OCCUPATIONAL QUALIFICATION STANDARD

Diploma Biomedical 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 Biomedical Engineer, EstQF Level 7	7

Part A
DESCRIPTION OF WORK

A.1 Description of work
Biomedical engineers work in health institutions, companies manufacturing, installing, maintaining and/or repairing medical devices, universities, test laboratories or other companies. The goal is to support the safe and high-quality functioning of contemporary medicine through engineering, medical physics and medical information technology applications. The activities of Diploma Biomedical Engineer, EstQF Level 7 consist of medical physics, medical information technology or engineering works, incl. tasks related to the selection, installation, operation and repairing of medical devices. The job entails operating in situations requiring an interdisciplinary approach both independently and in teams. When working in health care institutions, the requirements in force in clinical environments must be observed. There is a possibility of contact with poisonous materials, infectious materials or ionising radiation, which requires the use of protective equipment in accordance with the nature of the job.
A.2 Tasks
A.2.1 Operating medical devices and systems A.2.2 Improving medical devices and systems
Elective areas of work
A.2.3 Developing medical devices and systems A.2.4 Management
A.3 Professional preparation
Diploma Biomedical Engineer, EstQF Level 7 has a professional Master's degree and sufficient work experience and has undergone further training.
A.4 Most common occupational titles
Medical engineering technologist, quality engineer, medical physicist, medical technology specialist, sales engineer, etc.

Part B
COMPETENCY REQUIREMENTS

B.1 Structure of occupation
Competences B.2 and B.3.1 - B.3.2 must be certified when applying for the qualification of Diploma Biomedical Engineer, EstQF Level 7. Certification of optional competences B.3.3 and B.3.4 is not mandatory.

B.2 General skills of Diploma Biomedical Engineer, EstQF Level 7
1. In their activities, Authorised Biomedical Engineering Technologist, Level 7 relies on knowledge of engineering and medical physics: a) general science (higher mathematics, higher physics, physiology and anatomy); b) engineering (information technology, engineering graphics, electrical engineering, measuring technology and signal- and image-processing); c) concepts of biomedical technology, research methods, potential applications, theoretical trends and topical issues; d) principles of the organisation of medical technology and project management; e) national and international performance, safety and environmental standards pertaining to operations and quality control; f) principles of medical informatics. 2. They participate in team work, share all necessary and useful information with others and work to achieve the best joint result. 3. They create a positive communication environment and act in accordance with best practice in communication. 4. They make use of opportunities for self-improvement and keep informed of developments in professional technology. 5. They use at least Estonian and English at the B1 level (see Annex 1 – Language skills level descriptions). 6. They are guided by the professional ethics and code of conduct of engineers (see Annex 2). 7. They use the sub-skill of digital skills in their job: safety and content creation at the Basic user level and problem-solving, information-processing and communication at the Independent user level (see Annex 3 – Scale of self-assessment in digital competence).

B.3 Competences

MANDATORY COMPETENCES

B.3.1 Operating medical devices and systems	EstQF Level 7
Performance indicators: 1. Follows all procedures for operating existing devices and systems, in line with quality standards. 2. Defines and solves engineering tasks using general and specialised expertise in engineering or medical physics. 3. Advises users on the operation of devices and systems and offers technical support.	
B.3.2 Improving medical devices and systems	**EstQF Level 7**
Performance indicators: 1. Analyses and optimises the performance of devices and systems and carries out compliance checks. 2. Identifies the need for changes, instigates the changes and implements them, bearing in mind technological developments. 3. Analyses the combined impact of system-wide risks and takes measures to manage them.	

OPTIONAL COMPETENCES

Certification of optional competences B.3.3 and B.3.4 is not mandatory.

B.3.3 Developing medical devices and systems	EstQF Level 7
Performance indicators: 1. Devises, engineers and tests devices or their components. 2. Puts together the technology for manufacturing a device and the product's technical documentation.	
B.3.4 Management	**EstQF Level 7**
Performance indicators: 1. Initiates activities, manages their progress and goal-oriented development and makes management decisions. 2. Manages activities: Sets goals, guides and informs, supervises and controls the performance of employees, following the principles of management and organisational behaviour.	

3. Develops and finds resources, monitors and analyses processes and organises problem-solving.

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	24-06112024-2.4/6k
2. Occupational qualification standard compiled by:	Andres Kaalep, SA Põhja-Eesti Regionaalhaigla Andrus Aavik, SA Tartu Ülikooli Kliinikum Annika Mikola, SA Põhja-Eesti Regionaalhaigla Eduard Gerškevitš, SA Põhja-Eesti Regionaalhaigla Jaanus Lass, AB Medical Group, Eesti Biomeditsiinitehnika ja Meditsiinifüüsika Ühing Joosep Kepler, SA Pärnu Haigla Kalle Kepler, Tartu Ülikool Maie Bachmann, Tallinna Tehnikaülikool Marko Parve, AS Ida-Tallinna Keskhaigla
3. Occupational qualification standard approved by:	Engineering, Manufacturing and Processing
4. No. of decision of Sectoral Council	32
5. Date of decision of Sectoral Council	06.11.2024
6. Occupational qualification standard valid until	08.04.2025
7. Occupational qualification standard version no.	6
8. Reference to International Standard Classification of Occupations (ISCO 08)	2149 Engineering Professionals Not Elsewhere Classified
9. Reference to European Qualifications Framework (EQF)	7
C.2 Occupational title in foreign language	
English:	Diploma Biomedical Engineer, EstQF Level 7
C.3 Annexes	
Lisa 1 Language skills level descriptions	
Lisa 2 Engineer's Professional Ethics and Code Of Conduct	
Lisa 3 Scale of self-assessment in digital competence	