MINISTER OF EDUCATION, SCIENCE AND SPORT OF THE REPUBLIC OF LITHUANIA

ORDER
ON APPROVAL OF THE DESCRIPTOR OF THE STUDY FIELD OF MEDICAL TECHNOLOGY

24 February 2021 No. V-301
Vilnius

In accordance with Paragraph 11 of Article 53 of the Law on Higher Education and Research of the Republic of Lithuania:

1. I approve the Descriptor of the Study Field of Medical Technology (enclosed).

2. I determine that the higher education institutions have to adjust their study programs to the Descriptor of the Study Field of Medical Technology approved by Clause 1 hereby until 01 September 2021.

Minister of Education, Science and Sport Jurgita Šiugždinienė

APPROVED
by Order No. V-301 of the Minister of Education, Science and Sport of the Republic of Lithuania of 24 February 2021

DESCRIPTOR OF THE STUDY FIELD OF MEDICAL TECHNOLOGY

CHAPTER I
GENERAL PROVISIONS

1. The Descriptor of the Study Field of Medical Technology (hereinafter – Descriptor) regulates special requirements for the study programs in the study field of medical technology (G09) that belongs to the group of study fields of health sciences (G). The Descriptor regulates the study field of medical technology (hereinafter – field of medical technology) in the scope not covered by the General Requirements for the Studies approved by Order No. V-1168 of the Minister of Education and Science of the Republic of Lithuania of 30 December 2016 "On approval of the General Requirements for the Studies."

2. The Descriptor was prepared in consideration of the European Federation of Radiographer Societies (EFRS): European Qualifications Framework (EQF) Level 6 Benchmarking Document: Radiographers (2018); www.efrs.eu and the EFRS: European Qualifications Framework (EQF) Level 7 Benchmarking Document: Radiographers (2017); www.wfrs.eu recommendations; Council Directive 2013/59/Euratom of 5 December 2013 laying down basic safety standards for protection against dangers arising from exposure to ionising radiation (hereinafter – Directive 2013/59 EURATOM), the document of the European Commission, Radiation protection No 174. European guidelines on medical physics expert; International Standard Classification of Occupations ISCO-08/International labour office, V1, Geneve: ILO 2012, and the European Federation of Organisations for Medical Physics (EFOMP): Policy statement No. 12: The present status of medical physics education and training in Europe. New perspectives and EFOMP recommendations (2010); the International Organisation of Medical Physicists (IOMP) Policy Statement No. 1 (17 June 2010): The Medical Physicist: Role and Responsibilities; the European Association of Nuclear Medicine (EANM) Technologist Committee: Benchmark Document on Nuclear Medicine Technologists' Competencies, 2017, and the recommendations of the EAMN-EFOMP paper Curriculum for education and training of Medical Physicists in Nuclear Medicine: Recommendations from the EANM Physics Committee, the EANM Dosimetry Committee and EFOMP, 2013.

3. The Descriptor shall be applied to the college and university studies of the first cycle and second cycle conducted as full-time or part-time studies

4. The studies of medical technology may be provided as a part of the study programs classified under two study fields and within interdisciplinary study programs. The study programs under two study fields and within interdisciplinary study programs may be organised together with the programs of physics (C02), chemistry (C01), bioengineering (E02), biotechnology (F05), materials technology (F03), genetics (D02), molecular biology (D03), biophysics (D05), biochemistry (D06) and other related study fields. The program classified under two study fields has to satisfy the requirements of the descriptors of both fields, while the interdisciplinary study program has to satisfy the requirements of the descriptor of major study fields and those requirements of the second field that are directly related to the program's structure and implementation.

5. There are no special requirements established in the Descriptor for the persons, seeking admission to college and university study programs of the first cycle in the field of medical technology.

6. The persons may be admitted to the studies of the second cycle in the field of medical technology according to the procedure established by the university, if:

6.1. they have completed the university studies in the field of medical technology and have acquired the bachelor's degree;

6.2. they have completed the university studies in the fields of physical sciences (Physics, C02; Chemistry, C01), life sciences (Biophysics, D05, Biochemistry, D06), engineering sciences (Bioengineering, E02); technological sciences (Materials Technology, F03; Biotechnology, F05), and have acquired the bachelor's degree;

6.3. they have completed the studies in other fields of physical sciences (C), mathematical sciences (A), technological sciences (F), engineering sciences (E), life sciences (D), health sciences (G), have acquired the bachelor's degree, and have attended additionally basic modules of the study program in the field of medical technology (G09) established by the university in the volume of at least 12 study credits;

6.4. they have completed the college studies in the field of medical technology, have acquired the professional bachelor's degree, and have completed the bridging courses in the study field of medical technology at the university, the volume whereof cannot be less than 60 study credits.

7. The main goal of studies of all cycles in the field of medical technology is to provide the knowledge and comprehensive understanding to the graduates about medical technologies, their role in medicine and their application possibilities, when solving relevant problems of society's health promotion, also to train critical thinking, reasoning skills, ability to assess creatively and professionally the problematic situations and to make adequate decisions based on deep knowledge and competences in own area.

8. Upon completion of the studies in the field of medical technology, graduates will have the skills, necessary to evaluate and use existing knowledge of medical technologies, physics, medicine, information technologies in their activities, will have the competences to assess and use the medical technologies and to install the new ones, to conduct pertinent scientific research, to assess and analyse research results, will be able to think creatively and critically, to apply the knowledge in science and technologies in order to solve complex problems, to reason and communicate the solutions and ideas in the areas of society's health promotion and improvement of life quality, to cooperate with the representatives of other science fields, to assess critically the progress of medical technologies, their impact and importance for the society's development, to maintain and improve own professional competencies through the lifelong learning.

9. After completing the studies in the field of medical technology, the professional bachelor's /bachelor's or master's degree in health sciences that is in conformity with the sixth/seventh level of the Lithuanian Qualifications Framework and the European Qualifications Framework for lifelong learning, and first/second cycles of the Framework for Qualifications of the European Higher Education Area attested by the diploma and its supplement issued by the higher education institution is awarded. After completing the study programs of biomedicine diagnostics or biomedical diagnostics in the field of medical technology and receiving the professional bachelor's or bachelor's diploma in health sciences, graduates shall also receive the professional qualification of biomedical technologist. After completing the study programof medical physics in the field of medical technology, graduates shall be awarded with the master's degree in health sciences and may apply for licencing as medical physicist.

CHAPTER II
CONCEPT AND SCOPE OF THE STUDY FIELD

10. This Descriptor covers only the fields of technology that are closely related to medicine and does not describe other study fields, where technology is not linked with medicine. Medical technology is a constituent of health technologies defined by the World Health Organisation as "application of organized knowledge and skills in the form of devices, medicines, vaccines, procedures and systems developed to solve a health problem and improve quality of lives" (WHO Resolution of health technologies WHA60.29, 2007). Medical technologies are the technologies related to use and/or development of medical devices and measures, therapy, diagnostics, imaging,

information technologies, and other health care products and services; application, improvement and creation of research methods intended to prevent, diagnose, observe, treat the diseases, as well as rehabilitation.

11. Medical technologies are closely related to medicine, other technologies, life and natural sciences, and social sciences. The main working area of medical technology professionals is personal health care. It is based on deep knowledge in medical technologies, when new knowledge is applied and generated (especially in the area of application of artificial intellect in medicine), when new and advanced technologies are applied and introduced in clinical environment (especially, when new diagnostic and imaging and therapeutic methods and equipment are developed), and when intellectual potential is integrated into the performed researches and projects directed towards the national and priorities listed in the strategical documents of Lithuania and the European Union listed in Chapter I herein.

12. In the case when study programs in the field of medical technology, upon completion of which the qualification is acquired that is attributed to the group of professions regulated by the State, or when the content, requirements and learning outcomes of the study program and professional activities of the graduates are governed by international legal acts and normative documents and guidelines of the professional organisations of certain field, the following specific requirements are set for the descriptors:

12.1. the content and the learning outcomes of the study program, and the professional qualification, or upon completion whereof the acquired competences have to satisfy the requirements of certain professions, have to be in compliance with the international and legal acts regulating certain professions or qualifications;

12.2. when the study programs classified under two study fields and within interdisciplinary study programs are taught, the analysis of harmony with the included modules from other study fields has to be performed, and the theoretical and applied aspects of complex studies have to be taken into consideration.

13. The specialisations of nuclear or nanomedicine, diagnostics and imaging, and therapy are available in the field of medical technology. The specific subjects needed for applied professional activities have to be included.

14. The graduates of medical technology study programs can work in public and private health care institutions and laboratories, hospitals and radiation treatment and diagnostic centres, in biotechnological or pharmaceutical companies, research and educational institutions, and complete 2nd cycle (Master's) or 3rd cycle (PhD's) further training.

15. The knowledge acquired during the course of studies creates preconditions for the graduates in the field of medical technologies for independent lifelong learning.

CHAPTER III
GENERAL AND SPECIAL LEARNING OUTCOMES

16. The underlying general and special learning outcomes aimed in the field of medical technology are indicated in this chapter. Detailed requirements and learning outcomes of the programs, the graduates whereof acquire (or may acquire) professional qualification are provided in the national and international legal acts and documents governing the professional activities, as well as in the guidelines of professional organisations listed in Chapter I herein.

17. The college studies are aimed to provide basic education in the area of medical technologies for the graduates and to develop their ability to use the acquired knowledge professionally or for continued studies in the second cycle. After completing of college studies of the first cycle in the field of medical technology, the following learning outcomes have to be achieved:

17.1. Knowledge, its application. The person:

17.1.1. knows the fundamentals of human anatomy, physiology and pathological processes that take place in the human organism, has basic knowledge of medicine, biology and social sciences and is able to apply it for solution of theoretical and practical tasks;

17.1.2. knows modern technologies used to process medical images and special methods of medical imaging;

17.1.3. knows the essence and principles of medical examinations, basis of metrology and medical statistics;

17.1.4. has fundamentals of preparation and management of documents and accounting in health care institutions, and is able to apply this knowledge according to the competence;

17.2. Research skills. The person:

17.2.1. is able to use the information technologies and resources, to find professional information, to analyse and interpret the scientific literature sources;

17.2.2. is able to formulate the objectives and tasks for the research work;

17.2.3. is able to apply the knowledge acquired in the course of studies of medical technology practical and scientific problems solution;

17.3. Special abilities. The person:

17.3.1. is able to prepare the patient for medical examination or procedure, and to select the appropriate means;

17.3.2. is able to arrange the work place for examination, to use the equipment and medical means (devices), to assess the working conditions, to understand the operational principles of medical means (devices) and their maintenance, and to apply the principles of work safety;

17.3.3. is able to carry out medical examinations, medical imaging procedures, and actions that require knowledge of medical technologies according to the approved protocols;

17.3.4. is able to evaluate the conformity of results with the recommended values or underlying biological values, to apply the correction and prevention actions for unconformities, and to present the work results according to the established procedures;

17.3.5. is able to understand and apply the quality control principles and to analyse the influence of various factors on working results;

17.4. Social abilities. The person:

17.4.1. is able to communicate and cooperate with health care personnel and other specialists while solving professional activity tasks;

17.4.2. is able to work individually and in team, takes responsibility for individual and teamwork quality, follows professional ethics and public spirit;

17.4.3. is able to convey professional knowledge to colleagues, to consult health care specialists and patients according to own professional competence;

17.4.4. is able to promote healthy lifestyle and means of disease prevention and health preservation;

17.5. Personal abilities. The person:

17.5.1. is able to plan own time and work rationally, to make independent decisions and to assess their impact;

17.5.2. is able to assume moral responsibility for impact of own activities and their results on the patients and environment;

17.5.3. is able to choose independently the strategies and methods of its own continuous learning and development in professional area, and to apply the acquired knowledge practically.

18. The university studies of the first cycle in the field of medical technology are directed to universal basic university education, theoretical preparation for work in the health care system, and development of professional skills. After completing the first cycle of study at a university in the field of medical technology, the following learning outcomes have to be achieved:

18.1. Knowledge, its application. The person:

18.1.1. knows the requirements of work safety (including radiation), has fundamental knowledge of human anatomy, physiology and pathological processes occurring in the human body, has basic knowledge of medicine, radiology, biology, biostatistics and social sciences;

18.1.2. knows and is able to apply the results and methods of fundamental and applied scientific research to solve the problems of technological work;

18.1.3. knows practical and scientific principles in the field of medical technology, the development perspectives and their relationships with other research fields;

18.1.4. is familiar with management principles of medical technology resources and quality assurance principles;

18.1.5. is familiar and is able to manage relevant documentation according to own competence in health care institutions or in the institutions, the activities whereof are related to application, designing and development of medical technologies and equipment.

18.2. Research skills. The person:

18.2.1. is able to collect, analyse and interpret independently the necessary professional and scientific information in the databases and other information sources;

18.2.2. is able to apply the knowledge acquired in the course of studies of medical technology to solve practical and scientific problems;

18.2.3. is able to plan the imaging procedures, to operate the radiological examination and other medical imaging equipment, and to provide assessment of the performed examinations;

18.3. Special abilities. The person:

18.3.1. is able to select and apply the necessary equipment for the research, trains own professional identity while performing research in the field of medical technologies or interdisciplinary scientific research;

18.3.2. is able to apply the theoretical and applied knowledge to solve technological problems;

18.3.3. is able to assess the ethical, environmental protection and commercial circumstances of application and impact of medical technologies;

18.3.4. is able to select independently the complex technological, organisational and methodical means, to assess the work organisation principles, importance of work safety and the main requirements, as well as interrelation between the links of medical technologies application processes;

18.4. Social abilities. The person:

18.4.1. is able to communicate in the native and foreign language in intercultural and multi-sectorial environment;

18.4.2. is able to understand the principles of communication and cooperation and is not afraid to take the responsibility;

18.4.3. is able to communicate and convey the science-based knowledge to specialists and society;

18.4.4. is able to make independent decisions and to assess their impact under predefined situation circumstances;

18.4.5. is able to use modern communication means and social networks to convey professional and other information;

18.4.6. is able to manage and understand the importance of social activeness, to plan and implement the individual and team activities, and to assess their quality;

18.5. Personal abilities. The person:

18.5.1. is able to work efficiently as an individual and in team;

18.5.2. is able to communicate with doctors, nurses, IT specialists, engineers, technologists, and with general public;

18.5.3. is able to assess the impact of biomedical and medical technological decisions on the patients, society and environment, complies with professional ethics and activity requirements applied in health care institutions, and understands his/her responsibility working as medical technologist;

18.5.4. is able to manage projects and business aspects (management of risk and changes, effect of health management scale, etc.), and understands the links between the solutions of medical technologies and their economic consequences;

18.5.5. is able to assess the importance of lifelong learning and to prepare for it.

19. A second-cycle university study program has to ensure the preparation of graduates for independent work in clinical environment, scientific or business institution that needs deep professional knowledge and skills. After the completion of university studies of the second cycle in the field of medical technology, the following learning outcomes have to be achieved:

19.1. Knowledge, its application. The person:

19.1.1. knows well practical and scientific principles of medical technologies and development tendencies of biological systems and modern medical technologies;

19.1.2. knows the legal aspects of the creation, development, implementation and application of medical technologies in medical practice and R&D activities; is able to apply them for the solution of health problems and generation of innovation;

19.1.3. demonstrates systematic and deep physical, medical, biological, IT and other program specific knowledge, that are basis for original thinking and/or scientific research; while carrying out the scientific research, demonstrates the ability to apply creatively obtained knowledge in a new or unknown (especially interdisciplinary) environment in order to identify, analyse and assess the problems and to solve the formulated tasks;

19.1.4. knows modern imaging and diagnostic methods, technologies and equipment (radiation diagnostics, nuclear magnetic resonance, ultrasound, molecular diagnostics, etc.), and methods, technologies and equipment of modern therapy (radiation therapy, laser therapy, light therapy, photo simulated therapy, thermal and cryogenic therapy, etc.), as well as nuclear and nanomedicine;

19.1.5. is familiar with the legal basis in the field of occupational safety (including radiation protection) and the quality assurance system in health care sector , as well as with legal aspects related to the specialty;

19.1.6. is able to work with biomedical databases; to analyse the data, create and apply the control models;

19.2. Research skills. The person:

19.2.1. is able to integrate the physical and medical knowledge for problems solution and to apply them in professional activities (in medical institutions, diagnostic centres, research institutes), as well as for organisation and performance of scientific research or for planning R&D activities;

19.2.2. is able to identify practical and scientific health care problems, formulate the tasks for problems' solution; to plan methods, equipment and performance of the experimental investigation, and make independent and responsible decisions within the interdisciplinary context, and estimate the possible alternatives;

19.2.3. is able to assess the suitability of chosen equipment and tools and adequacy of methodologies suggested for solving of problems arising in scientific and clinical environment, provide and implement the recommendations when developing new medical technologies and equipment;

19.2.4. is able to analyse, synthesise and assess the research data necessary for studies, scientific and professional activities and innovation implementation, and make the conclusions;

19.2.5. is able to select and apply the appropriate analytical and modelling methods and techniques necessary to solve the performance problems, to carry out the applied and fundamental scientific research, and to implement the innovations; as well as develop new models intended for the solution of health promotion problems;

19.2.6. is able to identify and perform medical procedures in conformity with individual needs of the patients, to apply the optimisation principles and innovative research and treatment methods and technologies according to own competencies;

19.3. Special abilities. The person:

19.3.1. is able to work in the radiotherapy, radiology, diagnostic, nuclear and nanomedicine and other departments of health care institutions and in other institutions, the activities whereof are related to the use and development of medical technologies and equipment, according to own competence;

19.3.2. is able to choose and use modern medical technologies for patient treatment and diagnosis and for scientific research;

19.3.3. is able to plan and evaluate patient's treatment doses in radiotherapy and provide recommendations on the dosimetry issues (for medical physicists only);

19.3.4. is able to solve actively and competently the problems of optimisation of medical examinations and procedures and quality assurance problems;

19.3.5. is able to provide relevant examination data according to the legal procedure and to consult on use and development of medical technologies.

19.4. Social abilities. The person:

19.4.1. is able to communicate the summarised and critically evaluated information to specialists and society in clear and reasoned mode;

19.4.2. knows health, safety and legal problems and responsibility related to medical technologies, understands the impact of decisions on society and environment, complies with professional ethics and requirements for professional activities, takes the responsibility for own activities;

19.4.3. is able to work individually and in interdisciplinary team together with other medical professionals, engineers or technologists, who are developing innovative medical devices and technologies, and to make proposals according to own competence;

19.4.4. has management and creative cooperation skills, is able to participate and supervise R&D projects;

19.4.5. is able to form the team to achieve the identified professional and scientific goals and to solve the particular problems; can critically evaluate professional work of the colleagues and take responsibility for the work of whole team; is able to assess the quality of the results of the performed activity.

19.5. Personal abilities. The person:

19.5.1. is able to organise and plan independently and responsibly it's own professional and research activities and the learning process, and has skills of learning culture needed for self-development;

19.5.2. is able to think critically and analytically, to analyse the information sources independently, to use information technologies, to reflect its own professional growth, and to recognise the importance of lifelong learning;

19.5.3. is able to use the research knowledge, experience and strategy of systemic thinking in own professional and scientific work;

19.5.4. is able to evaluate the scientific problems adequately, to use creativeness, discipline and responsibility when searching for solution methods, to make independent innovative decisions, to reach conclusions and generalisations.

CHAPTER IV
TEACHING, LEARNING AND ASSESSMENT

20. The idea of lifelong learning has to be implemented during the studies. Students have to be prepared and encouraged to take their responsibility for their learning. The study program, its content and didactic system have to motivate students to use the available sources and resources for learning, while the teachers should be encouraged to include innovations into the teaching process.

21. Organisation of teaching/learning process should be flexible. Depending on the needs of the learners, the possibility should be provided for the students to make an individual curriculum and to choose the modules that are needed to acquire special skills.

22. Students and teachers should be encouraged to use the possibilities of academic mobility and to integrate the dimension of knowledge and experience of international level into the process of teaching/learning.

23. Teaching has to be based on the latest scientific achievements and concepts in the area of medical technologies and development and application of research methods for solving problems of

the health promotion (treatment,, diagnostics), and to reflect the relations with other fields of science and studies.

24. Teachers have to know and understand the didactic concept of the teaching/learning process; their competence must meet the requirements of the study program; they have to be able to construct the curriculum of the subject/module according to the study program, to which the respective subject/module belongs, to apply the latest scientific research results, to know the links of the taught subject/module with other research or study fields, to have an interdisciplinary approach to the problem solution, to be able to improve the teaching content, to select the appropriate student-oriented teaching methods and assessment modes of the students' achievements, and create more effective teaching methods.

25. Teaching/learning methods have to be effective and versatile. Tasks of independent learning have to comply with the learning outcomes of the study program and to motivate students. The teaching and learning time as well as material resources (libraries, laboratories, equipment, etc.) should be explored in a rational way.

26. The following learning and teaching methods may be applied: traditional and interactive lectures, lectures given by guest lecturers (practitioners), excursions and field visits, seminars, laboratory works, case analyses, problem analysis and their solution sessions, work with imitation models, individual and group projects, discussions, presentation sets of reports, consultations, also teaching/learning virtualisation, if part of the studies is conducted in the remote mode, and other methods. The same methods may be applied in different cycles of study programs; however, their application in the second cycle has to be based on more exhaustive understanding of the content, more complex tasks, expression of the student's independence, etc.

27. Organisation of practical training:

27.1. practical training (practice) is compulsory for the students of the first cycle. The volume of practical training in case of university studies cannot be less than 15 credits, and in case of college studies – at least 30 credits. During the practical training, the educational institution initiates contract for practical training between the student and practical training institution (entity, company, and organisation) that would have enough material and human resources for practical training and that would accept the trainee. Practical training may be also performed in the structural unit of the higher education institution. The learning outcomes of practical training and the competences acquired by the trainee shall be assessed in the procedure established by the higher education institution;

27.2. practical training is not compulsory for the students of the second study cycle.

28. Research work has to be planned in case of the university studies (preferably conducted with potential employers or stakeholders), as well as the development of transferrable skills. The didactic system of the study program has to encourage and create preconditions for application of analytical, practical and transferrable skills. It is recommended to use the results of research work as the basis for the final work however, each higher education institution and persons preparing the study program may decide, how to treat this aspect in consideration to the structure of particular study program.

29. The content of the research work of the second cycle has to be directed to the solution of scientific, technological and methodological problems in the field of medical technologies. The field's didactic system has to ensure training of the students' creativity, analytical, metacognition skills, enable the students to use the acquired knowledge in practice, to identify the problems and to provide the problem's solution tactics and strategy within the scope of available technical and/or technological resources, to observe and control the process of task execution, and to reflect own work with regard to newly obtained knowledge and skills.

30. Teaching of students, cooperation of teachers and supervisors of practical training or research works in the company, while preparing individual tasks for the student, as well as helping in their implementation, clarification of the processes in the company accepting the students, as well as participation of teachers and supervisors in the evaluation of the student's reports are obligatory constituents of the students' practical training or research work.

31. The evaluation of student's achievement has to be reliable and based on clear, predefined criteria. Working conditions and available resources have to be taken into consideration. Evaluation criteria have to reflect the conformity of the level of the knowledge and skills acquired by the student with the aimed learning outcomes defined in the study program. The student should be granted an opportunity to take part in decision making on the evaluation modes and criteria of learning outcomes, quantity and scope of tasks.

32. When the teachers are assessing the learning outcomes, they have to comply with the principles of objectivity, clarity, impartiality, mutual respect and goodwill. Students' participation in the self- assessment process should be aimed at.

33. All the knowledge and skills described in the learning outcomes should be assessed in the way which indicates that the students have (have acquired) the respective knowledge and skills. Depending on the specificity of the program and the level of studies (college, university studies of the first or second cycle), teachers can choose various assessment methods, such as: examination (oral or written), tests, problem solving exercises, analysis of problem solution, colloquiums, written works (review of literature, report, essay, etc.), oral and poster presentations and reports, reports and defence of laboratory works, reports on practical training, their public presentation and defence, reports on individual or group projects, their public presentation and defence, self-assessment, peer review, report on research work, its public presentation and defence, final work, its public presentation and defence (incl. questions and answers session), etc.

34. An important part of the assessment of the learning outcomes is the feedback to the students on their achievements (outcomes) and justification of the evaluation, as well as the feedback from students to teachers, the purpose whereof is to improve and develop the efficiency of teaching/learning process and to improve the teaching quality. The students have to receive timely information about their works. Their evaluation has to be based on clear criteria and supported by constructive comments. Students should have opportunity to discuss with the teachers (evaluators) about all the aspects of their studies, including the given final grade.

35. The assessment system of the learning outcomes related to the study program should be clearly documented and should enable the higher education institution to make sure that the students completing the study program have achieved all the learning outcomes provided in the study program.

36. Individual evaluations of the subjects must not be made public.

CHAPTER V
REQUIREMENTS FOR IMPLEMENTATION OF STUDY PROGRAMS

37. The higher education institutions are responsible for suitability of their resources, including human resources, for the study programs of medical technologies.

38. The study program has to satisfy the requirements for study programs established in the Descriptor and other legal acts; it has to be relevant, conform the level of the research and study field, be continuously updated and improved; it has to reflect the changes in the research and study fields and to respond to the needs of the companies open to knowledge in medical technologies, as well the needs of state and society. The program's executors have to ensure that the topics related to the latest scientific achievements in the field are included into the program, in order to introduce the students to the innovations in the field during the studies and enabling them to apply the innovations in their daily work, and encouraging them to predict the development perspectives of the study field.

39. The purpose of the study program should be clear, learning outcomes should be attainable and reflect the specificity, uniqueness and scope of the study program. The structure of the study program has to satisfy the particularity of the field of medical technologies and to have clearly stated orientation of practical activities.

40. The structure of the study program has to be constructed in the way to satisfy the needs of various expected groups of students (including international and integrated), which are related to

the duration and intensity of the studies, variety of schedules, geographical peculiarities, possibility to form an individual curriculum, and combinations of qualifications.

41. The teachers of the study programs must have the required professional qualification and scientific and practical competences of the taught subject.

42. The educational institution has to provide a possibility and encourage interinstitutional cooperation of teachers, international exchange, attraction and integration of high-level scientific practicians from Lithuania and abroad into the process of students' education

43. Requirements for the teachers:

43.1. at least 50 percent of the subjects of university studies and at least 10 percent of the subjects of college studies in the field of medical technologies must be taught by the scientists with a scientific degree; general subjects may be taught by the persons, who have at least the master's degree or the equivalent qualification of higher education in the area of taught subject. More than half of the teachers of the college study program must have the practical work experience of at least 3 years not in the higher educational institution – business or public sector;

43.2. the practical training of the college studies of the first cycle has to be supervised by the person, who has at least the bachelor's or the professional bachelor's degree. The practical training of the university studies of the first cycle has to be supervised by the person, who satisfies the requirements provided in the practical training regulations of certain unit of the university and who has a t least the master's degree. The supervisors of practical training are encouraged to improve their consulting skills systematically and to participate in the activities of educational institution – to initiate common projects, to participate in the research activities, to cooperate and develop the partnership relations;

43.3. at least 80 percent of the study program of the second cycle (in credits) have to be taught by teachers with a scientific degree. At least 20 percent of the subjects in the field have to be taught by professors. If the study program is oriented to practical activities, up to 40 percent of the teachers of subjects in the study field have to be practicians, who have acquired the professional work experience of at least 3 years within the recent 7 years in the field, the subjects whereof are taught. The professional work experience of the teachers of applied subjects of the program is compulsory;

43.4. if the theoretical lectures are given and the laboratory works are supervised by several teachers, their intercommunication has to be ensured: they have to be familiar with the theoretical course taught by the colleagues and with the laboratory works, seminars and workshops of that course, as well as the criteria of interim assessments of the students' knowledge and skills;

43.5. the study course ends with the publicly defended final work. It is recommended to form the assessment commission of the final work from competent specialists in the study field – scientists, professional practicians and representatives of probable employers. The commission's formation principles and structure are the prerogative of each educational institution.

44. The material and methodical basis have to satisfy the following minimal requirements:

44.1. the lecture rooms have to be arranged in modern manner; the number of work places for students in these halls, their equipment (audio-visual, internet, etc.) and layout have to satisfy the learning needs and the requirements of hygiene and occupational safety. During the contact sessions, the students should have an opportunity to use the software necessary to acquire the practical skills;

44.2. special spaces for individual work of students have to be arranged; they should be supplied with the necessary equipment (movable furniture, audio-visual technology, internet, etc.) intended to develop the communication skills and to form the skills of team work;

44.3. the basis for performing laboratory works (in the training laboratories or institutions of stakeholders) has to be modern and specialised, when needed; the available laboratory equipment, devices and work methodology have to be sufficient to teach the students how to perform modern biomedical tests, to perform the quality control of the equipment and procedures, to use the radiation protection and other equipment and tools, to plan and carry out the radiation treatment procedures of the patient (only in case of medical physics) who are seeking to acquire practical skills identified in the study program. The laboratories or classrooms of practical training have to

satisfy the requirements of hygiene and work safety and must be marked by warning signs (radiation) depending on the particularity of the performed works;

44.4. if unique research equipment that is available in the specialised laboratory or medical institution is needed to achieve the learning outcomes, it must be ensured that each student would have access to such an equipment with the help of competent staff operating this equipment;

44.5. the sufficient number of computers with installed software which is necessary for performing teaching tasks in modelling and information technologies has to be available;

44.6. technical and administrative services shall create conditions for training of the students' practical skills and to individualise the program;

44.7. the sources of teaching materials and literature sources available in libraries, reading rooms and methodical rooms must meet the needs of the persons studying in the study programs of medical technologies; electronic sources have to be easily accessible to all the participants of the teaching/learning process. Libraries should have at least minimal number of computers with online access to international databases, literature catalogues and search engines that would satisfy the needs of their visitors.

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