



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

**ORDER  
ON APPROVAL OF THE DESCRIPTOR OF STUDY FIELDS OF ANIMAL HUSBANDRY  
AND FISHERY**

14 May 2021 No. V-773  
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 Study Fields of Animal Husbandry and Fishery (enclosed).
2. I determine that the higher education institutions have to adjust their study programmes to the Descriptor of Study Fields of Animal Husbandry and Fishery approved by Clause 1 hereby until 01 September 2022.

Minister of Education, Science and Sport

Jurgita Šiugždiniene

APPROVED  
by Order No. V-773 of the Minister of  
Education, Science and Sport of the  
Republic of Lithuania of 14 May 2021

## **DESCRIPTOR OF STUDY FIELDS OF ANIMAL HUSBANDRY AND FISHERY**

### **CHAPTER I GENERAL PROVISIONS**

1. The Descriptor of Study Fields of Animal Husbandry and Fishery (hereinafter – Descriptor) regulates the special requirements for the study programmes in the study fields of Animal Husbandry (I04) and Fishery (I05) that belong to the group of study fields of agricultural sciences (D). The Descriptor regulates the studies in the listed fields 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 requirements of Directive 2010/63/EU of the European Parliament and the Council on the protection of animals used for scientific purposes and the accreditation system of FELASA (Federation of European Laboratory Animal Science Associations).

3. The Descriptor’s requirements shall apply to the university studies of the first and second cycles that may be organised as full-time and part-time studies.

4. Upon completion of the university studies in the field of animal husbandry and fishery, the bachelor’s / master’s degree in agricultural sciences that conform 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 bachelor’s/ master’s diploma and its supplement issued by the higher education institution are awarded.

5. The studies of animal husbandry and fishery may be provided as studies within the study programmes classified under two study fields and within interdisciplinary study programmes; however, they have to satisfy the requirements established for the respective study field in the Descriptor.

6. There are no special requirements established in the Descriptor for the persons who want to be admitted to the study programmes of the first cycle.

7. It is recommended to admit the persons who would have completed the studies in the fields of life, health, agricultural, physical, engineering, technological, and social sciences and acquired at least the bachelor’s degree to the studies of the second cycle. The persons, who have a professional bachelor’s degree in the above study fields, shall be admitted after they gain the necessary preparation for studies of the second cycle in the procedure established by the higher education institution. If the applicants, who have completed certain first-cycle studies, lack some knowledge and skills, the bridging courses shall be organised. The bridging courses of 60-90 study credits shall serve to prepare the applicants for studies.

8. The aims of the study field of animal husbandry depending on the cycle and type of studies:

8.1. to prepare specialists of animal husbandry of high quality, who would know the legal acts of the European Union (hereinafter – EU) governing the field of animal husbandry, and to provide them with knowledge and skills that would serve as the foundation for the work in the field of animal husbandry;

8.2. to provide knowledge about the animals’ anatomy, physiology, behaviour, and physiological needs;

8.3. to develop special and analytical skills needed for assurance of technologies of animal

raising, their welfare, feeding and breeding;

8.4. to train the ability to solve theoretical and practical problems of animal husbandry, continue the studies in animal husbandry and related study fields, and develop general skills of the student.

9. The aims of the study field of fishery depending on the cycle and type of studies:

9.1. to prepare specialists of fishery of high quality, who would know the EU and national legal acts governing the field of fishery, and to provide them with knowledge and skills that would serve as the foundation for the work in the field of fishery and its development;

9.2. to provide knowledge about the anatomy, physiology and physiological needs of fish and other aquatic organisms;

9.3. to develop special and analytical skills needed for assurance of raising technologies of fish and other aquatic organisms, the health of hydrobionts, their welfare, feeding and breeding;

9.4. to train the ability to solve theoretical and practical problems of fishery, to continue the studies in the field of fishery and related study fields, and to develop general skills of the student.

## **CHAPTER II**

### **CONCEPT AND SCOPE OF THE STUDY FIELDS OF LIFE SCIENCES**

10. Animal husbandry is a science that analyses breeding, feeding, keeping and care about farm animals and pets, structure and functions of the organism, making and quality of production:

10.1. farm animals (livestock) are the animals raised or bred for food, drugs and other production, for work and other farming goals;

10.2. pets are the animals kept to satisfy the aesthetical and communication needs;

10.3. animal breeding covers the system of animal science and organisational means used to improve the animal breeds: selection of animals that are considered the best according to the characteristics and origin, selection of matching pairs of animals, and special raising of obtained get;

10.4. animal keeping covers the creation of the conditions for life, feeding and zoohygiene for the animal, taking care of the animals' welfare, preservation of nature, and effective use of natural resources into consideration;

10.5. animal welfare means an optimal satisfaction of the physiological and ethological needs of the animals.

11. The animal husbandry examines the practical and theoretical methods of farm animals (cattle breeding, pig breeding, aviculture and other branches of animal husbandry), pets (cynology, felinology, horse breeding, exotic animals) development, and applies the sciences examining animal biology (general biology, morphology and physiology, anatomy, histology, embryology, biochemistry, genetics), as well as veterinary and agronomy.

12. The activities of animal husbandry cover raising and use of animals, supply of food products (meat, milk, fats, eggs), raw materials (wool, furs, skin, bristle, bones, blood), entertainments and organic fertilisers, as well making of forage from products and waste of animal husbandry.

13. Fishery is a science examining breeding, raising and caring for fish in natural waters and artificial water ponds and protecting fish resources. The fishery activities cover management, protection and restoration of fish resources, fishing, aquaculture, initial processing of fish.

14. Aquaculture means raising such aquatic organisms as fish, limpets, crustaceans, and water plants. Aquaculture covers the raising of these organisms in open and/or closed aquacultural systems.

15. The specialist of animal husbandry needs the following theoretical and practical knowledge:

15.1. to have knowledge and skills necessary for individual professional activities, planning and organisation of business processes of animal husbandry, use of high technologies in

animal husbandry, and the global social-economic and environmental contexts;

15.2. to carry out experimental tests, to analyse and assess the latest scientific knowledge critically, to generate new practical ideas, and to plan their implementation strategies for breeding and raising of animals;

15.3. to apply knowledge in various circumstances in order to ensure conditions for welfare and reproductivity of animals, quality and safety of their products, requirements of environmental protection and sustainable use of resources, to adjust the application of knowledge with fundamentals of business and management and knowledge of social sciences, and to understand the influence and importance of the made decisions for society's development;

15.4. to apply the knowledge in accordance with the requirements of occupational safety and health, ergonomics, work hygiene, fire safety, environmental protection, and veterinary.

16. The specialist of fishery needs the following theoretical and practical knowledge:

16.1. to have knowledge and skills necessary for management, designing and installation of sustainable aquaculture technologies, in consideration of social, economic and environmental aspects;

16.2. to apply the knowledge in order to plan, organise, implement and evaluate the fishery activities, by choosing the complex technological, organisational and methodical means independently in various circumstances, to adjust the application of knowledge with fundamentals of business and management and knowledge of social sciences, and to understand the influence and importance of the made decisions for society's development;

16.3. to carry out experimental tests, to analyse and assess the latest scientific knowledge critically, to generate new practical ideas, and to plan their implementation strategies for designing the aquaculture systems, breeding and raising of aquatic organisms;

16.4. to apply the knowledge in accordance with the requirements of occupational safety and health, ergonomics, work hygiene, fire safety, environmental protection, and veterinary.

17. The studies have to prepare the students for independent maintenance and expansion of their professional competence through life-long learning, to accept the future challenges and to assume responsibility for the results of their professional activities while solving the professional problems in the interdisciplinary environment; to have broad erudition, to be able to communicate efficiently, smoothly and suggestively orally and in writing in at least one foreign language with the specialists from own and other fields, to discuss the issues of professional activities, to spread the ideas publicly, and to consult.

18. Main areas of professional activities of the specialist of animal husbandry are the following:

18.1. to engage in the activities that are characterised by diverse contents: to explore, analyse, assess, plan, organise, control, manage, and modernise processes of animal husbandry;

18.2. to carry out exploratory, expert and consulting activities in the area of production of products of animal husbandry, breeding, control systems of quality of production and productivity of animals, and production of forage;

18.3. to produce products of animal husbandry safely and to apply the available methods with regard to social, economic and ecological factors;

18.4. to implement the requirements of the legal acts on the welfare of animals, environmental protection and quality of products in the processes of animal husbandry;

18.5. to supervise the works of making the products of animal husbandry and control of products' quality;

18.6. to think creatively and solve the problems of assurance of animals' welfare, reduction of environmental pollution, sustainable and competitive production, and rational consumption of resources originally and optimally.

19. Main areas of professional activities of the specialist of fishery are the following:

19.1. to analyse, forecast, model, assess, plan, organise, control, manage and introduce novelties in the processes of fishery and aquaculture;

19.2. to carry out exploratory, expert and consulting activities in the area of fish breeding,

raising and care of fish and other aquatic organisms, and in the processes of creation of recreational fishery environment;

19.3. to design the production systems of the products of aquaculture and fishery, and to assure entrepreneurship and competitiveness of the farms;

19.4. to supervise the works of fish breeding and the making of fishery products;

19.5. to think creatively and solve increasing fish resources, sustainable production, and rational consumption of land and environmental resources originally and optimally.

### **CHAPTER III GENERAL AND SPECIAL LEARNING OUTCOMES**

20. While studying the study programmes in the fields of animal husbandry and/or fishery, the student has to acquire and develop professional knowledge and personal, social, research and special skills.

21. The learning outcomes of different cycles described in the Descriptor are not the learning outcomes of a certain programme or subject. They have to be adapted, concretised and adjusted to the learning outcomes of the prepared (implemented) study programme and help shape the content and process of the study programme. The subject's learning outcomes are formed so as to achieve the learning outcomes of the particular study programme.

22. At the completion of the university studies of the first cycle in the field of animal husbandry, the following learning outcomes have to be achieved:

22.1. knowledge, its application. The person:

22.1.1. knows theories, concepts and principles of fundamental and applied sciences applied in the areas of professional activities, while organising and implementing the activities of animal husbandry, controlling the technologies, maintaining the equipment, and creating the environment needed for the recreational activities, aesthetical and communication needs;

22.1.2. knows and applies the social, environmental, economic and legal principles and methods creatively to plan and organise the activities of animal husbandry and to create the environment of entertaining (recreational) animal husbandry;

22.1.3. knows, applies and assesses various concepts, theories and methods of physiology, anatomy, animal nutrition and genetics, environmental and veterinary requirements applied for planning and organisation of the production of animal husbandry;

22.1.4. knows the technologies used in animal husbandry, their control principles, is able to choose the most suitable technical means, to assess them within the national and international context and to apply them for professional activities; is able to take care of technical equipment;

22.1.5. knows the possibilities of application of new fundamental and applied research results in practice for the improvement of animal husbandry technologies, uses the methods and modes applicable for designing of the animal husbandry farms, selects the technologies assuring breeding, raising and appropriate environment for farm animals and animals, and solves the technological problems related to the management of the animal husbandry systems in an organised way;

22.1.6. knows, organises and applies monitoring, disease prophylaxis and treatment of farm animals and animals;

22.1.7. knows and follows the requirements of occupational safety and health, ergonomics, work hygiene, fire safety, environmental protection, and veterinary in work;

22.2. research skills. The person:

22.2.1. is able to perform tests/experiments outdoors and indoors, collect and analyse the data needed to solve the scientific and practical problems in the field of animal husbandry, to introduce and develop the novelties;

22.2.2. is able to perform market researches, to analyse and implement them, while planning and organising activities of animal husbandry farm and making of products of animal husbandry;

22.2.3. is able to choose and apply the testing methods of water and feed quality;

22.2.4. is able to process, store and prepare the research material according to the bioethical rules in a laboratory and outdoors while making the products of animal husbandry;

22.2.5. is able to evaluate and interpret the data appropriately, to apply the latest methods and tools to accumulate, analyse and evaluate information, to perform researches, and to install green technologies in the animal husbandry farm;

22.3. special skills. The person:

22.3.1. is able to evaluate the animal resources, their condition, management and use principles, with regard to social, economic, political and legal systems within the global, regional and local contexts;

22.3.2. is able to plan, organise and carry out the business of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs and the making of products responsibly, sustainably and safely, with regard to the risk assessment to the environment and interested parties, on the basis of legal acts and safety regulations;

22.3.3. is able to plan, organise and implement application and installation of breeding and raising technologies of farm animals and animals, maintenance of technological processes and equipment for researches, development projects, studies and introduction of innovations;

22.3.4. is able to evaluate the physiological condition of farm animals and animals, to plan, organise and perform their monitoring, disease prevention and care;

22.3.5. is able to organise and perform supervision and monitoring of water quality and feed by choosing the methodical organisational means and complex technologies;

22.4. social skills. The person:

22.4.1. is able to communicate efficiently, to work individually and in a team with specialists and society, while solving the tasks of organisation of activities in the animal husbandry farm, control of technologies, maintenance of equipment, creation of an environment for the pets kept for recreational activities and satisfaction of aesthetical and communication needs, while preparing and implementing the projects;

22.4.2. is able to express the thoughts smoothly and fluently in writing and orally in Lithuanian and in a foreign language, to communicate effectively in a professional environment and community, while presenting the activities of animal husbandry and their results, and discussing the issues relevant to animal husbandry in the professional and interdisciplinary environment;

22.4.3. assumes responsibility for own work's quality and assessment and those of the subordinate employees in accordance with professional ethics and public spirit, as well as principles of social responsibility;

22.4.4. understands the aspects of environmental protection, law and sustainable use of the made decisions in the field of animal husbandry activities, and understands the responsibility for results of own professional activities and their impact on the environment;

22.5. personal skills. The person:

22.5.1. is able to study independently, to improve and develop the professional skills, to plan further improvement processes in the formal and informal modes, as required by changing professional activities of animal husbandry and progress in knowledge and technologies;

22.5.2. is able to find and study the newest academic literature independently and to use other modern information sources and technologies;

22.5.3. is able to evaluate critically own and colleagues' professional practice, understands moral responsibility for the impact of own economic activities and their results on the development, welfare of society, economics, culture, and environment;

22.5.4. is able to plan and manage time to organise own work and learning processes.

23. At the completion of the university studies of the second cycle in the field of animal husbandry, the following learning outcomes have to be achieved:

23.1. knowledge, its application. The person:

23.1.1. knows the latest research- and practice-based principles of biology, ecology, genetics, management, economics and their application for professional activities of animal

husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs, and attempts to learn and assess the theoretical and practical manifestations of professional activities in a new and/or unknown environment in the complex and systemic aspect;

23.1.2. has the latest knowledge in animal husbandry based on the results of fundamental and applied researches that serves as a basis to create and/or apply the original ideas within the research context or to introduce the innovations in the professional activities of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs, while organising business of animal husbandry and expanding the animal husbandry farming;

23.1.3. has classical and advanced systemised knowledge based on researches and practical work in the fields of animal breeding, marketing, management of investments and human resources, development of rural business, management skills, and is able to apply them by assessing the animal husbandry policy critically in the national and international context and solving the problems of creation and management of animal husbandry business, sustainable use of genetic resources, and environmental protection in a new or unknown environment;

23.1.4. knows, selects and applies the methods of statistical analysis, modelling, remote researches in the areas of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs, controls the productivity of the systems, knows the possibilities and restrictions of the methods, is able to interpret and forecast the results received using these methods, and foresees the methods and tools of monitoring, sustainable use and protection, while assessing the state of the resources;

23.2. research skills. The person

23.2.1. is able to organise the tests of qualitative and quantitative productivity potential in the field of animal husbandry, to generate, analyse and assess the scientific and practical ideas critically in the areas of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs, to formulate the arguments and assumptions, to apply the prognostic methods for assessment of the productivity of animal husbandry, to introduce innovations while performing the fundamental, applied and interdisciplinary researches in the national and international environment;

23.2.2. is able to organise search and collection of the necessary information, to systemise, evaluate and use the information received from various sources, including the search for operational information needed to plan and implement the researches in the areas of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs, to introduce innovations, to make alternative practical decisions, and to determine their possible impact on the environment;

23.2.3. is able to integrate the knowledge of fundamental and applied sciences, modern innovative research methods and technologies, when assessing the impact of animal raising on the environment with regard to bioecological and economic aspects, in order to manage the difficult situations and to make the decisions;

23.2.4. is able to identify and analyse the problems of researches and professional activities formed in the field of animal husbandry, to plan their solution methods by coordinating the practical and theoretical elements, implementing the pragmatism insights, alternative solution variants, and foreseeing probable impact on the environment;

23.2.5. is able to examine and improve the breeding and feeding processes and technologies in the areas of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs;

23.2.6. is able to carry out the researches of market evaluation and forecasting while expanding the animal husbandry farming and organising the animal husbandry business;

23.3. special skills. The person:

23.3.1. is able to assess critically and to solve atypical complex tasks of the activities of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs, while creating and implementing innovations in the fields of animal breeding

and raising, organising their application, and is able to match the knowledge of several subjects and to assume social responsibility;

23.3.2. is able to assess the complexity, interaction and integrity of problems of animal husbandry and other agricultural areas in critical and complex mode, as well as the implementation of their solution methods in the interdisciplinary context, to apply the acquired knowledge, skills and capacities in various developmental and other practical activities in the fields of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs;

23.3.3. selects and applies appropriately the methods and modes used to design the activities of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs, chooses the technologies assuring suitable environment for breeding, raising and living of animals, and is organised enough to solve the technological problems related to the management of the systems of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs;

23.3.4. is able to appropriately select and effectively use the strategies of economic activities, to apply the acquired theoretical and practical knowledge efficiently and skills, while organising the breeding, selection and other programs for animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs and while improving the disease preventive measures and technologies, and is able to assess reasonably the made decisions in the environmental, legal, social, economic and sustainable use aspects;

23.3.5. applies the knowledge effectively in other economic areas while planning, controlling, regulating and delivering the expert evaluation and engaging in the use of natural resources, making of products and other economic activities, by assuring the integrated application of the principles of sustainable use of natural resources and their protection in the course of development of animal husbandry farm;

23.3.6. selects and uses appropriately the laboratory equipment, experimental systems, technologies, information and data sources in order to plan and carry out research appropriately while solving the breeding and feeding processes and technologies of animals and pets kept for recreational activities and satisfaction of aesthetical and communication needs, and assesses the received results critically, prepares the conclusions and recommendations to introduce the innovations in the practical activities;

23.4. social skills. The person:

23.4.1. is able to communicate effectively, smoothly and fluently in writing and orally in at least one foreign language with the specialists in the field of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs and with other interested persons, to discuss the relevant issues of organisation of research and development of animal husbandry and introduction of innovations, to present the ideas, reports on the projects, to consult and conduct the expert evaluation;

23.4.2. is able to organise and carry out the research work in the field of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs individually and in groups, as well as in the interdisciplinary team, to assess the effectiveness of the group work, to analyse the principles of group formation, task transmission and management, in accordance with professional ethics and public spirit within the national and international contexts;

23.4.3. is able to organise the preparation of action plans and projects in a team and interdisciplinary environment independently, to supervise their implementation, to assess the effectiveness of these activities, to assume responsibility for the results of professional activities and their impact on the environment and society;

23.4.4. is able to apply the holistic approach consistently when making professional decisions or endeavouring at balancing expenditure, benefit, safety, quality, reliability and impact on the environment, applies human moral norms and professional ethics, understands the environmental, legal, social, economic and sustainable use aspects of made decisions while

planning researches in the field of animal husbandry and pets kept for recreational activities and satisfaction of aesthetical and communication needs;

23.5. personal skills. The person:

23.5.1. is able to think creatively, viably and logically, to formulate and model the data and information, to create new ideas, to make independent conclusions and rational arguments, to make decisions in case of difficult and vague situations;

23.5.2. is able to demonstrate the skills of critical systemic and strategic thinking when making innovative decisions based on the evaluation of possibilities and consequences, understanding the moral responsibility for the impact of own activities and their results on public, economic welfare and environment;

23.5.3. is able to evaluate and select critically the needed qualitative and quantitative information and data from the national and international sources, and to carry out the evaluation when contradictory and/or insufficient information is available;

23.5.4. is able to initiate and organise the professional activities independently, to supervise them, to perform the leader's functions, to endeavour at career consistently, to train own professionalism continuously, to learn, work and communicate the whole life systematically in the national and international environment;

23.5.5. is able to develop the essential characteristics of the personality systematically: responsibility, initiative, creativity, innovation, discipline, and motivation.

24. At the completion of the university studies of the first cycle in the field of fishery, the following learning outcomes have to be achieved:

24.1. knowledge, its application. The person:

24.1.1. knows theories, concepts and principles of fundamental and applied sciences applied in the areas of professional activities, while organising and implementing the activities of aquaculture farming, controlling the technologies, maintaining the equipment, and creating the environment of recreational fishery;

24.1.2. knows and applies the social, environmental, economic and legal principles and methods creatively to plan and organise the activities of aquaculture farming and to create the environment of the entertainment (recreational) fishery;

24.1.3. knows, applies and assesses various concepts, theories and methods hydrobiology, hydrology and hydrotechnics, environmental and veterinary requirements applied for planning and organisation of the production of aquaculture products;

24.1.4. knows the technologies used in aquaculture farming, their control principles, is able to choose the most suitable technical means, to assess them within the national and international context and to apply them for professional activities; is able to take care of technical equipment;

24.1.5. knows the possibilities of application of new fundamental and applied research results in practice for the improvement of fishery technologies, uses the methods and modes applicable for designing of the fishery and closed aquaculture farms, selects the technologies assuring breeding, raising and appropriate environment for aquatic animals, and solves the technological problems related to the management of the fishery and closed aquaculture farms in an organised way;

24.1.6. knows, organises and applies monitoring, disease prophylaxis and treatment of fish and other aquatic organisms;

24.1.7. knows and follows the requirements of occupational safety and health, ergonomics, work hygiene, fire safety, environmental protection, and veterinary in work;

24.2. research skills. The person:

24.2.1. is able to collect and analyse the data needed to solve the scientific and practical problems in the field of husbandry in the outdoor and experimental conditions, to introduce and develop the novelties;

24.2.2. is able to perform market researches, to analyse and implement them, while planning and organising activities of aquaculture farm and making of aquaculture products;

24.2.3. is able to choose and apply the testing methods of water and feed quality;

24.2.4. is able to process, store and prepare the research material according to the bioethical rules in a laboratory and outdoors;

24.2.5. is able to process and interpret the data appropriately, using the latest methods and tools of information accumulation, analysis and assessment;

24.2.6. is able to perform researches, instil green technologies in the aquaculture farm, and use the secondary raw materials, as needed;

24.3. special skills. The person:

24.3.1. is able to evaluate the fish resources, their condition, management and use principles, with regard to social, economic, political and legal systems within the global, regional and local contexts;

24.3.2. is able to plan, organise and carry out the business of aquaculture and recreational fishing and making of products responsibly, sustainably and safely, with regard to the risk assessment to the environment and interested parties, on the basis of legal acts and safety regulations;

24.3.3. is able to plan, organise and implement application and installation of breeding and raising technologies of fish and other aquatic organisms, maintenance of technological processes and equipment for the aquaculture, researches, development projects, studies and introduction of innovations;

24.3.4. is able to evaluate the physiological condition of fish and other aquatic organisms, to plan, organise and perform their monitoring, disease prevention and maintenance;

24.3.5. is able to assure water quality, its monitoring and maintenance by choosing the methodical organisational means and complex technologies;

24.4. social skills. The person:

24.4.1. is able to communicate efficiently, to work individually and in a team with specialists and society, while solving the tasks of organisation of activities of aquaculture farming, control of technologies, maintenance of equipment, creation of an environment for recreational fishing, while preparing and implementing the projects;

24.4.2. is able to express the thoughts smoothly and fluently in writing and orally in Lithuanian and in a foreign language, to communicate effectively in a professional environment and community, while presenting the activities of aquaculture farming and their results in public, and discussing the issues relevant to fishery in the professional and interdisciplinary environment;

24.4.3. assumes responsibility for own work's quality and assessment and those of the subordinate employees in the field of aquaculture farming in accordance with professional ethics and public spirit, as well as principles of social responsibility;

24.4.4. the aspects of environmental protection, law and sustainable use of the made decisions in the field of aquaculture farming activities, and understands the responsibility for results of own professional activities and their impact on the environment;

24.5. personal skills. The person:

24.5.1. is able to study independently, to improve and develop the professional skills, to plan further improvement process in the formal and informal modes, as required by changing professional activities of fishery and progress in knowledge and technologies;

24.5.2. is able to find and study the newest academic literature independently and to use other modern information sources and technologies;

24.5.3. is able to evaluate critically own and colleagues' professional practice, understands moral responsibility for the impact of own economic activities and their results on the development, welfare of society, economics, culture, and environment;

24.5.4. is able to plan and manage time, to organise own work and learning processes;

25. At the completion of the university studies of the second cycle in the field of fishery, the following learning outcomes have to be achieved:

25.1. knowledge, its application. The person:

25.1.1. knows the latest research- and practice-based principles of biology, ecology, water engineering, management, economics and their application for professional activities of aquaculture

and fishery, and attempts to learn and assess the theoretical and practical manifestations of professional activities of aquaculture and fishery in a new environment (under uncertain conditions) in the complex and systemic aspect;

25.1.2. has the latest knowledge in fishery based on the results of fundamental and applied researches that serves as a basis to create and/or apply the original ideas within the research context or to introduce the innovations in the practical activities of fishery and aquaculture while organising business of aquaculture and expanding the aquaculture farming;

25.1.3. has classical and advanced systemised knowledge based on researches and practical work in the fields of fish breeding, aquaculture, marketing, management of investments and human resources, development of rural business, management skills, and is able to apply them by assessing the aquaculture farming policy critically in the national and international context and solving the problems of creation and management of aquaculture business, sustainable use of natural resources, and environmental protection in a new or unknown environment;

25.1.4. knows, selects and applies the methods of statistical analysis, modelling, remote researches in the areas of fishery and aquaculture, controls the productivity of the systems, knows the possibilities and restrictions of the methods, is able to interpret and forecast the results received using these methods, and foresees the methods and tools of monitoring, sustainable use and protection, while assessing the state of the resources;

25.2. research skills. The person:

25.2.1. is able to organise the tests of qualitative and quantitative productivity potential in the aquaculture systems, to generate, analyse and assess the scientific and practical ideas critically in the areas of fishery and aquaculture, to formulate the arguments and assumptions, to apply the prognostic methods for assessment of the productivity of aqua systems, to introduce innovations while performing the fundamental, applied and interdisciplinary researches in the national and international environment;

25.2.2. is able to organise search and collection of the necessary information, to systemise, evaluate and use the information received from various sources, including the search for operational information needed to plan and implement the researches in the areas of fishery and aquaculture, to introduce innovations, to make alternative practical decisions, and to determine their possible impact on the environment;

25.2.3. is able to integrate the knowledge of fundamental and applied sciences, modern innovative research methods and technologies, when assessing the impact of fish raising on the environment with regard to bioecological and economic aspects, in order to manage the difficult situations and to make the decisions when comprehensive information is lacking;

25.2.4. is able to identify and analyse the problems of researches and professional activities formed in the field of fishery, to plan their solution methods by coordinating the practical and theoretical elements, implementing the pragmatism insights, alternative solution variants, and foreseeing probable impact on the environment;

25.2.5. is able to examine and improve the breeding and feeding processes and technologies of fish and other aquatic organisms;

25.2.6. is able to carry out the researches of market evaluation and forecasting while expanding the aquaculture farming and organising the aquaculture business;

25.3. special skills. The person:

25.3.1. is able to assess critically and to solve atypical complex tasks of the activities of fishery and aquaculture, while creating and implementing innovations in the fields of fish breeding and raising, organising their application, and is able to match the knowledge of several subjects and to assume social responsibility;

25.3.2. is able to assess the complexity, interaction and integrity of problems of fishery and other agricultural areas in critical and complex mode, as well as the implementation of their solution methods in the interdisciplinary context, to apply the acquired knowledge, skills and capacities in various developmental and other practical activities in the fields of fishery and aquaculture farming;

25.3.3. selects and applies appropriately the methods and modes used to design the fishery and closed aquaculture systems, chooses the technologies assuring suitable environment for breeding, raising and living of aquatic organisms, and is organised enough to solve the technological problems related to the management of the fishery and closed aquaculture systems;

25.3.4. is able to appropriately select and effectively use the strategies of economic activities, to apply the acquired theoretical and practical knowledge efficiently and skills while organising the disease, breeding, selection and other programs for fish and other aquatic organisms and while improving the disease preventive, breeding and selection measures and technologies, and is able to assess reasonably the made decisions in the environmental, legal, social, economic and sustainable use aspects;

25.3.5. applies the knowledge effectively in other economic areas while planning, controlling, regulating and delivering the expert evaluation and engaging in the use of natural resources, making of products and other economic activities, by assuring the integrated application of the principles of sustainable use of natural resources and their protection in the course of development of aquaculture farming;

25.3.6. selects and uses the laboratory equipment, experimental systems, technologies, information and data sources appropriately in order to plan and carry out researches appropriately while solving the breeding and feeding processes and technologies of fish and other aquatic organisms, and assesses the received results critically, prepares the conclusions and recommendations to introduce the innovations in the practical activities;

25.4. social skills. The person:

25.4.1. is able to communicate effectively, smoothly and fluently in writing and orally in at least one foreign language with the specialists in the field of fishery and aquaculture and with other interested persons, to discuss the relevant issues of organisation of research and development of aquaculture and introduction of innovations, to present the ideas, reports on the projects, to consult and conduct the expert evaluation;

25.4.2. is able to organise and carry out the research work in the field of fishery and aquaculture individually and in groups, as well as in the interdisciplinary team, to assess the effectiveness of the group work, to analyse the principles of group formation, task transmission and management, in accordance with professional ethics and public spirit within the national and international contexts;

25.4.3. is able to organise the preparation of action plans and projects in team and interdisciplinary environment independently, to supervise their implementation, to assess the effectiveness of these activities, to assume responsibility for the results of professional activities and their impact on the environment and society, while expanding the aquaculture farming or organising aquaculture business;

25.4.4. is able to apply the holistic approach consistently when making professional decisions or endeavouring at balancing expenditure, benefit, safety, quality, reliability and impact on the environment, applies human moral norms and professional ethics, understands the environmental, legal, social, economic and sustainable use aspects of made decisions while planning and implementing researches in the field of fishery and aquaculture;

25.5. personal skills. The person:

25.5.1. is able to think creatively, viably and logically, to formulate and model the data and information, to create new ideas, to make independent conclusions and rational arguments, to make decisions in case of difficult and vague situations;

25.5.2. is able to demonstrate the skills of critical systemic and strategic thinking when making innovative decisions based on the evaluation of possibilities and consequences, understanding the moral responsibility for the impact of own activities and their results on public, economic welfare and environment;

25.5.3. is able to evaluate and select critically the needed qualitative and quantitative information and data from the national and international sources, and to carry out the evaluation when contradictory and/or insufficient information is available;

25.5.4. is able to initiate and organise the professional activities independently, to supervise them, to perform the leader's functions, to endeavour at career consistently, to train own professionalism continuously, to learn, work and communicate the whole life systematically in the national and international environment;

25.5.5. is able to develop the essential characteristics of the personality systematically: responsibility, initiative, creativity, innovation, discipline, and motivation.

## **CHAPTER IV TEACHING, LEARNING AND ASSESSMENT**

26. The teaching of the study programmes in the study fields of animal husbandry and/or fishery have to be based on the latest scientific developments and concepts and reflect the relations with other higher education and research trends.

27. The teaching/learning methods have to be versatile and effective; the independent work tasks have to comply with the learning outcomes of the study programme and motivate the students. The time and material resources (libraries, laboratories, equipment, information technologies, computer classes, etc.) have to be used rationally.

28. The idea of life-long learning has to be promoted in the learning/teaching process; the students should be prepared and promoted to assume responsibility for their learning. The programme, its content and didactic system have to motivate the students to use other available resources for their studies, while the teachers should be motivated to include innovations into the teaching process.

29. The teachers have to know and understand the didactic concept of the study programme; their competence has to satisfy the requirements of the study programme; the teachers have to be able to construct the programme of the subject/module according to the study programme, to which the study subject/module in question belongs, to use the results of the latest researches, to know the links of the taught subject/module with other higher education and research fields, to have a multidisciplinary approach to the problem solution, to be able to improve the teaching and learning content, to select suitable student-oriented teaching/learning methods and assessment of students' achievements, and to create more effective teaching/learning methods. The same teaching and learning methods may be applied in different cycles of studies; however, in the second cycle of studies, their application should be based on a more comprehensive understanding of the content, more difficult tasks, expression of the student's independence, etc.

30. The choice of the teaching/learning methods has to assure the possibilities for the student to train/acquire certain skills. The following teaching/learning methods shall be applied in the course of studies:

30.1. traditional and interactive lectures; lectures of invited lecturers (practicians), field trips (to the companies or farms of animal husbandry, fishery or closed aquaculture systems), seminars, practical and/or laboratory works (systems of evaluation of animal welfare and their application; methods of control and modelling of animal-keeping technological processes; solution methods of environmental protection problems in animal husbandry farms); assessment methods of fish populations and fish resources and their application; management of aquaculture systems (pond fishery and closed recirculatory systems); growth of fishery products (from in vitro fertilisation until introduction to the market, etc.); tasks of search and generalisation of information, sets of presentation of reports, consultations and virtualisation of the studies, if part of the studies is online studies;

30.2. the gnoseological methods are directed to the development of cognitive skills and conveyance of knowledge (for example, conveyance of cognition and knowledge through academic practice), perception of knowledge (for example, narrative, conversation, illustration, demonstration, observation, learning through cooperation, situation modelling). These methods may be implemented by choosing the form of lecture;

30.3. the habituating methods are directed to the development of special, social and personal skills (for example, discussion, research, individual or group works or projects, work with simulation models, etc.). These methods may be implemented through workshops, laboratory works and seminars in small groups (by designing and selecting the equipment necessary to manage animal husbandry, fishery and closed aquaculture systems, in order to assure adequate breeding and raising conditions of animals and aquatic organisms);

30.4. the methods stimulating independent studies (for example, reflection, case analysis, problem solution, imitation, subject-specific games, learning from experience, an individual search for problem solution, control, self-control);

30.5. the methods of exploratory character (e.g., search for information, reflection, information analysis and synthesis, performance analysis, application of particular research method, data interpretation, etc.) have to be used as a ground for independent studies;

30.6. the control and self-control methods guarantee feedback on professional preparation to the teacher and students. These methods enable the student to perform more thorough applied researches described in the course and final works.

31. The research works have to be provided, especially in the second cycle studies. It would be preferred to perform these works together with potential employers or social partners. They should promote the development of professional activities, personal, social, research and special skills. The didactic system of the study programme has to promote and create preconditions to apply the analytical and practical skills. It is recommended to use the results of the research works as a ground for final work, however, each higher education institution and persons preparing the study programme may decide how to consider this aspect according to the structure of a particular study programme.

32. The content of research works of the second cycle of studies has to be directed to the solution of scientific, technological and methodical problems and it should be of the applied character. The didactic system of the field studies has to assure training of the student's creativity, analytical, meta-cognitive skills so that the student could enable the possessed knowledge to name the tactics and strategy of the problem's solution within the scope of available technical and/or technological resources, to observe and control the process of the task's execution, and to reflect own activities through self-assessment of the newly acquired knowledge and skills.

33. The student's activities related to practical training (studies of the first cycle) or research (studies of the second cycle) in the animal husbandry or fishery entities or other entities related to application, creation and development of these fields have to be properly organised. The teaching of students, cooperation of teachers and supervisors of practical training or research in the company, while preparing individual tasks for the students and helping to fulfil them, analysis of the processes in the company receiving the students, and participation in assessment of the students' reports on work are necessary constituents of the students' practical training or research works.

34. The studies have to ensure the preparation of future specialists of animal husbandry or fishery who should satisfy the needs of the labour markets; therefore, the reflection skills have to be trained in the study programmes as they provide a possibility to reinforce the link between theory and practice (for example, theoretical courses have to be supplemented by workshops), to spread good practice (for example, the students present publicly the projects they have been performing in conferences and places of practical training, make suggestions, how to organise the practical training, express professional expectations and achievements, the graduates share their professional experience, make suggestions, how to improve the study process, the stakeholders participate in the discussions on the improvement of professional activities).

35. The assessment of the students' knowledge and skills has to be reliable and based on clearly pre-formulated consideration of the work conditions and current resources. The assessment criteria have to manifest how the level of knowledge and skills obtained by the student comply with the aimed outcomes of the study programme. The students should be able to participate in making decisions regarding assessment modes and criteria, number and volume of tasks.

36. At the beginning of the semester, the teacher has to introduce the students to the aims

of the studies, assessment procedure and the assessment system of learning outcomes approved by the higher education institution, stating the assessment criteria and the weight of constituents of the final mark.

37. The learning outcomes of the subject shall be assessed according to the ten-point grading system. When assessing the learning outcomes, the teachers have to comply with the principles of objectivity, clarity, impartiality, mutual respect and benevolence. It should be aimed to include the students in the (self-) assessment process.

38. In order to assess the student's learning outcomes, the cumulative (the learning outcomes are assessed by interim tests), collegial (the students are examined by a competent commission formed from the specialists in the fields of animal husbandry or fishery, scientists, professional practitioners, and representatives of stakeholders), and diagnostic (applied in order to learn the student's achievements and made progress after a certain topic or part of the course) assessment may be used.

39. All the skills and knowledge described in the learning outcomes have to be assessed so as to prove that the students have (have acquired) respective knowledge and skills. Depending on the particularity and level of the programme (university studies of the first or second cycle), the teachers may use various assessment methods, such as written or oral examination; testing, the test works, solution of exercises, analysis of problem solution, colloquium, written works (review of literature, report, essay, etc.), oral and stand-based presentations and reports, report on results of laboratory works and their defence, reports on practical training, their presentation and defence, reports on individual or team projects, their presentation and defence, reports on research, their presentation and defence, final work, its presentation and public defence, learning records (folder of works), self-assessment, peer review, etc.; and the teachers have to know methodical aspects of their application. Besides, the student may be evaluated for participation in project-based activities and scientific publications. Moreover, it should be encouraged to look for new integrated assessment methods.

40. A very important component of the assessment of learning outcomes is the provision of feedback to the students about their achievements (outcomes) and substantiation of evaluation, as well as students' feedback to the teacher, enabling to improve and develop the effectiveness of the study process and to improve the teaching quality. The students have to receive feedback about their works on time. The evaluation of learning outcomes has to be based on clear criteria and supported by constructive comments. The students should be able to discuss all the aspects of their studies with the teachers (evaluators), including the final evaluation. In order to ensure the quality and accessibility of the studies with the help of modern technological and communication means, the higher education institution must have and follow the certified procedure of online examination.

## **CHAPTER V**

### **REQUIREMENTS FOR IMPLEMENTATION OF STUDY PROGRAMMES**

41. The study programme has to be improved and updated all the time and it has to reflect the changes in science, used applied technologies and the study field. The persons implementing the programme have to ensure the inclusion of newly emerging topics based on the scientific developments into the study programme so that the students would be introduced to the scientific and practical innovations at school already and so that they were encouraged to see the developmental perspectives in the study field. The conditions have to be created for the students to make use of the academic mobility possibilities, to integrate the knowledge and experience of the international level into the study process. The counting of positive learning outcomes acquired during the academic mobility towards the awarded qualification has to be assured for the students.

42. The aim of the study programme has to be clear and the learning outcomes have to be achievable and to reflect the programme's particularity, exceptionality and scope.

43. General requirements for teaching staff of the study programmes in the study fields of animal husbandry and/or fishery:

43.1. the foundation of the study programmes is competent and qualified teachers, who create a general academic environment and show an example to the students. The teachers should be selected and assessed according to the following factors: practical teaching experience, interest and activeness in the creation of effective and advanced teaching methods, level of research activities, ability to communicate fluently in at least one foreign language used for international communication, recognition in professional, scientific and other communities, participation in professional improvement programmes and internships, professional insight;

43.2. the teachers have to show interest in scientific novelties, participate in researches and preparation of the projects. The teachers have to advise the students about the study plans and career properly, to know and understand the criteria used to accredit the study programmes;

43.3. at least 50 per cent of the subjects of each study programme of the university studies of the first cycle have to be taught by scientists. It should be encouraged to have the teachers experienced in certain research fields or specialists who have practical (working in the field of animal husbandry and/or fishery) or theoretical (research) work experience in the study fields of the group of agricultural sciences and/or veterinary to teach respective subjects;

43.4. at least 80 per cent of the subjects of each study programme of the university studies of the second cycle have to be taught by scientists. Other teachers may be practitioners who have gained at least 3 years of professional experience in the taught field in the last 7 years. At least 20 per cent of the volume of the subjects in the study field have to be taught by teachers, who have the title of professor.

44. Requirements for the graduation of the study fields of animal husbandry and fishery:

44.1. the study programmes shall end in the evaluation of the graduate's competence through preparation and defence of the final work (project);

44.2. the studies of the first cycle shall end in the publicly defended final work. The final work has to be based on independent researches, application of knowledge, and it has to manifest the skills complying with the programme's aims and learning outcomes. The final work helps the student to show their level of knowledge and understanding, ability to analyse the selected topic, to take the previous works in the field of agriculture (animal husbandry and/or fishery) performed by other persons into consideration, to study and perform agricultural researches independently, to describe own research work, and to formulate clear and reasoned research conclusions and recommendations in accordance with the requirements of the higher education institution;

44.3. the final work of the second cycle has to be based on individual researches, application of acquired knowledge, and it has to manifest the skills complying with the study programme's aims. The final work helps the student to show their level of knowledge and understanding, ability to analyse the selected topic, to assess the previous national and international works of agricultural sciences (animal husbandry and fishery), to study and carry out the researches independently, to present interpretations of the research results, to describe own research work, and to formulate clear and reasoned research conclusions and practical recommendations in accordance with the requirements of the higher education institution with regard to the received research data.

45. The assessment commission of final works has to be formed from competent specialists in the study field – scientists, professional practitioners, and representatives of stakeholders; the commission's chair cannot be from the higher education institution, which study programme is finished.

46. The number of workplaces in the lecture halls, laboratories, other premises used for teaching and independent work, their equipment and layout have to satisfy the needs of studies and the requirements of hygiene and work safety.

47. The laboratory equipment and devices necessary for specialised teaching or research laboratories and laboratory tools have to satisfy the intended learning outcomes of the study programme. The laboratories must have good-quality and appropriate instruments and devices. The university must have a centre (farm) of practical teaching and experiments or it has to have contracts for long-term cooperation (covering the whole duration of the studies) with the research and social partners of the studies, where different species of animals, pets, fish and other aquatic

organisms could be bred and raised, and where practical sessions could be held for the students.

48. The university implementing the studies in the field of fishery has to have a centre (farm) of practical teaching and experiments that would cover the total cycle of raising of aquatic organisms: keeping and gestation of breeders (mature organisms), in vitro fertilisation and berry incubation, raising of larvae and fry, and raising of baby and adult organisms.

49. The university implementing the studies in the field of animal husbandry has to have a centre (farm) of practical teaching and experiments that would cover the total cycle of raising of animals: suitable assurance of feed base, the welfare of animals and keeping technologies, raising of farm animals, breeding, selection, nutrition, and production of products of animal origin.

50. The number of computers in the computer rooms and training laboratories has to satisfy the needs of the students in a certain study programme. All computers must have the software for the processing and analysis of text and qualitative and quantitative data and innovative teaching programmes.

51. The libraries must have textbooks for the subjects taught in the group of study fields of agricultural sciences, books, methodical publications, journals and other literature in Lithuanian, English and other languages. The number of the literature has to satisfy the students' needs. The libraries must have a sufficient number of computers with suitable software (Internet connection with international databases, catalogues of literature, engine systems), and their number has to satisfy the minimal needs of the visitors.

52. The information about studies (timetables, curricula, descriptors of subjects/modules, etc.) have to be available on the higher education institution's website, while the teaching material has to be accessible to the students.

53. The possibilities have to be provided for the students with special needs (persons with disabilities of vision, hearing, movement and other disabilities) to study.

54. Requirements for practical training in the study fields of animal husbandry and fishery:

54.1. practical training is an integral and compulsory part of each study programme. It helps to master the skills, competencies and knowledge acquired by the student on the basis of the study programme and special training, to adjust and elaborate them in the practical activities;

54.2. the volume of practical training of the study programmes of the first cycle has to be at least 15 study credits. The volume of practical training of the study programmes of the second cycle has to be at least 5 credits. The place of practical training has to be matched to the topic of the student's graduation work and to be similar to the workplaces, where the graduate may get employed;

54.3. the practical training shall be organised in the procedure for the organisation of practical training prepared by the higher education institution, defining the requirements of practical training, particular tasks of practical training, expected results and assessment system of the achievements, support to students during the practical training, and the criteria that help to recognise and assess the skills of certain level acquired by the student in the course of practical training;

54.4. the reflective character of practical training tasks is recommended (diary writing, registration journal, reflective analytical analysis of practical experience in report, etc.);

54.5. the supervisors of practical training and stakeholders have to be involved in the process of organisation and improvement of the content of practical tasks and practical training and assessment of the trainee;

54.6. the programme of practical training is prepared with the aim to increase the professional experience by linking the student's academic preparation with the competence of practical activities. The practical training is organised so that the student would be able to train educational competencies in the course of studies, starting from the role of an observer and ending with independent fulfilment of functions under the supervision of the supervisor of practical training;

54.7. the higher education institution has to suggest a list of possible places of practical training, with which it has cooperation agreements, to the students. The practical training may be

organised in the Lithuanian and world private and public entities related to animal husbandry, fishery and pets in feed production companies, other manufacturing companies, animal husbandry or fishery farms, nurseries, shelters, administration organisations and consulting agencies, the Fisheries Service under the Ministry of Agriculture of the Republic of Lithuania, fishery research and science units of companies, institutions and organisations, fishery and aquaculture companies, fish research laboratories, and fish breeding centres. Having agreed with the higher education institution, the student may find a place for practical training themselves, yet it has to comply with the criteria established by the higher education school. When the institution for practical training is chosen, a trilateral agreement between the student, the higher education institution and the institution of practical training is made. The student may exercise the practical training while taking part in exchange programmes (in foreign companies, teaching centres, research centres and other organisations). If the higher education institution has equipment in the needed study field and has the specialists of high quality able to operate it, part or whole practical training may be undergone in the higher education institution;

54.8. when the students account for practical training, they shall submit a report on the performed practical training (a written work), where the tasks performed during the practical training and the received results have to be presented and analysed.

55. From the very beginning of the studies, the students should be encouraged to participate voluntarily in various projects, engage in research, participate in seminars, conferences, prepare publications, and thus develop their own personal and special skills consistently purposefully.

56. The academic support to students shall be provided in accordance with the procedure established by the higher education institution. It is recommended to teach the subject “Introduction to Studies” in the first year, as it provides knowledge on the peculiarities of the programme’s implementation, aims, tasks, intended outcomes, assessment of achievements, and the students are consulted about their career possibilities.

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