OCCUPATIONAL QUALIFICATION STANDARD

Chartered Mining Engineer, EstQF Level 8

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)
Chartered Mining Engineer, EstQF Level 8	8

Possible specialisation and titles on occupational certificate	
Specialisation	**Title on occupational qualification certificate**
Opencast mining of mineral resources	Chartered Mining Engineer, EstQF Level 8 Opencast mining of mineral resources
Underground mining of mineral resources	Chartered Mining Engineer, EstQF Level 8 Underground mining of mineral resources
Designing opencast mining	Chartered Mining Engineer, EstQF Level 8 Designing opencast mining
Designing underground mining	Chartered Mining Engineer, EstQF Level 8 Designing underground mining
Mine surveying	Mine Surveyor, EstQF Level 8

Part A
DESCRIPTION OF WORK

A.1 Description of work
The aim of Chartered Mining Engineer, Level 8 is to ensure the safe, environmentally sustainable and efficient extraction and processing of mineral resources. A chartered mining engineer is a senior specialist or expert with extensive knowledge and experience who plans and manages processes related to the extraction of mineral resources, including opencast and underground mine surveying. Their role is to maintain and improve technologies, create new knowledge and technologies, prepare standard documents and perform expert analyses and audits. As a leader, they are responsible for the strategic activities of a unit or organisation. They are ready to work in a team with engineers and specialists from connected fields (construction, geology and mechanics).
A.2 Tasks
A.2.1 Operation, development and improvement 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
Chartered Mining Engineer, Level 8 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
Technical manager of a company, department, bureau, task force, chief engineer, chief technologist, mining manager, project manager, consultant, expert or other leading specialist, leading project manager, researcher, senior researcher, head mine surveyor, mine surveyor.
A.8 Regulations governing profession
Having a Chartered 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 Chartered Mining Engineer. Competence B.2.3 must also be certified when applying for the qualification of Chartered Mining Engineer specialising in the opencast mining of mineral resources. Competence B.2.4 must also be certified when applying for the qualification of Chartered Mining Engineer specialising in the underground mining of mineral resources. Competence B.2.5 must also be certified when applying for the qualification of Chartered Mining Engineer specialising in the planning of opencast mining. Competence B.2.6 must also be certified when applying for the qualification of Chartered Mining Engineer specialising in the planning of underground mining. Competence B.2.7 must also be certified when applying for the qualification of Chartered Mining Engineer specialising in mine surveying.

B.2 Competences

MANDATORY COMPETENCES

B.2.1 Operation, development and improvement of technologies	EstQF Level 8
Performance indicators: 1. applies knowledge of science, engineering and the field for the use and improvement of existing technology or for the creation of new technology: a) physics, mathematics, informatics, economics, foreign language(s) and philosophy; b) material engineering, engineering graphics, mechanical engineering and hydraulics; c) geology, rock mechanics, mining operations, mining machinery, basics of engineering geodesy and geology, the mining geographic information system (MGIS), management of the environmental protection of mining, geological and mining risks, principles of sustainable use of mineral resources and methods of economic analysis; 2. combines general engineering information with knowledge related to specialising to optimise existing technology and technology under development and to develop new solutions; 3. designs, develops and implements technological solutions taking into account aspects of cost, safety, reliability, quality, environmental impact, etc.; 4. assesses the applicability of new technologies in their field taking into account user needs, the market situation and constraints; 5. based on their specialist knowledge, compiles an impartial expert's opinion or response to a study according to the expertise and audit tasks; 6. purposefully uses information and communication technology (ICT) tools, modelling and simulation, analysis and synthesis techniques; 7. uses solution methods across technical and economic fields (information technology, market information, economy and environmental protection) related to the field of mining; 8. observes professional standards and regulations, including environmental protection requirements. *optional for mine surveying specialisation	
B.2.2 Management	**EstQF Level 8**
Performance indicators: 1. manages teams and coordinates project activities using appropriate management techniques and systems; 2. keeps the project's planned budget and activities in compliance with legislation; 3. implements the principles of quality and environmental management of the organisation or unit, adjusting quality indicators; 4. identifies the abilities and development needs of employees and plans their development; 5. passes on professional skills and knowledge and coordinates the work of those being supervised based on the developments in the field; 6. compiles standard documents.	

COMPETENTCES RELATED TO SPECIALISATION

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

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

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

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

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

Opencast mining of mineral resources	
B.2.3 Opencast mining of mineral resources	**EstQF Level 8**
Performance indicators: 1. manages opencast mining based on the requirements of the mineral resources, the chosen methods and the technique; 2. if necessary, coordinates 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; 3. coordinates the inspection of mining claims and excavation fields, if necessary, based on developments in the field; 4. if necessary, coordinates the preparation of projects studying mineral deposits based on developments in the field; 5. manages and controls the maintenance of the mined area and the environmental impact of mining, guided by principles of controlling the impact of mining; 6. leads and guides the treatment and enrichment of the extracted mineral matter based on the method, technique and quality requirements; 7. controls the environmental impact of the processing of mineral resources and enrichment residue, guided by environmental impact management principles; 8. 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 8**
Performance indicators: 1. leads and organises underground mining based on the selected methods and techniques; 2. coordinates 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; 3. coordinates the inspection of mining claims and excavation fields, if necessary, based on developments in the field; 4. manages the operation of mountain pressure management, airing and other processes specific to underground work in their company; 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. manages and supervises the treatment and enrichment of the extracted mineral matter following the principles of environmental impact management; 8. optimises the sale and transport of processing products to the consumer based on the principles of controlling the environmental impact of mineral processing.	

Designing opencast mining	
B.2.5 Designing opencast mining	**EstQF Level 8**
Performance indicators: 1. manages and guides design: selection and use of prototypes and normative documents based on design documentation and best practice; 2. identifies and assesses risks and risk factors and plans measures to prevent risks based on risk analysis; 3. determines the project volume using calculation methodologies and design software; 4. checks and assesses the compliance of projects with established criteria; 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 8**
Performance indicators: 1. manages and guides design: selection and use of prototypes and normative documents based on design documentation and best practice;	

2. identifies and assesses risks and risk factors and plans measures to prevent risks based on the company's risk analysis; 3. determines the project volume using calculation methodologies and design software; 4. checks and assesses the compliance of projects with established criteria; 5. assembles the normative documents required for designing based on the organisation of work.

Mine surveying	
B.2.7 Mine surveying	**EstQF Level 8**
Performance indicators: 1. organises the collection of basic data necessary for opencast and underground surveying; 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 and completes, compiles and formalises the mine surveying report.	

RECURRING COMPETENCES

B.2.8 Recurring competences of Chartered Mining Engineer, Level 8	**EstQF Level 8**
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. establishes communication networks for cooperation using electronic media tools and channels; 5. navigates the various aspects of the occupation, keeps up to date with technological developments and makes proposals for innovative changes; 6. maintains and develops their professional skills, including professional communication skills; 7. cooperates with institutions and cooperation networks associated with the profession and with cross-cutting project teams; 8. provides information clearly, logically and in a manner understandable to the target audience; 9. uses a computer in their work according to the base modules and standard module 'Presentation' (see Annex 2 'Computer skills’); 10. 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	07-26042017-2.4/4k

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)	8
C.2 Occupational title in foreign language	
English:	Chartered Mining Engineer, EstQF Level 8
Russian:	Уполномоченный горный инженер
C.3 Annexes	
Lisa 1 Mining Engineer's Code of Ethics	
Lisa 2 Computer Skills	
Lisa 3 Language skills level descriptions	