualification standard version no.	4
8. Reference to International Standard Classification of Occupations (ISCO 08)	2146 Mining Engineers, Metallurgists and Related Professionals
9. Reference to European Qualifications Framework (EQF)	7
C.2 Occupational title in foreign language	
English:	Diploma Mining Engineer, EstQF Level 7
Russian:	Дипломированный горный инженер
C.3 Annexes	
Lisa 1 Mining Engineer's Code of Ethics	
Lisa 2 Computer Skills	
Lisa 3 Language skills level descriptions	