VYTAUTAS MAGNUS UNIVERSITY

VYTAUTO
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UNIVERSITETAS
M C M X X I I

Field of study: Ecology (D07)

Second cycle

SELF-EVALUATION REPORT

2021

Study Field Data

No.	Title of the study program	State code	Type of studies	Cycle of studies	Mode of study and duration (in years)	Credit volume	Qualification degree and (or) professional qualification	Language of instruction	Minimum education required	Registration date of the study program	Study program location
1.	Applied Ecology	6211DX013	Full-time/Part-time	Second cycle	2 years (full-time), 3 years * (part-time)	120	Master of Life Sciences	Lithuanian	Bachelor's degree	May 19, 1997 No. 565	VMU Agriculture Academy
2.	Agroecosystems	6213DX001	Part-time	Second cycle	3 years (part-time)	120	Master of Life Sciences	Lithuanian	Bachelor's degree	November 9, 2007 No. 2166	VMU Agriculture Academy

* Admission to full-time studies was carried out until 2018, and from 2019. carried out only for part-time studies.

Self-Evaluation Group

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INTRODUCTION

The National Sustainable Development Strategy pays great attention to reducing the environmental impact of the main branches of economy by increasing their eco-efficiency, justifying solutions to ecological problems through research, and integrating economic, social and environmental goals, objectives, and implementation measures. One of the priorities of the Lithuanian Public Environmental Education Strategy is the preparation of qualified environmental and other specialists, setting the task of preparing specialists for the environmental protection system and other environmental services, taking into account the changing situation in the country and environmental technology innovations in the world. Achieving the intended goals requires highly qualified Masters of Ecology and Agroecosystems with a broad education, who are able to identify environmental problems through research and justify the solution of these problems in an ever-changing environment.

Vytautas Magnus University (hereinafter referred to as VMU or the University) was established in 1922 and re-established in 1989. It is a classical university based on the common beliefs and values of freedom, openness and dialogue, and oriented towards humanistic culture. The University provides degree studies of all three cycles – Bachelor, Master and PhD studies, which cover a broad spectrum of study fields ranging from humanities, social sciences and arts to the fundamental sciences such as environmental science and biotechnology.

The University's Liberal Arts education profile, with core emphasis on studying broadly themed subjects, ensures that the studies offered at VMU are comprehensive, they are not restricted to specialized, pre-defined subjects. VMU's liberal study policy lets students themselves plan their studies by choosing general study courses and part of the study field courses, they also have the possibility to move from one study program to another and change the form of studies. Alongside a Bachelor degree diploma of their major specialty, VMU graduates can also get a certificate of minor studies and later apply for Master's degree program of another study field.

VMU works with many universities and scientists around the globe, implementing projects, enhancing student and staff exchanges, and improving the study and research system. It is an international and multilingual institution that continuously develops international networks and intercultural dialogues, participates in international scientific, academic and social projects, encourages teacher and student mobility.

VMU is managed by two collegial bodies, the Council and the Senate, and the separate managerial body of the Rector. The Council is a collegial management body which affirms the University's vision, mission and strategy, financial and other strategic issues. The Senate is a collegial body managing the academic affairs of the University. The University is headed by the Rector, and the Rector's advisory institution is the Rector's Council.

The study program of Applied Ecology is carried out at the Academy of Agriculture. There are five faculties in the Academy: Faculty of Agronomy, Faculty of Bioeconomy Development, Faculty of Agricultural Engineering, Faculty of Forest Sciences and Ecology, and Faculty of Water and Land Management.

There are 14 academic divisions at VMU: Faculty of Arts, Faculty of Catholic Theology, Faculty of Economics and Management, Faculty of Humanities, Faculty of Informatics, Faculty of Law, Faculty of Natural Sciences, Faculty of Political Science and Diplomacy, Faculty of Social Sciences, Agriculture Academy, Education Academy, Music Academy, Institute of Foreign Languages, Botanical Garden.

The study programs of Applied Ecology and Agroecosystems are carried out at the Agriculture Academy. There are five faculties in the Academy: Faculty of Agronomy, Faculty of BioeconomyBū Development, Faculty of Agricultural Engineering, Faculty of Forest Sciences and Ecology, and Faculty of Water and Land Management.

The second cycle study program of Applied Ecology was registered on May 19, 1997. No. 565 (hereinafter referred to as the AE program); it is administered and coordinated by the Dean's Office of the Faculty of Forest Sciences and Ecology (hereinafter referred to as the FFSE); the main executor is the Institute of Environment and Ecology (hereinafter referred to as the IEE) (until

October 8, 2012 – the Department of Ecology). The Institute of Forest Biology and Silviculture and the Institute of Forest Management and Wood Science of the Faculty , as well as the teachers from the Faculty of Agronomy and the Center of Cultural Communication and Educology are also involved in the program.
The faculty is currently preparing the following: masters in Forestry, Wildlife Resources and Their Management, and Urban and Recreational Forestry in the study field group of Agricultural Sciences, and masters in the Applied Ecology in the study field group of Life Sciences.
The second cycle study program of Agroecosystems was registered on November 9, 2007, No. 2166 (hereinafter referred to as the AE program); it is administered and coordinated by the Dean's Office of the Faculty of Agronomy (hereinafter referred to as the FA); the main executor is the Institute of Agroecosystems and Soil Sciences (hereinafter refered to as the IASS). The Institute of Forest Biology and Silviculture, the Institute of Forest Management and Wood and the Institute of Environment and Ecology2 of the Faculty of Forest Sciences and Ecology; the Institute of Biology and Plant Biotechnology and 9 the Institute of Agricultural and Food Sciences10 of the Faculty of Agronomy; the Research Insitute for Bioeconomy 11 of the Faculty of Bioeconomy Development and the teachers of the Center of Cultural Communication and Educology are also involved in the program 12.
The faculty is currently preparing the following: masters in Agronomy, Agrobiotechnology, Quality and Safety of Food Plant Raw Materials in the study field group of Agricultural Sciences, and masters in Agroecosystems in the study field group of Life Sciences.
In the group of life sciences study fields, first and second cycle Applied Ecology specialists are currently trained only by VMU Faculty of Forestry and Ecology
The training of ecological specialists is relevant for the implementation of the European Green
Course of the EU Communication. Lithuania needs ecologists who are able to think critically and creatively, have knowledge about wildlife and the processes that take place in it, knowledge of ecology and environmental protection, and understand the connections between organisms and the environment.
The external evaluation of the study field of Ecology was carried by international expert panels in 2014 and of the Agroecosystems study program in 2016. Comments, recommendations and a discussion of what actions have been taken are presented at the end of each chapter of the self-evaluation report.
There are no other study programs in the field of Ecology in VMU.

1. STUDY AIMS, OUTCOMES AND CONTENT

1.1. Evaluation of the conformity of the aims and outcomes of the field and cycle study programs to the needs of the society and the labour market.

A Master's degree in Life Sciences provides students with a solid foundation of knowledge in life sciences, complemented by studies in ecosystem management and agriculture. The studies are based on comprehensive theory and a high level of practical and applied learning. The studies are designed to educate versatile students with a high level of knowledge about ecosystem sustainability, based on the vital skills required to use climate change-related technologies. Teachers in the Applied Ecology and the Agroecosystems second cycle study programs are focused on providing quality knowledge and student growth in a cohort-based learning community. Graduates of the program pursue various careers related to environmental protection, organic farming and climate change or continue their studies at Doctoral level.
The preparation of specialists in Applied Ecology and in Agroecosystems is relevant for the implementation of the EU Communication on the European Green Deal[1] and corresponds to the

[12]COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. Brussels, 11.12.2019 COM (2019) 640 final.

outcomes of the study programs in the study field of Ecology. Every year the atmosphere is warming, and the climate is changing. One million of the eight million species on the planet are threatened with extinction. Forests and oceans are polluted and destroyed. The European Green Deal is a response to these challenges. It is a new growth strategy that aims to transform the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy where there are no net emissions of greenhouse gases in 2050 and where economic growth is decoupled from resource use. It also aims to protect, conserve and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts. Creating a toxic-free environment requires more action to prevent pollution from being generated as well as measures to clean and remedy it. To protect Europe's citizens and ecosystems, the EU needs to better monitor, report, prevent and remedy pollution from air, water, soil, and consumer products. To achieve this, the EU and Member States will need to look more systematically at all policies and regulations. To address these interlinked challenges, The Commission will adopt in 2021 a zero pollution action plan for air, water, and soil.

The natural functions of ground and surface water must be restored. This is essential to preserve and restore biodiversity in lakes, rivers, wetlands and estuaries, and to prevent and limit damage from floods. Implementing the 'Farm to Fork' strategy will reduce pollution from excess nutrients. In addition, the Commission will propose measures to address pollution from urban runoff and from new or particularly harmful sources of pollution such as micro plastics and chemicals, including pharmaceuticals. There is also a need to address the combined effects of different pollutants.

The Commission will draw on the lessons learnt from the evaluation of the current air quality legislation. It will also propose to strengthen provisions on monitoring, modelling and air quality plans to help local authorities achieve cleaner air. The Commission will notably propose to revise air quality standards to align them more closely with the World Health Organization recommendations.

Preparing specialists in Applied Ecology and Agroecosystems is one of the priority areas of science and studies. The European Parliament Resolution of 2011 stated that by 2020, EU agriculture must meet the food, natural resources and territorial challenges of the future. This has not been achieved so far; however, this is a goal. This means that the quality of the living environment remains a major challenge in the agricultural sector, both in the EU and worldwide. According to the FAO projections, by 2050, the world's population will reach 9.1 billion. With limited water, energy and soil resources, this will require a 70% increase in global food production. Environmental quality research has been and will be of strategic importance in the production of safe and high-quality food in agriculture. Pollution of the Baltic Sea is the result of human activities around the Baltic Sea. Agriculture is responsible for leaching some of the nutrients into watercourses (lakes, rivers and groundwater), and eventually into the sea. About 50% of the anthropogenic nitrogen load (53% of the total nitrogen load) and almost 50% of the anthropogenic phosphorus load (46% of the total phosphorus load) can be attributed to agriculture. Due to economic activities in Lithuania, 5% of total nitrogen and 7% of total phosphorus enter the Baltic Sea (HELCOM 2010). Therefore, it is very important that the Applied Ecology study program and the Agroecosystems study program prepare well-qualified ecology and climate change specialists with sufficient skills and knowledge of ecology, ecosystem sustainability, agricultural production methods, and the use, protection, management and planning of agroecosystems.

The aim of the Applied Ecology study program is to prepare Masters in Ecology study field who have knowledge of the individual, ecosystem-level processes and methods of their assessment, principles, and frameworks for nature management and environmental protection, biodiversity, species distribution, and their whole, who are able to understand fundamental environmental processes and are able to carry out research and apply the latest knowledge and methods in ecology and environmental protection in environmental activities that require innovation and knowledge integration.

The aim of the second cycle study program of Agroecosystems is to prepare Master degree students in Ecology with in-depth theoretical knowledge in the field of agroecology, organic and

sustainable agriculture, who are able to assess and shape the conditions influencing the development and productivity of agricultural plants, design rational technologies of intensive, sustainable and organic agricultural systems, assess the environmental impact of farming in terms of agroecological impact on agro-ecological aspects as well as assess the influence of agro-climatic factors on agroecosystems. A person who has obtained a Master's degree in Life Sciences will be able to define the elements of plant productivity and the factors influencing the quality of production and to select effective means of productive crop formation; to develop research methodology, carry out experiments, perform statistical analysis, evaluation and generalization of data.

In order to clarify the need for specialists in the study field of the program, a survey of interested parties was conducted, the aim of which was to find out the conformity of the learning outcomes to the needs of the society or the labor market. The survey sample was comprised of 75 respondents. To conduct a survey, a questionnaire was placed online, in the portal apklausk.lt; this survey questionnaire is no longer available. Requests to fill in the questionnaire were sent to the employees of all divisions of the Ministry of Environment and institutions subordinate to the Ministry, Environmental Protection Agency, Environmental Project Management Agency, Housing and Urban Development Agency, Plant Gene Bank, Lithuanian Environmental Investment Fund, all district municipalities, State Territorial Planning and Construction Inspectorate, Lithuanian Geological Survey, State Forest Service, and State Service for Protected Areas. The questionnaire was publicly available, it was possible to fill it in on the public survey page www.publika.lt. Questionnaires were filled in by the following institutions: Skuodas District Municipality, Public Institution "Ekoagros", Švenčionys District Municipality Administration, "Ūkininkas", Department of Agriculture of Jonava District Municipality Administration, Kaunas Environmental Protection Inspectorate of Kaunas Board of Environmental Protection Department under the Ministry of Environment, Environmental Quality Department, Utena Environmental Protection Board of Environmental Protection Department under the Ministry of the Environment, Kristina Martinėlienė's biodynamic farm, UAB "PhosAgro Baltic", National Land Service, Department of Agriculture of Biržai District Municipality Administration, Kaunas District Municipality Administration, Lithuanian Association of Land Management and Hydraulic Engineers. The survey results are presented in Tables 1–5.

Table 1. Status of the represented organisation:

Association, union or other public organisation	Public institution	Business enterprise, company, farmer	State and municipal institution or body	Research or educational institution
1 (1.33%)	6 (8%)	3 (4%)	63 (84%)	2 (2.67%)

Table 2. Does Lithuania need a specialist?

	Yes	No	I don't know
A graduate of the Applied Ecology program	66 (89.19%)	0	8 (10.81%)
A graduate of the Agroecosystems program	59 (79.73%)	4 (5.41%)	11 (14.86%)

Table 3. Would you employ a graduate of the programs to work in your company/organization (if there were a vacancy)?

	Yes	No
A graduate of the Applied Ecology program	64 (86.49%)	10 (13.51%)
A graduate of the Agroecosystems program	56 (75.68%)	18 (24.32%)

Table 4. In your opinion, what will be the demand for program specialists in the Lithuanian labor market after 4 years?

	The demand	The demand	The demand	The	The demand

	will remain the same	will increase slightly	will increase significantly	demand will decrease slightly	will decrease significantly
A graduate of the Applied Ecology program	21 (28%)	42 (56%)	7 (9.33%)	4 (5.33%)	1 (1.33%)
A graduate of the Agroecosystems program	25 (33.78%)	33 (44.59%)	8 (10.81%)	6 (8.11%)	2 (2.7%)

Table 5. What will be the demand for program specialists in the European Union labor market after 4 years?

	The demand will remain the same	The demand will increase slightly	The demand will increase significantly	The demand will decrease slightly	The demand will decrease significantly
A graduate of the Applied Ecology program	17 (22.67%)	40 (53.33%)	15 (20%)	3 (4%)	0
A graduate of the Agroecosystems program	23 (31.08%)	34 (45.95%)	12(16.22%)	5 (6.76%)	0

89.19% of the respondents answered that Lithuania needs a specialist in Applied Ecology; 79.73% of the respondents answered that Lithuania needs a specialist in Agroecosystems. 6.49% of the respondents answered that they would employ a graduate of the Applied Ecology study program and 75.68% of the respondents answered that they would employ a graduate of the Agroecosystems study program to work in their company/organization. 56% of the respondents believe that the demand for specialists in Applied Ecology in the Lithuanian labor market will increase slightly after 4 years. 44.59 % of the respondents believe that the demand for specialists in Agroecosystems in the Lithuanian labor market will increase slightly after 4 years. 53.33% of the respondents think that the demand for specialists in Applied Ecology in the European Union labor market will increase slightly after 4 years. 45.95% of the respondents think that the demand for specialists in Agroecosystems in the European Union labor market will increase slightly after 4 years. The results of the survey showed that graduates in Ecology are in demand in the labor market and comply with the needs of the modern labor market.

The aims of the programs are in compliance with the study cycle, and the programs are oriented to the future scientific, pedagogical and managerial work of the graduates in the Ministry of Environment and its subdivisions, State Environmental Protection Inspectorate, State Service for Protected Areas, Environmental Protection Agency, regional environmental protection departments, municipal environmental protection departments, forest enterprises, research and study institutions, and consulting companies.

Second cycle studies prepare specialists in ecology with the skills needed to study the relationship of organisms with the living environment at the levels of the individual, populations, and ecosystems and to address today's biodiversity challenges. Graduates of the program have good understanding of biodiversity, the distribution of species and their totality, and they are able to anticipate changes in the environment and understand the essential processes taking place in the environment.[2]

[2] Order No. V-1863 of November 30, 2020, of the Minister of Education, Science and Sports of the Republic of Lithuania No. of the Field of Ecology Studies.

Graduates of the field of ecology can work in educational institutions, science and study institutions, high technology, industry, research and development and production companies, in analysis, analytics and other fields, create new businesses and work in other ecological or nature protection and economic and management (state) institutions.
The need for the study programs is proved by the increased demand for specialists and the relevance of the constant dissemination of the latest scientific knowledge in the agri-environment quality sector; the surveys of the social partners, according to which, in the modern labor market, there is a demand for competent, motivated master students who can act as the department/division heads, researchers, consultants, municipal ecologists, ecologists in companies, institutions, closed joint-stock companies or specialists responsible for nature protection, evaluators of ecosystem condition, environmental project managers or executors, protected area specialists of various levels, climate change prevention specialists, local action group advisers, etc. In order for the sector to be able to adapt effectively to change and focus on innovation and business development, it is important to have enough qualified professionals capable of implementing knowledge and managing innovation.
Climate change has recently threatened the environment, ecosystems, agricultural activity, and economic development. Based on the best available scientific information provided in the Fifth Assessment Report of the Intergovernmental Panel on Climate Change and other published scientific studies, anthropogenic substances have the greatest impact on the climate system.
Creating and maintaining high-skilled jobs in regions where people would be encouraged to pursue higher education without fear of finding higher-skilled jobs in their place of residence. It will also encourage the creation of business in regions, which will require high-skilled workforce and thus attract more educated people (including young people) who can contribute to regional prosperity. Lithuanian Rural Development Program for 2014–2020, approved by the decisions No. C(2015)842 of February 13, 2015, and No. C(2020)4103) of June 15, 2020, of the European Commission.[3]
At the moment, in the study field of Ecology (D07) in Life Sciences (D), Vytautas Magnus University offers only the second cycle study programs under evaluation. There are no other study programs offered.

1.2. Evaluation of the conformity of the field and cycle study program aims and outcomes with the mission, objectives of activities and strategy of the HEI

The programs that were carried out until 2020, were in conformity with Vytautas Magnus University strategy for 2012–2020,[4] approved by VMU Senate on February 29, 2012, and VMU Council on April 19, 2012.
Mission. Vytautas Magnus University is a community-based research, art and study institution, which pursues the mission of the University of Lithuania, established in Kaunas in 1922, Creates liberal learning conditions for an individual, develops partnerships, takes active part in the life of Kaunas, advances the future of Lithuania, and contributes to the global cultural and academic development.
The University strategy is based on 5 fields with more detailed groups of objectives: 1. Socially active and responsible community. 2. Reliable international partner. 3. Studies favourable for unfolding talents and personalities. 4. The highest level of science and arts. 5. Harmonious and creative environment.
Vytautas Magnus University strategic plan[5] (strategy) for 2021–2027 was approved by VMU Senate and VMU Council on November 25, 2020.
The University strategy consists of clear strategic objectives: 1. Harmonious and united University community. 2. International research university. 3. Studies 360. 4. Coherence between self-government and responsibility. 5. The role of the University in the development of society.

[3] https://zum.lrv.lt/lt/veiklos-sritys/kaimo-pletra/lietuvos-kaimo-pletros-2014-2020-m-programa/programa-2

[4] https://www.vdu.lt/wp-content/uploads/2012/07/35129.pdf (LT, EN).
[5] https://www.vdu.lt/wp-content/uploads/2020/11/VDU-Strateginis-veiklos-planas-2021-2027.pdf

The Applied Ecology study program and the Aagroecosystems study program are in compliance with the University strategic objective 5.3—to seek leadership in the training of agricultural specialists and in the development of Agriculture, Forestry, Aquaculture and Rural Development Policies. The programs are strongly aligned with the tasks of the strategic objective 5.3:
5.3.1. To strengthen the role of the University in developing national policies on Agriculture, Forestry, Aquaculture and Rural Development and training of specialists;
5.3.2. To expand expert and consulting services based on the achievements of modern science both for agricultural entities and for public institutions;
5.3.3. To actively contribute to the European Green Deal, digitalization of agriculture, circular economy and other initiatives as well as to the substantiation of ideas by research and their implementation in Lithuania.
This corresponds to the learning outcome of the Applied Ecology study program: a graduate is able to analyze the structure, relationships, functioning, pollution processes, and change of ecosystems under changing environmental conditions of anthropogenic impact, explain the principles and methods of biodiversity conservation and environmental management, compare environmental policy concepts, principles and measures, and apply them in professional practice. A graduate is able to select ecological research methods and mathematical statistics methods for specific studies, and plan and carry out basic and applied ecological research.
This corresponds to the learning outcome of the Agroecosystems study program: a graduate is able to describe the characteristics of agroecosystems of various intensities, explain the regularities of their formation and regulation, modelling possibilities, describe renewable and biological resources and their potential, define the peculiarities of intensive, sustainable and organic agriculture systems, development directions and trends, interpret the strategic documents of Lithuania and the EU in the field of environment and agriculture. A graduate is able to analyze the significance of biodiversity in natural and artificial ecosystems and propose ways to preserve it.

1.3. Evaluation of the compliance of the field and cycle study program with legal requirements

The study curricula, aims and outcomes are presented in Annex 1-2. The structure of the study program corresponds to the general study requirements and the requirements of the Description of the Study Field. The structure of the Applied Ecology study program and the Agroecosystems study program complies with the general study requirements[6] and the requirements of the Description of the Study Field.[7] This coherence is presented in Annex 1-2.
The study program meets the following requirements:
-The requirements for the learning outcomes of the second study cycle provided in the Description of Study Cycles.[8]
The requirements formulated in the description of the Ecology study field for the study aims, learning outcomes and study content.[9]
Table 6. Conformity of the Applied Ecology program with the general requirements for *Master programs*.

Criteria	Requirements	In program
Scope of the program in ECTS	90 or 120 ECTS	120
ECTS for the study field	No less than 60 ECTS	60
ECTS for studies specified by University or optional studies	No more than 30 ECTS	30
ECTS for final thesis	No less than 30 ECTS	30
Contact hours	No less than 10%	37,5

[6] https://www.e-tar.lt/portal/lt/legalAct/739065a0ce9911e69e09f35d37acd719/asr (LT).
[7] https://www.e-tar.lt/portal/lt/legalAct/539256f0330311eb932eb1ed7f923910
[8] https://www.e-tar.lt/portal/lt/legalAct/775fbb90ac0711e6b844f0f29024f5ac
[9] https://www.e-tar.lt/portal/lt/legalAct/539256f0330311eb932eb1ed7f923910

Scope of independent learning	No less than 50%	62,5

The structure of the Agroecosystems study program complies with the general study requirements and the requirements[10] of the description of the study field. This coherence is presented in *Table 7.*

Table 7. The conformity of the Agroecosystems study program to general requirements for *second cycle* study programs.

Criteria	**Requirements**	**In program**
Scope of the program in ECTS	90 or 120 ECTS	120
ECTS for the study field	No less than 60 ECTS	84
ECTS for studies specified by University or optional studies	No more than 30 ECTS	36
ECTS for final thesis	No less than 30 ECTS	30
Contact hours	No less than 10%	10
Scope of independent learning	No less than 50%	50

The structure of the study program complies with all the legal acts regulating studies: the requirements for the general scope, the scope of the courses of the study field, the scope of practice and the final thesis, as well as the scope of contact and independent work. The qualification requirements for the staff implementing the program are evaluated in Chapter 5.

The study program meets the following requirements:

- The requirements for the learning outcomes of the second study cycle provided in the Description of Study Cycles.[11] For example, according of Annex 4 to the Description of the Study Cycles, Knowledge and its application: the latest knowledge in a field of study or activity is based on the results of fundamental or applied research, and a graduate is able to apply this knowledge in solving tasks in a new or unknown environment, conducting research or engaging in professional activities and introducing innovations. The learning outcome of the Applied Ecology study program: a graduate is able to analyze the structure, relationships, functioning, pollution processes, and change of ecosystems under changing environmental conditions of anthropogenic impact, explain the principles and methods of biodiversity conservation and environmental management, compare environmental policy concepts, principles and measures, and apply them in professional practice. These learning outcomes relate to following study courses: Environmental Bioindication, Environmental Policy, Nature Management, Diversity and Protection of Hydroecosystems, Diversity and Protection of Terrestrial Ecosystems, Diffusion of Pollution in Ecosystems.
- The requirements formulated in the description of the study field[12] for the study aims, outcomes and content. For example, one of the study outcomes of the second cycle studies in **Ecology is as follows:** *a person knows classical and modern concepts of ecology and nature protection and is able to apply them in his/her professional activity*. The learning outcome of **the Applied Ecology** study program: a graduate is able to analyze the structure, relationships, functioning, pollution processes, and change of ecosystems under changing environmental conditions of anthropogenic impact, explain the principles and methods of biodiversity conservation and environmental management, compare environmental policy concepts, principles and measures, and apply them in professional practice. These learning outcomes relate to the following study courses: Diversity and Protection of Terrestrial Ecosystems, Diversity and Protection of Hydroecosystems, Anthropogenic Ecosystems, Environmental Bioindication, Diffusion of Pollution in Ecosystems. The learning outcome of the **Agroecosystems** study program: a graduate is able to describe the characteristics of agroecosystems of various intensities, explain the regularities of their formation and regulation, modelling possibilities, describe renewable and biological resources and their potential, define the peculiarities of intensive, sustainable and organic agriculture systems, development directions and

[10] https://www.e-tar.lt/portal/lt/legalAct/739065a0ce9911e69e09f35d37acd719/asr (LT).
[11] https://www.e-tar.lt/portal/lt/legalAct/775fbb90ac0711e6b844f0f29024f5ac (LT).
[12] https://www.skvc.lt/default/lt/teisine-informacija/teises_aktai/studiju-krypciu-aprasai- (LT) arba https://www.skvc.lt/default/lt/teisine-informacija/ta_projektai/studiju-krypciu-aprasu-projektai- (LT) arba https://www.e-tar.lt/portal/lt/legalAct/539256f0330311eb932eb1ed7f923910

trends, interpret the strategic documents of Lithuania and the EU in the field of environment and agriculture. These learning outcomes relate to the following study courses: Organic Farming, Agroecology, Renewable Agricultural Resources and Waste Treatment, Modeling of Agroecosystems, Environmental Protection, Biological Diversity Conservation, Plant Protection in Organic Farming.

Learning outcomes are the basis for the scope of the courses, and the allocation of ECTS depends on the nature and complexity of learning outcomes. When learning outcomes are more complex, a higher number of students working hours is planned in the course, and more credits are assigned for such a course comparing to the one that covers learning outcomes of a lower complexity. Student workload encompasses a standard, usual number of hours necessary to complete the activities that have been planned in the course. Student workload includes their time in classes, laboratories, internship placements, making individual or group assignments, preparation for assessment, etc. 1 ECTS corresponds to 26.67 hours of usual student work time.

The volume of student workload and the allocation of ECTS are systematically reviewed.

Methodical work is regulated by General Study Requirements,[13] which specify that "...the volume of contact work must be at least 20%".

In 2020, the study programs were redesigned according to VMU requirements (Order of the Rector of Vytautas Magnus University No. 245 of 2 June 2021)—a simpler methodology for determining contact work hours was introduced: 4–5 ECTS—45 hours, 6 ECTS—60 hours, 7 ECTS—75 hours, 8 ECTS—90 hours, 30 ECTS for the final Master thesis (800 hours)—4 hours for contact work, 796 hours for independent work.

The study program consists of: 1. Study courses of the main study field and related courses, 2. Study courses of deeper specialization in the main study field (or other study field), 3. Research and final thesis. Study courses of the main study field and related courses—42 ECTS or 35% of the program volume, study courses of deeper specialization in the main study field (or other study field)—30 ECTS or 25% of the program volume, research paper—18 ECTS or 15% of the program volume, final thesis—30 ECTS or 25% of the program volume.

The scope of student workload and the allocation of ECTS are reviewed at least once per academic year.

The structure of the Ecology study programs is presented in Annex 1, and short descriptions of study courses are provided on the VMU study programs website, full descriptions of study courses are available in Moodle.

1.4. Evaluation of compatibility of aims, learning outcomes, teaching/learning and assessment methods of the field and cycle study program

The learning outcomes of the study program are formulated taking into account the aim of the program and include all the components of the aim.

The learning outcomes of the study course are compatible with the outcomes of the study program: a) the outcome of the study course covers the same or a narrower object compared to the outcome of the program; b) the outcome of the study course defines the ability of the same or minor (but not greater) complexity compared to the outcome of the study program. Study topics are formed on the basis of learning outcomes—they include the objects that are included in the learning outcomes. Study methods are compatible with learning outcomes as well as assessment methods are compatible with study methods.

Implementation of the study program encourages creativity and innovation of teachers with variation and flexibility of active teaching (learning) methods: explanation, presentation of reports (essays), case study, problem-solving, demonstration, project preparation and presentation, information analysis and generalization, watching videos, professional practices, etc. The aim of preparing and updating study course descriptions is to harmonize the aim of the study program, course outcomes and study and assessment methods. The volume of student workload and the allocation of credits are systematically reviewed and, if necessary, changed (not more often than

[13] https://www.e-tar.lt/portal/lt/legalAct/739065a0ce9911e69e09f35d37acd719/kfwQKicljg

once per academic year). Taking into account the rapid development of technologies, the updating of normative documents and the constantly growing need for knowledge, the outcomes of the study Applied Ecology study programs and outcomes of the study courses (Environmental Policy, Planning and Organization of Ecological Research) that are aligned with the outcomes of the study programs are periodically updated. For example, In the outcomes of the study course of Environmental Policy, the evaluation of the Green Deal Strategy has been included. To evaluate legal documents related to environmental policy as a tool for the implementation of activities. This is done during the attestation of courses—at least once in three years.

The aim of the Applied Ecology program is to prepare Masters in Ecology study field who have knowledge of the individual, ecosystem-level processes and methods of their assessment, principles, and frameworks for nature management and environmental protection, biodiversity, species distribution, and their whole, who are able to understand fundamental environmental processes and are able to carry out research and apply the latest knowledge and methods in ecology and environmental protection in environmental activities that require innovation and knowledge integration. One of the learning outcome of the Applied Ecology study program: a graduate is able to analyze the structure, relationships, functioning, pollution processes, and change of ecosystems under changing environmental conditions of anthropogenic impact, explain the principles and methods of biodiversity conservation and environmental management, compare environmental policy concepts, principles and measures, and apply them in professional practice. To achieve the learning outcome, students must study the following study courses: Environmental Bioindication, Diffusion of Pollution in Ecosystems, Diversity and Protection of Terrestrial Ecosystems, Diversity and Protection of Hydroecosystems, etc. For example, in the study course Diffusion of Pollution in Ecosystems 1. The outcome is to understand the processes of ecosystem pollution. Content: 1. Main characteristics of pollution processes; 2. Kinetics of reactions; 2. Mass balance; 3. Change in pollution over time, etc. Study methods include narration, interpretation, illustration, presentation of questions and answers, analysis of documents and scientific sources; assessment methods—a written test.

The aim of the Agroecosystems study program: To prepare highly qualified Masters of Ecology, able to form agroecosystems of various intensities, increase their sustainability and productivity, manage ecological processes in agriculture, apply the acquired knowledge in research and implement it in practice.

One of the learning outcome of the Agroecosystems study program: a graduate is able to describe the characteristics of agroecosystems of various intensities, explain the regularities of their formation and regulation, modelling possibilities, describe renewable and biological resources and their potential, define the peculiarities of intensive, sustainable and organic agriculture systems, development directions and trends, interpret the strategic documents of Lithuania and the EU in the field of environment and agriculture. A graduate is able to analyze the significance of biodiversity in natural and artificial ecosystems and propose ways to preserve it. To achieve this aim, students must study the following study courses: Agroecology, Soil Management in Agroecosystems, Agrobiological Potential of Plants, Weed Ecology, Crop Communities and Their Investigations, Biology and Fertility of Soil, Organic Farming, Methodology of Extension, Experimental Design and Analysis, Environmental Protection, Modeling of Agroecosystems, Biological Diversity Conservation, etc. For example, in the study course Agroecology 1. The learning outcome—the ability to define the most important concepts of agroecology. Contents: 1. Introduction. 2. The concept, development and peculiarities of agroecology, etc.; study methods—interpretation, illustration, discussions, individual tasks, performance of practical tasks, performance of team tasks.

1.5. Evaluation of the totality of the field and cycle study program courses/modules, which ensures consistent development of competences of students

Study programs: taught from 2020–2021 are presented in Annex 1, and short descriptions of study courses are provided on the website of VMU study programs Applied Ecology[14] and Agroecosystems.[15] Comments related to the study curricula are provided in Annex 1. The program update in 2019–2020 was determined by the following factors: 1. The need to comply with the Study Regulations of Vytautas Magnus University; 2. As the number of students decreased, it became irrational to offer both full-time and part-time study forms. The study programs will be updated for the study year 2021/2022 because, according to the new Description of the Study Field of Ecology, in the second cycle studies, at least 50% of the credits must be allocated for study courses that deepen or develop knowledge in the study field, not more than 20%—for optional or other study courses, at least 25%—for final work, and 5%—for practice. The volume of studies is 120 ECTS;

The Applied Ecology study program is carried out in the form of full-time studies (2 years, 4 semesters of 30±1 ECTS each) and part-time studies (3 years, 6 semesters of 20±1 ECTS each). The Agroecosystems study program is offered only in a part-time study form. Study timetables are prepared every semester for full-time study form (autumn semester: September–December; spring semester: February–May). Part-time students intensively study twice per semester with the sessions of 3 weeks. Session time is chosen so that it would not coincide with the seasonal working period in agriculture. Full-time and part-time face-to-face lectures have different timing and do not overlap.

The study courses in the Applied Ecology program are arranged in a sequential manner, starting with Statistical methods in Ecology, Diffusion of Pollution in Ecosystems, Research Methodology in Ecology, Diversity and Conservation of Terrestrial and Hydro-Ecosystems, etc., which are prerequisites for the planning of theoretical and/or experimental research, and the choice of equipment for experiments and measurements (prerequisite outcomes). In Semester I, the idea of the final thesis is chosen (the research goal and the main tasks are formulated), in Semester II, the research methodology is developed, the methodology of analysis and evaluation of the results are developed, the primary research is carried out and the analysis of the results is performed, and in Semester III, the processes of pollution dispersion in ecosystems and environmental policy are introduced. In Semester 4, the research is carried out according to a developed methodology, the results are analyzed and summarized, conclusions are drawn and the work is presented. The student also has the possibility to choose two study courses from the study field (8 courses) or alternative subjects from other study fields (4 courses). In addition, one optional course is designed to prepare for doctoral studies or professional activities (one course of 6 ECTS shall be selected). A student can choose from a list of study courses in his/her study field (2 courses) or a list of study courses in other study fields (2 courses). In Semester 5, students choose 3 study courses from the study field (8 courses) or alternatives from other study fields (4 courses). In Semester 6, 30 credits are assigned to the preparation and defence of the final thesis.

The study courses in the Agroecosystems program are arranged in a sequential manner, starting with Agroecology, Soil Management in Agroecosystems, Agrobiological Potential of Plants, Organic Farming, Experimental Design and Analysis, etc. and other courses which are prerequisites for the planning of theoretical and/or experimental research and the choice of experimental methodology. In Semester 1, the final thesis idea is selected, in Semester 2, the research aim and main objectives are formulated, in Semester 3, the research methodology and the methodology for analysing and evaluating the results are developed, in Semester 4, the preparations for the research are made and the primary research is carried out and in Semester 5, the research is carried out on the basis of the methodology developed, and in Semester 6, the Master's thesis is drafted: the results are analyzed, summarized, and the conclusions and the presentation of the thesis is made. The student

[14] https://zua.vdu.lt/studijos/studiju-programos/?/lt/study/program/subject/286
[15] https://zua.vdu.lt/studijos/studiju-programos/?/lt/study/program/show/309

also has the possibility to choose three study courses from the study field (2 courses) or alternative courses from other study fields (6 courses).

1.6. Evaluation of opportunities for students to personalise the structure of field study programs according to their personal learning objectives and intended learning outcomes

VMU provides students with possibilities to study according to an individual study schedule in order to meet specific learning needs. The schedule is designed on the basis of the implemented study program and individual study plans. An individual study schedule determines the allocation of the taken courses at a certain time, the number and time of consultations, the form and order of assessment, the beginning and end dates of the examination session. Studies according to the individual study schedule are regulated by the Description of the Procedure for Providing the Individual Study Schedule.[16]

VMU also provides students with opportunities to take individual studies when creating their own individual study plans following Artes Liberales principles. Following the study timetable, specific study programs and the requirements of the Study Regulations, students can prepare individual study schedules each semester in order to acquire additional knowledge and skills necessary to prepare for further academic and professional activities. Individual studies are regulated by the Order on Organization of Individual Studies[17] and VMU Study Regulations.[18] A student who is interested in an individual study plan fills an application form and confirm it with the Dean. The Dean evaluates the validity of the application, creates and confirms an individual study plan. Individual studies allow for variation in timetable but do not reduce the level of knowledge. Students who choose addition study courses do not need to pay a fee for additional study credits in excess of the scope of the program. Only motivated and prepared students are selected for individual studies through a competition.

The University is intercultural and multilingual that is why students have opportunities to choose different foreign languages. More than 30 different language are available at VMU.

In order to individualize studies, the student submits a motivated application to the Vice-Dean for Studies, who assesses validity of the application and creates/confirms an individual study plan.

In the Applied Ecology study program, 36 credits are allocated for optional study courses. When choosing the topic and scientific advisor of the final thesis, a student can choose from all VMU teachers (FFSE, AF, FNS) working in the study fields of Ecology, Agriculture, Environmental Engineering, Natural Sciences, Technology, Medicine, and Health Sciences.

In the Agroecosystems study program, 18 ECTS are allocated for optional courses. A student chooses the topic for the Master's thesis himself/herself in coordination with the scientific advisor —the University teacher, and the research can be carried out in another research institution, such as the Lithuanian Research Centre for Agriculture and Forestry. A researcher from another institution may be a consultant to a second cycle student.

1.7. Evaluation of compliance of final theses with the field and cycle requirements

Preparation and defence of final theses is regulated by VMU Study Regulations and General Order on the Final Theses Preparation and Defence.[19]

The Order describes the general requirements for final theses preparation and defence of first and second study cycle, integrated and professional studies. Special requirements for preparation, formatting, and presentation for defence of final theses are set by faculties and academies, the subdivisions of which (i.e., departments and academies) prepare methodological guidelines. In accordance with a specific study program, they set the requirements for final theses, their preparation, defence, and special evaluation criteria.

[16] https://www.vdu.lt/wp-content/uploads/2015/01/VDU-individualaus-studiju-grafiko-teikimo-tvarkos-apra%C5%A1as.pdf (LT).
[17]: https://www.vdu.lt/wp-content/uploads/2015/01/Individualiuju-studiju-tvarkos-aprasas.pdf (LT).
[18] https://www.vdu.lt/wp-content/uploads/2019/12/Studiju-reguliaminas_po-Senato-2019.pdf (LT).
[19] https://www.vdu.lt/wp-content/uploads/2020/05/Baigaim%C5%B3j%C5%B3-darb%C5%B3-tvarka.pdf (LT).

Students can defend their final theses only after completing the compulsory study program. Final theses are defended at the end of the last semester. If the thesis is evaluated negatively, the student may re-defend the final thesis no earlier than after six months after the first defence. Evaluations of final theses are not subject to appeal.

When preparing a final thesis, a second cycle student usually performs research work and must publish a scientific article on the subject in the light of the results obtained. Most of the articles prepared by second cycle students are published in the proceedings of the annual scientific conferences "The Young Scientist", "Human and Nature Safety", "Herbology: Ecology and Control of Weeds". Second cycle students of both programs may participate in student conferences organized at other universities. For example, in 2021, two second cycle students of Applied Ecology participated in a scientific conference organized by Vilnius Gediminas Technical University. The initial defense of the prepared final theses is carried out in the Commission formed of the teachers of the Institute of Environment and Ecology, the Institute of Agroecosystems and Soil Sciences, the Institute of Biology and Plant Biotechnology, and the Institute of Agricultural and Food Sciences 3–4 weeks before the public defense. During the course of defense, a decision is made on whether to continue the defense of the final thesis. The final theses before the public defense are evaluated by reviewers. The public defense takes place in the Final Thesis and Examination Assessment Commission, which consists of 5 members and a chairperson (including 4 representatives of the faculty, researchers from other institutions, social partners; the commission is always chaired by a representative of scientific social partners) who are annually approved by the Faculty Council and VMU Rector. During the public defense, the members of the Final Thesis and Examination Assessment Commission evaluate the final theses and their defense. During assessment, attention is paid to the quality of the thesis, its presentation, the theoretical readiness of the student, the ability to clearly and consistently express his/her thoughts, how the student answers to questions on the topic of the thesis and the reviewer's assessment. The grade of the final thesis is calculated as the arithmetical average of the assessments of all members of the commission and the reviewers. The members of the commission evaluate the final thesis on the basis of the criteria set out in the Description of the Procedure for Preparing and Defending the Final Thesis. Compliance of the final theses with the requirements of the study field and the study cycle is carried out by the Final Thesis Assessment Commission and, after the defense, the chairperson of the commission submits a report to the Faculty Council. A Description of the Procedure for the Preparation and Defense of Second Cycle Final Thesis in Applied Ecology is prepared and updated annually[20]. All information necessary for the preparation of the final thesis in the study program of Agroecosystems is posted on the website of the Faculty of Agronomy.[21]

The lists of final theses defended in 2018, 2019 and 2020 are provided in Annex 2. In 2018–2020, there were no Master's theses in Applied Ecology commissioned by social partners, but in 2021, the Master's thesis was prepared and defended under the agreement with Kaunas District Municipality Administration "Impact of Climate Change on the Surface Water Status of Kaunas District".

The external evaluation of the Applied Ecology study field was carried by international expert panels in 2014 and of the Agrosystems study program in 2016. Expert recommendations are presented in Table 8 and at the end of the descriptions of all other evaluation areas. Expert recommendations provided during the external evaluations in 2014 and 2016 related to "Study aims, outcomes and content" and their implementation are presented in Table 8. Strengths and areas for improvement are presented in Table 9.

Table 8. Expert recommendations provided during the external evaluations in 2014 and in 2016 and their implementation.

Expert recommendations provided during the last external evaluation *Study aims, outcomes and content*
Applied Ecology (External evaluation in 2014)

[20] https://zua.vdu.lt/wp-content/uploads/2019/04/mef-nurodymai_ii_s_pakopos_baigiamajam_darbui_rengti.pdf
[21] https://zua.vdu.lt/fakultetai/agronomijos-fakultetas/studentams/baigiamieji-darbai-egzaminai/

1.	*Recommendation*	*Actions taken by the HEI*	*Notes*
	To include in the study program all major courses in Ecology.	The Study Program Committee annually reviews the structure of the study program. At present (from 2015), the program covers all subjects of Ecology: the study program consists of compulsory study courses, such as Diversity and Protection of Terrestrial Ecosystems, Diversity and Protection of Hydroecosystems, Nature Management, Anthropogenic Ecosystems and other courses, as well as 3 optional courses in the group of optional study courses—Biological Diversity, Forest Ecology, Environmental Quality.	
2.	*Recommendation*	*Actions taken by the HEI*	*Notes*
	In Master theses, a clear scientific question should be raised and formulated as a hypothesis to be tested, and methods to reject or accept that hypothesis should be applied. When courses allow this, preference should be given to experimental studies rather than descriptive ones;	Methodological guidelines for the preparation of the final thesis have been prepared. They contain the necessary chapters (introduction, literature analysis, research methods, etc.). 92% of the final Master theses in 2018–2020 were experimental. In final theses, the scientific problem (hypothesis) to be solved is formulated, and in conclusions, this hypothesis has to be justified, and/or the extent and solutions of the problem should be proven.	
3.	*Recommendation*	*Actions taken by the HEI*	*Notes*
	Given the small number of entrants and the related ineffective teaching, the University should consider combining the Applied Ecology study program *with one* or more similar programs in the country or finding other ways to make the program more sustainable.	Much attention is paid to publicizing the study program in the media and social networks. In addition, college graduates are also actively invited to study in supplementary studies, upon the completion of which, the right to enroll in Master studies is granted.	
Agroecosystems (external evaluation in 2016)			
1.	*Recommendation*	*Actions taken by the HEI*	*Notes*
	The University should review the structure of the study program and ensure that the content of the program is consistent with the title of the program and the expected learning outcomes.	The Study Program Committee reviewed the study program curriculum and course descriptions as well as the topics presented in the descriptions. The number of optional courses was increased, one compulsory study course was replaced by another course (Environmental Chemistry was replaced by Soil Biology and Fertility AGR5009).	
2.	*Recommendation*		
	The revision of the study program should include the missing fields of study (e.g., economics, financial management as far as agricultural production is concerned).	An optional course (AGR5004 Bioeconomics) was included.	
3.	*Recommendation*		
	The non-living environment theme should take a greater part in the content of the program compared to the part of the soil theme.	By the decision of the Study Program Committee, it was proposed to the teachers of the program to expand separate topics related to the non-living environment in the courses that they teach. For example, in the course of Agroecology, the topics of water, air pollution, and its management were added.	
4.	The quality of Master's theses prepared by students should be improved by applying statistical methods and linking the research results obtained by students with the scientific literature.	In 2019, research methodology courses were organized for the teachers of the Faculty of Agronomy, providing them with an opportunity to get acquainted with the latest methods of statistical data evaluation. The Methodological Guidelines for the Preparation of Final Theses (2020) were updated.	

Table 9. Summary of the area to be evaluated. Strengths and areas for improvement

Main results of the self-evaluation in the evaluation area *Study aims, outcomes and content*
Strengths
1. The study programs are versatile, broad and cover the entire field of Ecology. 2. The programs are coherent, with logical connections between individual groups of courses, and they the applicable requirements for study programs. 3. The learning outcomes of the study courses in the program systematically form the totality of the study program outcomes. 4. High demand for specialists in the study field of Ecology, a wide range of competences. This creates conditions for the successful development of studies and the opportunity to meet the demand for graduates in Ecology.
Areas for improvement
To focus even more on the publicity of the study program, thus reaching the widest possible audience of interested students.

2. LINKS BETWEEN SCIENCE AND STUDY ACTIVITIES

2.1. Evaluation of the sufficiency of the science (applied science, art) activities implemented by the HEI for the field of research (art) related to the field of study

A distinctive feature of VMU in the development of science and art is the activities of research clusters. These clusters are the active groups of researches in various fields. They carry out joint research, integrate studies and science combining the scientific potential of several departments. At the moment, there are 48 research clusters in the University in the fields of humanities, social sciences, arts, natural science and technology. In the Agriculture Academy, cluster functions are performed by the Institutes. The study program of Applied Ecology is carried out at the Institute of Environment and Ecology,[22] whereas the study program of Agroecosystems—at the Institute of Agroecosystems and Soil Sciences (coordinating Institute), the Institutes of Biology and Plant Biotechnology, and the Institute of Agricultural and Food Sciences.

At the University, research is organized and conducted in accordance with the regulations of institutes and clusters. R&D is organized and conducted in institutes. During the evaluation period, the research team conducted research directly related to the Life Sciences study field.

The scientific activity of teachers is very important in ensuring the quality of university studies. Active scientific work of teachers helps to share the latest achievements in science and technology with students. Teachers publish scientific articles, present their research in conferences, and participate in projects. The topics of the research conducted by the teachers are closely related to the courses taught by the teachers. The most important publications (3 publications within the last 5 years) of teachers from this study field are presented in Annex 4.

Based on the description of the study field of Ecology,[23] studies in Ecology are an academic field integrating the knowledge and skills of life, physical and social sciences that are necessary to solve ecological and environmental problems; teachers' research areas must cover not only life science but also physical, social, environmental engineering research areas. In accordance with Annex 6 to the Description of the External Evaluation and Accreditation Procedures for Study Fields, the study field of Ecology (D07) of the Life Sciences' study field group is linked to the study field of Ecology and Environmental Science (N 012) of the Natural Sciences' study field group. The latter study field is also related to the study field of Environmental Science (C07) of Physical Sciences' study field group.

During the comparative expert assessment of research and experimental development (R&D) (2018) in the field of Biomedical Sciences of then Aleksandras Stulginskis University, the quality of research activities of the evaluation unit of the Ecology and Environmental Science scored 3 points (the unit is strong with limited international recognition); the economic and social impact of R&D activities was assessed with 3 points (the unit conducts important research and is an important

[22] https://zua.vdu.lt/fakultetai/misku-ir-ekologijos-fakultetas/padaliniai/aplinkos-ir-ekologijos-institutas/
[23] https://www.e-tar.lt/portal/lt/legalAct/539256f0330311eb932eb1ed7f923910

partner in R&D issues outside the academic community); the development potential of R&D activities was assessed with 3 points (the unit is able, over the next 5–10 years, to improve the assessments of the quality as well as the economic and social impact of R&D activities). During the comparative assessment of research activities in 2014–2015, the evaluation unit of then Aleksandras Stulginskis University "Forestry and Ecology" was evaluated with 3 points as an important national actor with the potential to become an important international actor.

Results of the annual evaluation of R&D activities which was carried out by the RCL in the field of Natural Sciences[24] (formerly known as Biomedical Sciences) for the period 2017–2019 shows a fairly stable 3rd place among other Lithuanian universities (according to the score of the formal evaluation) (Table 10).

Table 10. Results of the formal evaluation of the fields of Biomedical Sciences (2017), Natural Sciences (2018–2019) during the annual evaluation of R&D activities, which was performed by the RCL.

Institution	2017		2018		2019	
	FTE_i *	**LF_i** **	FTE_i *	**LF_i** **	FTE_i *	**LF_i** **
Aleksandras Stulginskis University	9.18	**70.68**	-	-	-	-
Vytautas Magnus University (until 2017)	21.96	**84.42**	-	-	-	-
Lithuanian University of Educational Sciences	5.35	**100**				
Vytautas Magnus University (from 2018)	-	-	45.65	**75.55**	48.14	**64.42**

*FTE_i—full-time equivalent of researchers in the field of the institution, parts of posts;

**LF_i—the score of formal evaluation determined in comparison with the results other institutions in relation to 1 researcher's FTE, %. Calculated only for those institutions whose FTE of the field researchers is equal to or greater than five

The number of scientific articles in current VMU in the field of Ecology and Environmental Science published in the publications indexed in CA WOS DB, with IF/AIF average ≥ 0.25, and included in the annual evaluation of R&D activities which was performed by the RCL is increasing: in 2017, there were 40 such articles published; in 2018, 43 articles; in 2019, 51 article.

During the annual evaluation of R&D activities which was performed by the RCL in 2018, 99.9 thousand EUR and in 2019, 122.8 thousand EUR were credited. VMU received the mentioned amounts for the participation in projects of international research programs in the field of Ecology and Environmental Science.

In the 2018 final report of the comparative expert assessment of R&D activities of Lithuanian universities and research institutes in the field of Biomedical Sciences, Ecology and Environment (03B) scored 3.

Scientific activities related to the direction of Ecology studies are carried out in the departments of the Institute:

JOINT RESEARCH CENTRE OF AGRICULTURE AND FORESTRY

Environment Laboratory
Laboratory of Quality Vegetable Raw Materials
Laboratory of Agrobiotechnology
Laboratory of Agrobiology
Laboratory of Climate Change Impact to Forest Ecosystems

CENTER OF FOREST SECTOR RESEARCH, STUDIES AND DEVELOPMENT

Laboratory of Game Management

CENTRE OF BIOSYSTEMS ENGINEERING, BIOMASS ENERGETICS AND WATER ENGINEERING

Laboratory of Biogas

[24] https://www.lmt.lt/lt/mokslo-kokybe/mokslo-meno-vertinimas/kasmetinis-mokslo-meno-veiklos-vertinimas/2885

Biodiesel, Bioethanol and Biological Lubricants Laboratory
Laboratory of Biological Waste And By-products Usage
Laboratory of Biomass Treatment, Logistics and Solid Fuel Processes
Laboratory of Automatic Control of Machines, Technological Systems and Processes
Laboratory of Progressive Agricultural Engineering
Synthesis Gas, Second Generation Liquid Biofuel and Biohydrogen Laboratory
Laboratory of Structures and Building Materials
Laboratory of Technology Safety
Laboratory of Heat-Energy Processes and Emissions
Laboratory of Aquatic Ecosystems

CENTER FOR SCIENCE AND STUDY OF AGROECOLOGY AND PLANT BIOPOTENTIAL

Laboratory of Soil and Crop Ecology

INSTITUTE OF ENVIRONMENT AND ECOLOGY

Laboratory of Chemical and Biochemical Research for Environmental Technology
Center of Agroecology.

Plans to develop research are best revealed in project preparation. The Institute of Environment and Ecology prepares at least 20 different project applications each year. For example, in 2020, the employees of the Institute of Environment and Ecology have submitted applications for the following projects: Lithuanian–Ukrainian – 3 applications (funded by all countries); high level of R&D (SMART) – 2 applications (Research Council of Lithuania – RCL); postdoctoral fellowships – 2 applications (RCL); projects of scientific groups –2 applications (RCL); LIVE – 1 application (EU); ERA-NET – 1 application (EU, RCL). Applications have been submitted in scientific projects funded by the Research Council of Lithuania, Horizon 2020, Inerreg and economic operators.

2.2. Evaluation of the link between the content of studies and the latest developments in science, art and technology

At the University, research is organized and conducted in accordance with the regulations of institutes and clusters. R&D is organized and conducted in institutes. During the evaluation period, the research team conducted research directly related to the Ecology study field. At the Institute of Environment and Ecology, research related to studies in the field of Applied Ecology and Agroecosystems have been conducted:

Interreg Baltic Sea Region program. “Water Emissions and Their Reduction in Village Communities-Villages in Baltic Sea Region as Pilots-Village Waters”; Research Council of Lithuania. Analysis of the tribological properties of environmentally friendly ammonium protolytic ionic liquids; Alytus City Municipality Administration. Implementation of Alytus City Municipality Environmental Monitoring Program 2017-2022; Kaunas District Municipality. Implementation of Kaunas District Municipality Environmental Monitoring Program 2014-2020; Kaunas District Municipality. Research of surface water in the territory of Kaunas District Municipality. The State Service for Protected Areas under the Ministry of Environment. Implementation of the European Union Twinning Project “Strengthened capacities for preparation of draft management plans for natural protected areas (potential future NATURA 2000 sites)”. Farmer Darius Aperavičius. Studies on the use of Biohumicacids bio-organic fertilizers for seed preparation and crop spraying; Scandagra, UAB. Research of the effectiveness of soil improvement measures produced using bone meal in an organic farming system; Akvatera, UAB. Development of a new generation of feeds for the improvement of animal health using oleaginous components; MMA Foods, UAB. Research of development processes of liquid eco-friendly potash fertilizers using organic and inorganic waste; Akvatera, UAB. Use of poultry fat in pet foods production; Ekovormas, UAB. Research of the properties and impact on soil biodegradation processes and plants of organic matter and plant products suitable for organic production and vermicompost processed by the earthworm Eisenia fetida; LIFE project “Optimisation of the management of the Natura 2000 network in Lithuania” 01–01–2018—12–31–2027 Environmental Project Management Agency (coordinator); Horizon 2020 project GENTREE. Based on a contract with the European Commission. Optimising the

management and sustainable use of forest genetic resources in Europe. Horizon 2020 project ALTERFOR. Based on the Contract with Research Executive Agency (EC) Alternative models and robust decision-making for future forest management. Environmental Protection Agency. Assessing the impact of long-range transport of air pollutants from other countries on the status of relatively natural ecosystems. 10–29–2019—04–30–2021.

Research results are integrated into the following study courses: Diffusion of Pollution in Ecosystems, Diversity and Protection of Terrestrial Ecosystems, Diversity and Protection of Hydroecosystems, Nature Management, Research Methodology in Ecology, Agroecology, Soil Management in Agroecosystems, Organic Farming, etc. For example, the project Interreg Baltic Sea Region Program was implemented under the leadership of Laima Česonienė. "Water Emissions and Their Reduction in Village Communities-Villages in Baltic Sea Region as Pilots-Village Waters" became a part of the content of the study course Diffusion of Pollution in Ecosystems—Diffusion of pollution in water systems. Spread of pollution in the atmosphere.

In order to disseminate research results, the teachers of the study program organize international scientific conferences "The Young Scientist", "Human and Nature Safety", "AGROECOSYSTEM SUSTAINABILITY: Links between Carbon Sequestration in Soils, Food Security and Climate Change (AGROECO)" (every second year), which create opportunities to share research experience with scientists from other countries, and students can present their papers in these conferences or learn about the latest academic advances. The program teachers L. Česonienė, V. Marozas, E. Sendžikienė, V. Paulauskas and others participate in the doctoral process. Researchers working in the programs are actively involved in the processes of joint doctoral studies in the field of Ecology and Environmental Science.

Teachers of the Applied Ecology study program are members of editorial boards of international scientific journals, organizers and members of international scientific conferences. Prof. V. Maroz is a member of the editorial boards of the journals "Baltic Forestry" and "Miškininkystė". From Agroekosystems, Assoc. Prof. Dr. Rita Pupalienė is a member of the editorial board of the journal "Agriculture-Zemdirbyste", Prof. Habil. Dr. Rimantas Velička is a member of the editorial board of the journal "Žemės ūkio mokslai", Prof. Habil. Dr. Pavelas Duchovskis is a member of the editorial boards of the journals "Folia Horticulturae", "Sodininkystė ir daržininkystė", "Žemės ūkio mokslai", "VDU Botanikos sodo mokslo darbai", Prof. Dr. Kęstutis Romaneckas is Editor-in-Chief of the journal "Žemės ūkio mokslai", a member of the editorial board of the journal "Agronomy Research", a guest editor of the journal "Agronomy", an editor of special issues of "Multi-Functional Cultivation of Crops" and "Sustainable Tillage and Sowing Technology", Vladzė Vitunskienė a member of the editorial boards of the journals "Current Analysis on Economics & Finance" and "Economics and Rural Development", Assoc. Prof. Dr. Zita Kriaučiūnienė is a member of the editorial boards of the journals "Agronomy Research". "AGRAARTEADUS: Journal of Agricultural Science" and "INMATEH – Agricultural Engineering", an editor of the Agri-Innovation and Food Technology Section in the Proceedings of the international conference "Rural Development 2019: Research and Innovation for Bioeconomy", Prof. Habil. Dr. Elvyra Jarienė is a member of the editorial boards of the journals "Journal of Elementology" and "Herbalism", Assoc. Prof. Dr. Rimantas Vaisvalavičius is a member of the editorial board of the journal "Bulletin of Geography. Physical Geography Series", Prof. Dr. Gintautas Mozgeris is an editor of the journal "Baltic Forestry" and the special issue "Operationalization of Remote Sensing Solutions for Sustainable Forest Management" of the journal "Remote Sensing", Aida Adamavičienė is an executive secretary of the journal "Žemės ūkio mokslai".

In order to ensure the unity of science and studies, it is very important that the courses taught by teachers correspond to the research areas.

At the University, research-based studies are developed:

- students of the Applied Ecology program prepare exploratory final theses (in 2018–2020, there were 93% of them); students of the Agroecosystems study program also prepare exploratory final theses (in 2018–2020, there were 100% of them).
- teachers use research results in study courses;

The monitoring of the operational effectiveness of research and experimental development units (clusters, institutes, research groups) is carried out by the Research and Arts Unit of the Research and Innovation Department. The efficiency
of research activities is assessed and funds are allocated taking into account the following indicators:
- results of scientific production (according to the methodology of the evaluation of scientific production of the University);
- results of other scientific activities—the organization of scientific conferences, seminars, exhibitions, etc.,
project activities and evaluations of other achievements (prizes, winners of competitions, etc.) according to the methodology used at the University for calculating other scientific activities;
- contribution of the R&D unit to the study process;
- The full-time equivalent (FTE) of researchers involved in the activities of the R&D unit.[25]

2.3. Evaluation of conditions for students to get involved in scientific (applied science, art) activities consistent with their study cycle

Second cycle students also prepare scientific exploratory final theses.
All students publish their research results in scientific and science popularization journals and present them at the conferences "Young Scientist" and "Human and Nature Safety", which is organized annually. Second cycle students participate in the conference for young scientists "Science —the Future of Lithuania" organized by Vilnius Gediminas Technical University. In 2021, 2 presentations were given on the topics: "Impact of Climate Change on Surface Water Status" and "The Impact of Kaunas Reservoir on the Nemunas Water Status".
When evaluating the effectiveness of scientific activities and allocating funds, the employment of students in projects that are carried out is also taken into consideration. In this way, the involvement of students of all cycles in research in institutes is encouraged. Currently, three Master theses are being prepared; during the preparation of the theses, the students carried out experimental research in the projects the "Interreg Baltic Sea Region Program". "Water Emissions and Their Reduction in Village Communities-Villages in Baltic Sea Region as Pilots-Village Waters" and "Implementation of Kaunas District Municipality Environmental Monitoring Program for 2014–2020"; "Research of surface water in the territory of Kaunas District Municipality". The final thesis "Implementation of Alytus City Municipality Environmental Monitoring Program for 2017–2022" is being prepared and will be defended in 2023. The aim of this work is to assess the condition of surface water after the fire in Alytus.
The faculty is actively engaged in scientific activities—there are 7 doctoral students studying at the faculty (2 of them are in the field of Environmental Engineering; 5, in the field of Environment and Ecology). The topics of Master's theses are often combined with the research topics of the doctoral students, thus the doctoral students are involved in the study process.
Expert recommendations provided during the external evaluations in 2014 and 2016 for the area "Links between science (art) and study activities" and their implementation are presented in Table 11.
A summary of the evaluation area, its strengths and areas for improvement is presented in Table 12.

Table 11. Expert recommendations provided during the external evaluation in 2014 and 2016 and their implementation.

Expert recommendations provided during the last external evaluation
Links between science (art) and study activities

[25] The full-time equivalent (FTE) of researchers is the number of hours worked per year by researchers in the R&D unit divided by the total number of hours worked in the 12-month period of that year as determined by the Minister for Social Security and Labor.

Applied Ecology (External evaluation in 2014)			
1.	*Recommendation*	*Actions taken by the HEI*	*Notes*
	The staff should strive to publish more and to publish more often in English in journals covered by the science citation index.	Teachers publish their scientific articles in peer-reviewed periodic, continuous and one-time Clarivate Analytics Master Journal List journals with an impact factor above zero and the quartile Q value of 2 and above.	
Agroecosystems (external evaluation in 2016)...			
1.	*Recommendation*	*Actions taken by the HEI*	
	It is necessary to improve the results of staff research (ISI publications, international project activities) in order to meet the new standards.	Teachers publish their scientific articles in peer-reviewed periodic, continuous and one-time Clarivate Analytics Master Journal List journals with an impact factor above zero and the quartile Q value of 2 and above. Compared to 2019, the number of publications in 2020 increased.	
2.	*Recommendation*	*Actions taken by the HEI*	
	To expand the material base in cooperation with external stakeholders such as research institutions and companies.	Some second cycle students are already conducting research or individual fragments of it at the institutes of the Lithuanian Research Centre for Agriculture and Forestry, and after the integration of ASU and VMU, the possible research base will be further expanded.	

Table 12. Summary of the area to be evaluated. Strengths and areas for improvement.

Main results of the self-evaluation in the evaluation area *Links between science (art) and study activities*
Strengths
1. A team of researchers of international and national level works in the study program. 2. The research base created by the faculty conducts research in the areas relevant to the study program: Quality of the environment (soil, air, water, vegetation), Biodiversity, structure, sustainability and change of natural and anthropogenic ecosystems under conditions of climate change and human impact, Bioenergy, chemical and biotechnological processes, Environmental condition improvement and climate change, Sustainable use of land, forest, water, and energy resources, Healthy and safe food. and other research. 3. Research and projects that are conducted create preconditions for high-quality studies in the field of Ecology 4. Periodic international conferences ("Rural Development", "Human and Natural Safety") contribute to the development of international relations and the preparation of new projects.
Areas for improvement
Teachers applying for project activities but not receiving funding have minimal opportunities to conduct scientific activities. Improvement. The staff of the Open Access Center and the staff of the Communication and Technology Transfer Center assist in submitting scientific applications. Better results are expected.

3. STUDENT ADMISSION AND SUPPORT

3.1. Evaluation of the suitability and publicity of student selection and admission criteria and process.

Requirements for admission to the Applied Ecology study program: having completed first cycle (Bachelor's) studies of the branch of ecology in the field of biology; having completed first cycle (Bachelor's) studies in other areas in the field of biomedical sciences and having heard and passed examinations in the courses of the study field of ecology, the total volume of which is not less than 30 credits; Having completed fist cycle (Bachelor's) studies in other fields of science and having listened to and passed the examinations in the courses of the branch of ecology, the total volume of which is not less than 60 credits; Having completed college (professional bachelor) studies and additional studies according to the Applied Ecology program.

Requirements for admission to the Agroecosystems study program: having completed first cycle (Bachelor's) studies of the study field of ecology; having completed first cycle (Bachelor's) studies in other areas in the field of biomedical sciences and having heard and passed examinations in the courses of the branch of agronomy and ecology, the total volume of which is not less than 30

credits; Having completed fist cycle (Bachelor's) studies in other fields of science and having listened to and passed the examinations in the courses of the branch of agronomy, ecology and environmental science, the total volume of which is not less than 60 credits; Having completed college (professional bachelor) studies and additional studies according to the Agronomy or Applied Ecology program.

Number of students admitted to part-time study programs; admission scores are presented in Table 13; the ratio of the number of students admitted to those who successfully completed the program is presented in Table 14; No students were admitted to full-time studies during the analyzed period (the last graduate students of Applied Ecology were admitted in 2016, see Table 14).

Table 13. Admission to second cycle part-time study programs; Lowest, highest and average admission scores of the admitted entrants in 3 years.

Year	Number of in-coming students	Admission scores		
		Highest	Lowest	Average
Applied Ecology				
2018	11	9.621	6.528	7.87
2019	8	9.85	7.1	8.09
2020	10	9.16	6.66	8.19
Agroecosystems				
2018	11	9.284	7.544	8.26
2019	8	8.88	7.79	8.57
2020	8	9.87	8.11	8.93

The number of students admitted to studies is similar, the average admission score of students admitted to studies consistently increases: from 7.87 to 8.18 in the Applied Ecology program and from 8.26 to 8.93 in the Agroecosystems study program.

The number of students admitted depends on the number of state-funded study places allocated to the programs.

Table 14. The ratio between students who were accepted to the program and those who have successfully completed the studies

Year of admission	Year of graduation	Number of students admitted to studies	Number of students who have successfully completed the program	Ratio
Applied Ecology full-time studies				
2015	2017	13	13	1.00
2016	2018	6	7	1.17
2017	2019	-	-	-
2018	2020	-	1	-
Applied Ecology part-time studies				
2014	2017	7	7	1.00
2015	2018	5	4	0.80
2016	2019	8	8	1.00
2017	2020	10	9	0.90
Agroecosystems				
2015	2018	8	4	0.50
2016	2019	8	8	1.00
2017	2020	9	12	1.33

In the Applied Ecology study program, 80–100 percent of the admitted students complete Master's studies.

Academic leave (maternity) is the most common reason for non-completion of studies.

In the Agroecosystems study program, 50–100 percent of the admitted students complete Master's studies.

Academic leave (maternity) is the most common reason for non-completion of studies, e.g., when students admitted in 2015 graduated in 2020.
Meanwhile, the admission to second cycle studies is organized by the universities themselves. Students are admitted on a competitive basis according to the minimum score. The number of state-funded places depends on the number of students who have completed Bachelor's studies and the results of research (Part 2).

3.2. Evaluation of the procedure of recognition of foreign qualifications, partial studies and prior non-formal and informal learning and its application

On July 28, 2017 the Ministry of Education, Science and Sport of the Republic of Lithuania (LR) granted VMU the right to carry out academic recognition of education and qualifications related to higher education and acquired in the framework of education programs of foreign states and international organizations. Recognition of foreign qualifications at VMU is done centrally in the International Cooperation Department in accordance with resolutions and regulations of LR, following information provided by the Centre for Quality Assessment in Higher Education, as well as general or individual (in the absence of general) recommendations and in consultation with the responsible staff from the Centre for Quality Assessment in Higher Education. The Regulations for the Admission of Foreign Nationals into First and Second Cycle Studies at Vytautas Magnus University that are Organized Not in Lithuanian and are Self-Funded are updated and approved annually. They specify the basis on which the assessment of the qualifications gained abroad is conducted as well as to whom it applies, the documents that are to be provided, and the assessment process. Each year, the University reports to the Centre for Quality Assessment in Higher Education about the decisions that are made on academic recognition.
Recognition of partial learning outcomes is regulated by VMU Description of the Procedure for Recognition of Learning Outcomes[26]. This procedure is performed in a decentralized way at the University, and it is organized by the Faculties, Academies or the initial assessment is done by the International Cooperation Department. The learning outcomes of a person who has studied at another Lithuanian or foreign higher education institution under a contract concluded with higher education institutions or under a contract on partial studies or under some other legal basis are recognized by converting the acquired evaluation into ECTS according to pre-agreed equivalents, if there is no violation of the requirements of the contract or other document.
Recognition of partial studies can be carried out for current university students and newly enrolled.
Current students participating in study exchange programs agree on the study plan with VMU before leaving for a partner university. Learning outcomes acquired during partial studies in accordance with the agreed study plan, should be recognized upon an academic certificate from the higher education institution where the student has been studying. If the student has been for a visit for several semesters, certificates must be obtained and credited after each semester. This ensures the recognition of partial studies after returning from another university.
Newly enrolled students, who have completed part of their studies at another university and apply for recognition, firstly are asked to submit their documents to the International Cooperation Department. The list of requested documents corresponds to the documents provided to the newly enrolled students, only an academic certificate or other document attesting the courses studied in another institution should be added. Only after evaluating the available documents, the level and other information of the institution where the partial education was obtained, the documents are transmitted to the Faculty/Academy staff responsible for recognizing learning outcomes. The correspondence of the study course content and its volume are assessed in the Faculty/Academy.
Principles and processes of recognition of competences acquired in non-formal and informal way are regulated by VMU Study Regulations; Description of the Procedure for Assessment and

26 https://www.vdu.lt/wp-content/uploads/2019/12/VDU-studij%C5%B3-rezultat%C5%B3-%C4%AFskaitymo-tvarka-1.pdf (LT)

Recognition of Competences acquired through Non-Formal and Informal Education[27]; VMU Description of Organization of Non-formal Adult Education[28]. Individuals may apply for the assessment of competences acquired in work activities or voluntary work, internships, courses, seminars, projects, etc.; while self-learning or at leisure time. Competences acquired by the candidate through non-formal and informal education can comply with the part of the appropriate study program or separate courses.
If during the assessment it is determined that student's informal and non-formal learning outcomes correspond to the learning outcomes formulated in the study course of the study program, the study course (-s) are recognized.

3.3. Evaluation of conditions for ensuring academic mobility of students

All VMU students are eligible to apply to Erasmus+ programs and to benefit from the following opportunities:
1. To study for a semester or an academic year at one of 516 partner universities in the EU or EEA/candidate countries as well as go outside the EU to one of 99 partner institutions. About 200 VMU students take the advantage of this opportunity per year - (under usual conditions, not during a pandemic period).
2. To participate in Erasmus+ internship lasting from 2 to 12 months. Graduate students can also participate in this internship program within 12 months after their graduation. About 150 VMU students and graduates take the advantage of this opportunity per year (under usual conditions, not during a pandemic period).
In addition to the opportunities offered by Erasmus+ program, VMU students are also encouraged to participate in academic exchange programs:
1. They can go for exchange with mobility grant or with scholarships from partner universities to one of 206 partner countries outside the EU/EEA for a semester or for academic year. About 40 VMU students take the advantage of this opportunity per year(under usual conditions, not during a pandemic period).
2. Students can also participate in the internship from 1 to 3 months with VMU mobility grant in companies/organizations outside the EU/EEA. About 10 VMU students take the advantage of this opportunity per year.
3. Participate in partial studies or internships (related to Lithuania) lasting from 1 to 6 months L. Mockūnas scholarship. About 1–3 VMU students take the advantage of this opportunity per year.
4. Participate in internships lasting from 2 to 6 months in Lithuanian education schools or Lithuanian communities and Lithuanian centers abroad (the competition is announced by Education Exchanges Support Foundation). About 15 VMU students and graduates take the advantage of this opportunity per year (under usual conditions, not during a pandemic period).
Information about student mobility possibilities is announced by various channels: international coordinator of VMU International Cooperation Department, of the Faculty/Academy provides students with information about studies and placement abroad; VMU Erasmus days are organized, Erasmus+ competitions are posted on VMU website www.vdu.lt, Intranet (*Outlook*), social media, etc.
There were no students who came for full-time studies in the last 3 years.
The number of students of the program who have left for part-time studies (≥15 credits) or internship during their studies is presented in Table 15. In 2016/2017 academic year, 19% of all students had left, followed by up to 10% later. A total of 2 internship visits took place in 2017–2019).
Table 15. Mobility (ERASMUS+) of second cycle students of Ecology study field programs

27 https://www.vdu.lt/wp-content/uploads/2017/10/VDU-neformaliuoju-ir-savaiminiu-budu-igytu-kompetenciju-aprasas.pdf (LT)
28 https://www.vdu.lt/wp-content/uploads/2019/09/Neformaliojo-svietimo-organizavimo-tvarkos-aprasas-2019-002.pdf (LT)

Academic year	2017/2018	2018/2019	2019/2020
ERASMUS+ study trips for partial studies	0	0	0
ERASMUS+ internships	2	0	0

Students intending to take advantage of the opportunities offered by mobility projects participate in the selection process in an established order, where the main criteria are learning outcomes, language skills, motivation, etc. This
motivates one to learn more, but also restricts the possibilities for those with lower achievements to travel for part-time studies or internship. Participation in mobility programs is low, as students have recently been studying remotely, working and therefore unable to leave. Students are offered to attend lectures by incoming teachers, e.g., prof. J. C. Striebig, University of Copenhagen, fall semester 2020, Methodology and Analysis of Agronomic Research, etc. With the start of quarantine in various countries, VMU students are offered the opportunity to study individual study courses remotely at universities in other countries.

3.4. Assessment of the suitability, adequacy and effectiveness of the academic, financial, social, psychological and personal support provided to the students of the field

Academic student support covers several aspects:
1) easily accessible and timely information on: a) the studies, including information, which is useful to the students choosing their study courses according to their individual study needs; b) University's information (Rector's orders, rules, mobility opportunities, student support information, career possibilities, etc.) in order to keep in line with institutional issues and opportunities at the University; c) extracurricular University's activities (events, meetings, seminars, leisure and entertainment, etc.) in order to provide opportunities for students' personal development;
2) regular teachers' consultations to clarify topics of study courses and assignments, evaluate students' learning progress, provide and gather feedback both for students and teachers, etc.
Information on the studies is provided during various communication channels and means. All VMU students have free access to the University's intranet system Outlook and Moodle (virtual learning environment for publishing information on courses, methodical material, etc.) for communication, cooperation and information exchange purposes. Besides, frequently used channels are the University website, University and Faculty/Academy Facebook, newsletters.
The heads of the Faculties/Academies, Departments as well as members of the committees of the programs periodically meet with the students and discuss current issues and career opportunities. The staff of the Faculty, Academy administration employees are available daily for consulting students on various academic and study organization issues. Examination results are discussed with the students during specially appointed time; the students are informed about the time of the meeting during the examination.
According to the VMU Study Regulations, every teacher spends certain number of hours per semester consulting students on their homework, individual or group assignments and/or other issues related to studies. Consulting is performed face-to-face during officially announced hours, as well as using different online means, such as Skype, e-mail, discussion forums, other communication environments and tools that are convenient for teachers and students.
Financial support for students is regulated by the Description of Procedures for Tax Exemption and Compensation[29]; and the Description of Procedure for Compensation for Tuition Fees.[30]
Upon a reasoned request from a student, the University may postpone the payment of the tuition fee and/or the accommodation fee or allow this fee to be paid in a more extended period, for several times. In such cases, the student writes a reasoned request to the Rector, explaining the reasons why the University should allow the student to pay under specific conditions. The application for tuition

29 https://www.vdu.lt/wp-content/uploads/2015/01/Mokestini%C5%B3-lengvat%C5%B3-teikimo-ir-kompensacij%C5%B3-skyrimo-tvarkos-apra%C5%A1as.pdf (LT)
30 https://www.vdu.lt/wp-content/uploads/2018/09/KK-tvarkos-apra%C5%A1as.pdf (LT)

fees is submitted to the Dean/Chancellor. The application for accommodation fee is submitted to Student Affairs Department.
For the University students, attending scientific conferences, seminars or other events to represent the University, for collaborative or other purposes related to the University, VMU may reimburse the whole or part of the expenses in accordance with the Description of Procedures for Tax Exemption and Compensation.
Student social support is coordinated by VMU Student Affairs Department that manages students' accommodation at the University dormitories, administrates student social and motivational scholarships and releases from tuition fees.
Accommodation service is provided for VMU students, and they have opportunities to settle in at the University dormitories. Open competitions are held in which the accommodation fee is reduced for some students, in accordance with their social situation (taking into account the social status and the type (price) of the room), or their study fee is reduced (taking into account the social status and the average grade of the previous semester (must be no lower than 8). Taking into consideration the students' social changes or actions in order to be actively involved at the University or represent it, one-time social or incentive scholarships are awarded. The University has sponsor-founded scholarships that support student activities.
VMU Student Council also takes care for student social support. It represents the interests of students and enhance their cultural and social activities.
If needed, students may receive free-of-charge counselling of a psychologist at VMU Psychology Clinics. Students are provided counselling at the clinics during individual meetings or online.
Students are supported in modelling their career plans. VMU Career Centre of Student Affairs Department regularly organizes seminars and provides consultations on career planning issues. Regularly, at least once a year, face-to-face meetings with the Faculty/Academy Alumni members are organized, where graduates introduce their work experience, relevance of acquired knowledge and skills. The University and the Faculties/Academy have cooperation agreements with different social partners, including commitments to inform students about job positions. Vacancy notices are posted on the website of the Career Center; Faculty/Academy staff disseminate information on job offers at the request of employers.
Other support opportunities: support for the activities of student organizations is provided through project competitions; students with special needs have all the conditions for studies; there are individual consultations given due to the studies choices, their continuation. All the measures are intended to create favorable study conditions and reduce the number of drop-out students, ensuring the quality of studies.

3.5. Evaluation of the sufficiency of study information and student counselling

Information about various activities related to the study process is delivered by different means to the students. First-year students of first study cycle receive the most important information in the special annual event "Introduction to Studies". It is organized according to relevant topics that are discussed on different days: Faculty Day, Knowledge and Foreign Language Day, Opportunity Day, Registration Day, Sports, Wellness and Arts Day. The introductory week includes presentations of the Faculties, Academies and their staff, foreign language options, opportunities to study abroad, Student Representative Council and academic clubs' presentations, information about the use of library resources, facilities, etc. During the event, students get to know the VMU environment, Faculties, Academies and senior students. On the Faculty Day, first-year students are introduced with the chosen study program in more detail. These measures enhance the motivation of new students and encourage them to reach high learning outcomes.
Newly enrolled students can also get acquainted with the program on the VMU website.31 Detailed descriptions of the selected study program and the optional/alternative study courses for which the

31 https://zua.vdu.lt/studijos/studiju-programos/?/lt/study/program/show/310
https://zua.vdu.lt/studijos/studiju-programos/?/lt/study/program/show/309

student has registered can be found in the Moodle environment. The descriptions include information about the aim of the study course, the planned outcomes of the studies, their links to the study course's topics, the methods of studies and assessment; it also presents the assessment system as well as recommended reference materials (basic and supplementary).
In order to provide students with timely information about studies, they receive personalized emails. All VMU students are given a personal e-mail account. Students use a specially designed portal http://studentas.vdu.lt where they can perform certain actions and receive informational messages. There is a centralized (based on integrated services) provision of information on the study process to students. The Student Centre can be contacted through all contact channels (face-to-face, by phone or e-mail studentas@vdu.lt). In Facebook social network a special account for VMU students has been created, where relevant information for students is posted. General information and news are also published at VMU website: http://vdu.lt. VMU Student Affairs Department provides counselling, dealing with student issues related to accommodation, scholarships, benefits, career counselling, etc. Two times a week, lecturers of the study programs hold 2-hour long receptions of consultative nature. One of the receptions, which is orientated towards part-time studies' students, takes place on Thursdays at 3–4.30 p.m. Electronic means are used for consultations as well.
In 2014, there were no external evaluation recommendations for the Applied Ecology program in this area; In 2016, the recommendations of external evaluations and their implementation for the Agroecosystems program are presented in Table 16. Summary of the area to be evaluated, strengths and areas for improvement are presented in Table 17.

Table 16. Expert recommendations provided during the external evaluation in 2016 and their implementation.

Expert recommendations provided during the last external evaluation *Student admission and support*			
	Agroecosystems (external evaluation in 2016)		
1.	*Recommendation*		
1.	The quality of Master's theses prepared by students should be improved by applying statistical methods and linking the research results obtained by students with the scientific literature.	During the community meeting held at the Faculty of Agronomy (April 18, 2018, Minutes No. 8 (8)), aimed at improving the quality of studies, the requirements for Master's theses were discussed. Scientific advisors and students were reminded of the need to evaluate all the research data presented in the final theses by statistical analysis methods, to compare the research data with the data of other researchers by quoting scientific literature sources. In the academic year 2019, qualification improvement courses on the topic "Statistical evaluation of research data" were held for the teachers of the Faculty of Agronomy. Teachers renewed and supplemented their knowledge of research methodology and statistical evaluation of data.	

Table 17. Summary of the area to be evaluated. Strengths and areas for improvement.

Main results of the self-evaluation in the evaluation area *Student admission and support*
Strengths
1. The number of students entering the study program remains constant during the analyzed period. This shows that the study programs are relevant, the entrants are motivated to study in the field of Ecological sciences. 2. Students are provided with sufficient and effective social, psychological assistance and, in individual cases, financial

support. 3. Students are provided with appropriate academic assistance, and information on studies and student counselling are sufficient.
Areas for improvement
International participation in Erasmus part-time studies or internships must be improved. The University should promote greater participation of students in international activities including Erasmus exchange programs, cooperation, research activities, etc.

4. STUDYING, STUDENT PERFORMANCE AND GRADUATE EMPLOYMENT

4.1. Evaluation of the teaching and learning process that enables to take into account the needs of the students and enables them to achieve the intended learning outcomes.

Different study methods (teaching and learning methods) shall be chosen in different forms of study course delivery. For example, a) Study methods often used during the lecture – explanation, illustration, video review, summarizing information, etc.; b) Study methods used in seminars – analysis of problem examples and questions, performance and summary of tasks, case analysis, etc.; c) In laboratory works study methods – experimentation, observation, report preparation and presentation, etc.; d) In practical work study methods – task interpretation and solution, etc.; e) In practice study methods – interpretation and solution of practical tasks; analysis of professional activity; preparation and presentation of reports, etc. The examination forms used in the study courses provided for in the VMU Study Regulations are as follows: defense of individual and group, laboratory works and course projects, midterm exams, exam, etc. This is interim and/or final testing. Interim assignments include midterm exams and laboratory work, tests, homework and other tasks. Final testing includes exams, except in cases of internships and final theses. The essential aspect in the study outcomes is the number of contact hours and independent work hours. In the study course's description, the teacher teaching the course presents the testing forms and the numbers of contact hours and independent work hours; during the course assessment by Study Program Committee, it is analyzed whether the selected option is optimal for the achievement of study outcomes.

The interim and final testing (midterm exam, exam) are organized remotely as well in accordance with the Description of the Procedure for Organizing Distance Learning. This became especially relevant during the period of lockdown due to the COVID-19 pandemic, from March 16, 2020 until July 1, 2020 and from November 1, 2020 until now.

The accumulative system for the assessment of learning outcomes is applied at the University. Students' learning outcomes are assessed in midterms, another intermediate assessment tests and examination or defense of students' works (projects). The final grade integrates the grades of intermediate assessment tests and examination. The examination grade makes 30–60% of the final grade. The structure of the accumulative system is presented in the description of each study course.

Master's graduate students are invited to deepen their knowledge in the third cycle study programs/ doctoral studies[32] in Environmental Engineering; Ecology and Environmental Science, Agronomy or Forestry.

4.2. Evaluation of conditions ensuring access to study for socially vulnerable groups and students with special needs

Socially vulnerable groups and students with special needs are given the opportunity to study according to an individual study schedule. Studies according to the individual study schedule are regulated by Description of the Procedure for Providing the Individual Study Schedule approved by VMU Rector.

32 https://www.vdu.lt/lt/mokslas/doktorantura/

Socially vulnerable groups (orphans, people with disabilities, students from large families and low-income families) receive different discounts for tuition or dormitory fees; also different schemes of study support/scholarships are provided for these students.
Students with disabilities have access to parking near the University buildings; the entrance to the buildings is constantly maintained and renovated; libraries have equipment for the disabled to create working places for them, classrooms are with the necessary furniture. Students with disabilities have the opportunity to stay in dormitory rooms adapted for them, if necessary, with an accompanying person. The study process is organized according to the individual needs of students; disability education campaigns are organized; data on students with disabilities are integrated into the databases, thus allowing facilitate the entire study process for students with disabilities. The University organizes various events for the disabled.
The study process at the Faculty of Forest Sciences and Ecology and at the Faculty of Agronomy is adapted for socially vulnerable groups and students with special needs – the central building is adapted for individuals with reduced mobility, lifts are available. The building (No. 8) of VMU Agriculture Academy is also adapted for people with disabilities, where students perform laboratory and other experimental work. There were no students with special needs during the analyzed period.

4.3. Evaluation of the systematic nature of the monitoring of student study progress and feedback to students to promote self-assessment and subsequent planning of study progress

The monitoring of student learning progress is regulated by VMU Study Regulations and the Description of Procedure for Student Learning Outcomes Monitoring and Assistance.[33] Monitoring of learning achievements and delivery of assistance covers interrelated processes, which include the following phases: 1. Analysis of the situation of student registration for studies and study courses; 2. Analysis of the reasons for students' non-participation in midterm and final exams; 3. Analysis of evaluation of students' midterm and final exams; 4. Improving the organization of studies and implementing preventive measures to manage poor progress of students.
The University departments perform monitoring of learning outcomes regularly. Students themselves are invited to make self-monitoring of their progress in studies and follow the processes of studies: to register for studies, to amend their study plans, to observe evaluations of their own learning and make improvements, to get acquainted with results of surveys for quality improvements, etc.
Monitoring of students' study progress is carried out through the study information system Studis, and through the distant study environment Moodle (teachers of the course regularly fill in the course progress bar) and the results of the monitoring are used for timely analysis and elimination of the causes (discussions on the causes with the Vice-Dean for Studies).

4.4. Evaluation of the feedback provided to students in the course of the studies to promote self-assessment and subsequent planning of study progress.

Examinations and midterm tests are proceeded in written form; their tasks are the same or of equal value for all examinees. The results of intermediate assessment tests are announced and discussed during lectures within the period of two weeks. After the written examination, the final results are announced on the University intranet within the period of three working days and afterwards they are discussed in the student group. According to point 147 of VMU Study Regulations, the results of intermediate assessment tests are announced and discussed during the sessions within two weeks after the interim assessment, but not later than before the beginning of the exam session. It is prompt enough and gives the student the opportunity to change the situation.
During a pandemic, when studying remotely, the comment is written by evaluating the tasks through the distant learning environment Moodle. Feedback (response) is indicated for each task in most study courses.

33 https://www.vdu.lt/wp-content/uploads/2015/01/Student%C5%B3-studijavimo-pasiekim%C5%B3-steb%C4%97senos-ir-pagalbos-teikimo-tvarka-.pdf (LT)

4.5. Evaluation of employability of graduates and graduate career tracking in the study field.

Collaboration with VMU alumni takes place mainly through alumni clubs and individual departments of the University. Graduates periodically get newsletters with current information.

The University has an active VMU Alumni Club whose main aim is to connect VMU graduates and to maintain close relationships with the University. Every year members of the club attend the University events organized to develop students' professional and employability skills as well as get acquainted with career opportunities. Alumni Club members also organize club meetings, various events (lectures, discussions, informal meetings, field trips, excursions to various companies employing university alumni, etc.), actively participate as consultants and experts in study program committees, study quality assessment groups. Each year, with the help of the University, the club organizes Alumni Day in order to bring together VMU alumni.

VMU Agriculture Academy also has Alumni Club, whose main activities are representation of VMU Agriculture Academy to students and members of agrobusiness; promotion of partnership between VMU Agriculture Academy and alumni by establishing new regional and professional departments; participation in student events; assisting students in planning their careers and employment. VMU Agriculture Academy Regional Alumni Divisions have been established and are being developed.

In order to ensure the quality of studies and provide career-planning services that meet the needs of the students, the University monitors the employment and career of VMU graduates. The main sources of information are: VMU alumni survey, statistics provided by the Employment Service and statistics provided by the Government Strategic Analysis Centre.

Each year in May–June VMU Career Center performs an online survey for alumni, one year after their graduation. The focus of attention is their current work situation. Those graduates, who are not working, are asked if they have work experience and if they are looking for a job. All graduates (employed and unemployed) are requested to give their opinion on how much they are satisfied with their current career situation and what has been most useful while preparing for their career at the University. Alumni are also asked to evaluate VMU's contribution to their preparation for labor market. Summarized survey results are published in the University website (vdu.lt) and on the Career Centre website.[34] A more comprehensive analysis of the survey data is available on the University intranet Outlook in the Public Folder Career Monitoring (Outlook Public Folders→ Career Monitoring).

On the basis of the cooperation agreement with the Employment Service, signed on the 6th of November in 2019, VMU will get statistical information about VMU graduates registered for a job search. Information will be provided twice per year, i.e.,12 months and 15 months after their graduation.

Students who graduated in 2018–2020 were each interviewed individually. Employment of graduates by qualification level is given in Table 18.

Table 18. Employment of program graduates

Year of graduation	Number of graduates (number/percent)	Number of graduates working according to the acquired qualification (number/percent)	Number of graduates working in other areas (number/percent)	Number of unemployed graduates (number/percent)	Raising a child (maternity leave), number/percent
A graduate of the Applied Ecology program					
2018	11/100	5/45.45	3/27.27	2/18.18	1/9.10
2019	8/100	4/50	1/12.5	1/12.5	2/25
2020	10/100	8/80	1/10	1/10	-
Agroecosystems					

34 http://karjera.vdu.lt/apie-mus/apklausu-rezultatai/

2018	4	3/75,0	0/0	0/0	1/25.0
2019	8	6/75.0	2/25.0	0/0	0/0
2020	12	11/91.7	1/8.30	0/0	0/0

The employment rate of graduates of Applied Ecology according to the acquired qualification is steadily increasing from 45.45% to 80%, the employment in other fields is decreasing from 27.27% to 10% and the number of unemployed graduates is decreasing from 18.18% to 10%.

The employment rate of graduates of Agroecosystems according to the acquired qualification is steadily increasing from 75.0% to 91.7%, while employment in other fields varies from 0% to 25%. There are no unemployed graduates.

Data provided by the University and the Government Strategic Analysis Centre (STRATA) on the employment of graduates 12 months after graduation according to the level of acquired qualification (for the last 3 years of studies in Ecology study field).

In 2019, VMU performed a survey of ASU 2018-year alumni 12 months after their graduation; however, the number of those who responded to the survey was very low (only 5.65 percent).

Information on the employment of graduates 12 months after their graduation is provided below from the following sources:

- VMU graduate survey data (Table 19). Information is provided by the study program.

Table 19. Data of VMU graduate surveys on working graduates in 2017, 2018, 2019 according to the study program 12 months after graduation

Percentage (number) of 2018-year graduates who took part in the survey among all graduates*	Percentage of employed graduates among 2018-year graduates who participated in the survey	Percentage (number) of 2019-year graduates who took part in the survey among all graduates**	Percentage of employed graduates among 2019-year graduates who participated in the survey
Applied Ecology; second cycle studies			
18.18% (2)	50% (1)	50% (4)	75% (3)
Agroecosystems; second cycle studies			
0%	0%	12.5% (1)	100% (1)

* 11 students completed the Master's degree program Applied Ecology in 2018. 4 students completed the study program Agroecosystems

** 8 students completed the Master's degree program Applied Ecology in 2019. 8 students completed the study program Agroecosystems

Information on the opinion of graduates and employers regarding the professional preparation of graduates and the competences acquired after graduation is provided from the following sources:

- Data of the survey of VMU exit students on how the respondents assess the contribution of VMU to their labor market preparation (Tables 21–22).
- Data of the survey of VMU exit students on what was most useful when preparing for the labor market (Table 23).
- Data of the survey of VMU graduates 12 months after their graduation on how they assess the contribution of VMU to the labor market preparation (Table 24). No graduates participated in the survey conducted in 2018.
- Data of the survey of VMU graduates 12 months after their graduation on what was most useful when preparing for professional activities (Table 25).

Table 20. Opinion of employers on the graduates of study fields, taken from the rankings of university study fields in 2018, 2019 and 2020 presented in the magazines "Reitingai".

Study field: Environmental Science and Ecology					
Opinion of employers about alumnus (percent)					
First cycle			**Second cycle**		
2020*	**2019****	**2018*****	**2020**	**2019**	**2018**
50	50	40	50	50	40

* During the period from September 10 to October 1, 2019, sociological research company "Prime consulting", at the request of the magazine "Reitingai", interviewed 2192 employers from all regions of the country and all branches of the economy, as well as the public sector. They were asked graduates of what higher education institutions and of what

study fields work in their companies, institutions or organizations. In addition, employers were asked to assess the quality of preparation of graduates of these study fields and of different universities. Employers could single out one or two universities with the best knowledge and skills of graduates. Those study fields that are taught in only one higher education institution were assessed by respondents on a ten-point scale. Graduates in each field were assessed only by professionals in that field. In total, the employers' opinion amounted to 30% of total assessment (magazine "Reitingai", December 2019 – May 2020 / No. 2 (12))

** During the period from September 3 to October 3, 2018, sociological research company "Prime consulting", at the request of the magazine "Reitingai", interviewed 2194 employers from all regions of the country and all branches of the economy, as well as the public sector. Employers from all sectors in Lithuania were asked which higher education institutions and which study fields alumni work in their companies, institutions or organizations and which higher education institution graduates quality of work they are most satisfied with. Employers could single out one or two universities with the best knowledge and skills of graduates. In cases when a specific study field is taught at only one university, respondents assessed knowledge and skills of graduates on a ten-point scale. (Magazine "Reitingai", December 2018 – May 2019 / No. 2 (10))

*** A survey conducted by sociological research company "Prime consulting", at the request of the magazine "Reitingai", during the period from August 1 to September 10, 2017. Sociologists surveyed 2200 employers of different sectors throughout Lithuania. They were asked graduates of what higher education institutions and of what study fields work in their companies, institutions or organizations. In addition, employers were asked to assess the quality of preparation of graduates of these study fields and of different universities. Employers could single out one or two universities with the best knowledge and skills of graduates. Those study fields that are taught at only one higher education institution were assessed by respondents on a ten-point scale. It should be noted that graduates in each study field were assessed only by professionals in that field (Magazine "Reitingai", December – May 2017 / No. 2 (8))

Table 21. Survey data of students of the Master's study program **Applied Ecology** (N=7) of the Faculty of Forest Sciences and Ecology at VMU Agriculture Academy and students of the Master's degree study program **Agroecosystems** (N=5) of the Faculty of Agronomy at VMU Agriculture Academy graduating in 2019 (exit students) on how they assess VMU contribution to their preparation for the labor market.

Rating scale: 4 – good, 3 – rather good, 2 – rather bad, 1 – bad, 0 – don't know, difficult to say)

How do you assess contribution of VMU to the preparation for the labor market?	**Don't know, difficult to say (percent/number)**	**Bad (percent/number)**	**Rather bad (percent/number)**	**Rather good (percent/number)**	**Good (percent/number)**
	Applied Ecology				
	0%	0%	0%	57.14% (4)	42.86% (3)
	Agroecosystems				
	20% (1)	0%	20% (1)	25% (5)	60% (3)

Table 22. Survey data of students of the Master's degree study program **Applied Ecology** (N=7) of the Faculty of Forest Sciences and Ecology at VMU Agriculture Academy and students of the Master's degree study program **Agroecosystems** (N=9) of the Faculty of Agronomy at VMU Agriculture Academy graduating in 2020 (exit students) on how they assess VMU contribution to their preparation for the labor market.

Rating scale: 4 – good, 3 – rather good, 2 – rather bad, 1 – bad, 0 – don't know, difficult to say)

How do you assess contribution of VMU to the preparation for the labor market?	**Don't know, difficult to say (percent/number)**	**Bad (percent/number)**	**Rather bad (percent/number)**	**Rather good (percent/number)**	**Good (percent/number)**
	Applied Ecology				
	28.57% (2)	0%	0%	14.29% (1)	57.14% (4)
	Agroecosystems				
	33.33% (3)	0%	0%	33.33% (3)	33.33% (3)

Table 23. Survey data of students of the Master's degree study program **Applied Ecology** of the Faculty of Forest Sciences and Ecology at VMU Agriculture Academy and students of the Master's degree study program **Agroecosystems** of the Faculty of Agronomy at VMU Agriculture Academy graduating in 2019 and 2020 (exit students) on what was most useful in preparing for the labor market.

What was most useful in preparing for the labor market? (percent/number)	**Applied Ecology**	**Agroecosystems**

	2019 (N=7)	2020 (N=7)	2019 (N=5)	2020 (N=9)
Knowledge and skills acquired during study sessions (lectures, seminars, laboratory works, etc.)	100% (7)	57.14% (4)	100% (5)	66.66% (6)
Knowledge and skills acquired through independent tasks	42.86% (3)	71.43% (5)	40% (2)	11.11% (1)
Knowledge and skills acquired during study practice	0%	14.29% (1)	40% (2)	33.33% (3)
Experience gained during international studies or internship (e.g., Erasmus studies, Erasmus internship, exchange studies, etc.)	0%	28.57% (2)	0%	0%
Knowledge and skills acquired other than through studies or international internship (e.g., additional, voluntary or other type of internship)	0%	28.57% (2)	20% (1)	11.11% (1)
Volunteering	14.29% (1)	28.57% (2)	0%	11.11% (1)
Activities in university student organizations	0%	14.29% (1)	0%	11.11% (1)
Assistance from University administration (e.g., Dean's Office, Departments, Student Affairs Department, Career Center, etc.)	0%	14.29% (1)	0%	22.22% (2)
Teacher assistance	14.29% (1)	14.29% (1)	40% (2)	11.11% (1)
Other	0%	0%	0%	0%

Table 24. Survey data of students of the Master's degree study program **Applied Ecology** of the Faculty of Forest Sciences and Ecology at VMU Agriculture Academy graduating in 2018 and students of the Master's degree study program **Agroecosystems** of the Faculty of Agronomy at VMU Agriculture Academy graduating in 2019 (exit students) on how they assess VMU contribution to the preparation for the labor market.

(Rating scale: 4 – good, 3 – rather good, 2 – rather bad, 1 – bad, 0 – don't know, difficult to say)

How do you assess contribution of ASU to the preparation for the labor market?	Don't know, difficult to say (percent/number)	Bad (percent/number)	Rather bad (percent/number)	Rather good (percent/number)	Good (percent/number)
	Applied Ecology				
	0%	0%	0%	50% (2)	50% (2)
	Agroecosystems				
	33.33% (3)	0%	0%	33.33% (3)	33.33% (3)

Table 25. Data of the survey of students of the Master's degree study program **Applied Ecology** of the Faculty of Forest Sciences and Ecology at VMU Agriculture Academy and students of the Master's degree study program **Agroecosystems** of the Faculty of Agronomy at VMU Agriculture Academy graduating in 2019, 12 months after their graduation on what was most useful when preparing for the labor market.

What was most useful in preparing for the labor market? (percent/number)	Applied Ecology		Agroecosystems
	2018 (N=2)	2019 (N=4)	2019 (N=1)
Knowledge and skills acquired during study sessions (lectures, seminars, laboratory works, etc.)	100% (1)	100% (4)	100% (1)
Knowledge and skills acquired through independent tasks	0%	50% (2)	100% (1)
Knowledge and skills acquired during study practice	0%	50% (2)	0%
Experience gained during international studies or internship (e.g., Erasmus studies, Erasmus internship, exchange studies, etc.)	0%	0%	0%
Knowledge and skills acquired other than through studies or international internship (e.g., additional, voluntary or other type of internship)	0%	0%	0%
Volunteering	0%	25% (1)	0%
Activities in university student organizations	0%	0%	0%
Assistance from University administration (e.g., Dean's Office, Departments, Student Affairs Department, Career Center, etc.)	0%	25% (1)	0%
Teacher assistance	0%	25% (1)	100% (1)

Other	0%	0%	0%

The results of the surveys of employers conducted by the program committees revealed that 80% of employers rate the vocational training of graduates well and 20% as very well. Sixty percent of employers believe that graduates have sufficient competences after graduation, 40% lack of competences and 0% have no competences. According to employers, graduates are most lacking in the basics of law, English and practice. Advantages of the programs: awareness of environmental aspects; good preparation. According to employers, English language skills (40%), knowledge of legal documents (40%) and practical skills (20%) should be improved.

4.6. Evaluation of the implementation of policies to ensure academic integrity, tolerance and non-discrimination.

The principles of academic integrity are defined in the VMU Statute [35], the Code of Ethics of VMU[36], the Plagiarism Prevention Procedures of VMU[37], VMU Study Regulations. Non-discrimination measures at VMU are regulated by the Code of Ethics.

In the case of dishonest student behavior, observed during the final examination or any other type of academic assessment, a teacher discontinues the student's performance and informs about this the Dean of the Faculty in which a student or unclassified student is studying, the Chancellor of the Academy and the Department of Studies in written form. The final evaluation "0" (zero) is written in the learning outcome record book. By order of the Dean of the Faculty, an investigation is conducted and a final decision is made.

VMU procedure for plagiarism prevention identify types of plagiarism, methods of determining the plagiarism and consideration procedures, as well as recommendations for teachers and students on how to prevent plagiarism in written works. Both teachers and students have the right to appeal to the University's Academic Ethics Commission, which makes final decisions on academic integrity.

There were no cases of breaches of the principles of academic integrity, tolerance and non-discrimination in the study field concerned over the last 3 years. According to the procedure established by the University, Oxsico is used to evaluate the plagiarism of final theses.

4.7. Evaluation of the effectiveness of the application of procedures for the submission and examination of appeals and complaints regarding the study process within the field studies.

Procedures for appeals and complaints of the study process are regulated by the VMU Description of Procedure for Appeal Investigation[38], the Plagiarism Prevention Procedures of VMU and VMU Study Regulations.

A student has the right to make appeals regarding the assessment of learning outcomes or assessment procedures when the student disagrees with the teacher's assessment and/or identify the violation of assessment procedures. Students can file appeals by complaining of multiple-choice test evaluations using the prescribed form; complaining of any other form of test evaluation and/or breaches assessment procedures using a free complaint form; in the event of additional, unforeseen circumstances, the student has the right to submit supporting documents that affect the appeal. There were no cases of exclusions from examinations due to dishonesty during the period 2017-2020.

During the external evaluations carried out in 2014 and 2016, the experts did not provide any recommendations in this area. A summary of the evaluation area, its strengths and areas for improvement is presented in Table 26.

Table 26. A summary of the evaluation area, its strengths and areas for improvement.

Main results of the self-evaluation in the evaluation area *Studying, student performance and graduate employment*

35 https://www.vdu.lt/wp-content/uploads/2019/01/Statutas_2018_VDU.pdf (LT)
36 https://www.vdu.lt/wp-content/uploads/2017/12/Akademin%c4%97s-etikos-kodeksas_2017.pdf (LT)
37 https://www.vdu.lt/wp-content/uploads/2015/01/Plagiato-prevencijos-nuostatai_VDU_2015-06-25.pdf (LT)
38https://www.vdu.lt/wp-content/uploads/2021/04/Apeliaciju%CC%A8-teikimo-nuostatai-2020-03-24.pdf

Strengths
1. Students use the opportunities offered by the distant learning environment Moodle, study progress monitoring system, feedback and planning of further study progress. 2. The employment rate of graduates is high. Evaluation of employability of graduates and graduate career tracking in the study field. 3. There are no graduates of the field program who graduated 1-2 years ago and are registered at the Employment Service. Employers respond positively about graduates. 4. Graduates state that they have acquired good professional preparation after graduation; sufficient competences were acquired at the University (well prepared for ecological activities). The listed advantages include good preparation. 5. Students of socially disadvantaged groups and students with special needs can study in the study programs.
Areas for improvement
According to employers, graduates lack practice; areas of competence to be improved: knowledge of English and legal documents. Improvement: the number of English language credits has been increased for first cycle students. The Study Committees (May 14, 2021) reviewed the descriptions of the courses, obliged teachers to include the analysis of legal documents in the content of the courses theoretically and during the exercises.

5. TEACHING STAFF

5.1. Evaluation of the adequacy of the number, qualification and competence (scientific, didactic, professional) of teaching staff within a field study program(s) at the HEI in order to achieve the learning outcomes

Seven professors, 3 associate professors, 2 teachers (2 of them with a scientific degree) work in the Applied Ecology study program (Annex 4). Second cycle study program of Applied Ecology is taught by teachers, 100 percent of whom have a doctoral degree. Some teachers have part-time employment in business and colleges. The composition of teachers meets the requirements of legal acts in 2019–2020 academic year.[39]

The Institute of Environment and Ecology had 14 teachers (8.9 full-time positions, 6.4 full-time positions of which work and conduct research in the field of Ecology. Of which: 100%; teachers working at least in 0.5 full-time positions; share of teachers working for at least 3 years –100%; the share of teachers-practitioners is 7%; dynamics in the change of teachers (number of positions).

Dynamics of the teachers of the Institute of Environment and Ecology: 2013/2014 academic year – 15.71 full-time positions; 2017/2018 academic year – 12.0 full-time positions; 2018/2019 academic year –10.55 full-time positions; 2019/2020 academic year – 8.9 full-time positions; 2020/2021 academic year – 9.30 full-time positions; the duration of the teachers' work at the University is from 10 to 41 years. 90% of teachers have English language proficiency at level B1–C2. Some teachers have part-time employment in business and colleges. The dynamics of the change of teachers in the field of ecology is poor. Most teachers work for 10-15 years. The substitutability of lecturers completing their careers is ensured by participating in doctoral studies in the fields of Ecology and Environmental Science, Forestry and Environmental Engineering. Doctoral students replace those lecturers who complete their careers as lecturers. Teachers-practitioners are also invited to teach subjects in the field (V. Dulskienė; J. Abraitienė; N. Maršalkienė).

8 professors, 11 associate professors and 1 teacher (with a scientific degree) work in the Agroecosystems study program (Annex 4). Second cycle study program of Agroecosystems is taught by teachers, 100 percent of whom have a doctoral degree. Some teachers have part-time employment in business. The composition of teachers meets the requirements of legal.

Compliance of program teachers (those who teach the courses in the field of Ecology) with the general requirements for the implementation of studies is given in Table 27. There are no such requirements in of the field of Ecology.[40]

Table 27. Compliance of program teachers (those who teach the courses in the field of Ecology) with the general requirements for the implementation of studies.

Criteria	Requirements	in the programs

39 https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/a4caf862ced511e6a476d5908abd2210/asr

40 https://www.skvc.lt/default/lt/teisine-informacija/ta_projektai/studiju-krypciu-aprasu-projektai-

A graduate of the Applied Ecology program		
Teachers must be scientists	No less than 80%	100%
The courses in the second cycle studies must be taught by teachers holding a professor's position	No less than 20% of learning	54%
The scope of the courses of the field must be taught by teachers whose field of research corresponds to the courses they teach	No less than 60%	100%
Laboratory works and other practical classes of study programs of all study cycles must be conducted and internships of students are supervised by persons with higher university education. It is recommended that in the second cycle study programs such persons have at least Master's degree.	100%	100%
Agroecosystems		
Teachers must be scientists	No less than 80%	100%
The courses in the second cycle studies must be taught by teachers holding a professor's position	No less than 20% of learning	40%
The scope of the courses of the field must be taught by teachers whose field of research corresponds to the courses they teach	No less than 60%	100%
Laboratory works and other practical classes of study programs of all study cycles must be conducted and internships of students are supervised by persons with higher university education. It is recommended that in the second cycle study programs such persons have at least Master's degree.	100%	100%

More information about teachers is provided in VMU Research Management System CRIS (publications, Scopus author ID, ORCID, etc.)[41] The structure of teachers' pedagogical, scientific, methodological and organizational working time is planned for the academic year. The scope of work is differentiated according to position. The average workload of the Faculty employee in the 2017/2018 academic year was 880 working hours, for professors – 760, for associate professors – 880, for lecturers – 930. Structure of working time of the program teachers: pedagogical / scientific / methodological time of professors (52/33/15% of the working time); associate professors, respectively, 60/28/12%; lecturers-doctors – 61/28/11%; teachers – 62/28/10%. From the 2019–2020 academic year, the full-time equivalent part of VMU teacher was calculated according to the normative workload of contact work: professors – 450 contact hours, associate professors – 500 hours, teachers, assistants – 600 hours. The structure of working time is fixed in the annual individual work tasks of teachers. Scientific, methodological and organizational working hours are registered in the annual activity reports, which are monitored by the Research Department. The results are discussed with the Director of the Institute.

There are 24 Master students (8 of them are first year students; 7 are second year students and 9 are third year students) in the Applied Ecology program in the 2020/2021 academic year. They are taught by 13 teachers (compulsory and optional courses of the study field). The number of teachers is sufficient. The ratio of the number of teachers of the field courses to the number of students is as follows: 1 teacher for 1.85 students. The majority of teachers of the same faculty teach both in the first cycle study program and in other programs at the University.[42]

41 https://www.vdu.lt/cris/browse?type=rpname&locale=lt

42 https://www.vdu.lt/wp-content/uploads/2019/04/G-T-Z_kvailifikaciniai-reikalavimai-2019-04-05.pdf

In the 2020/2021 academic year, 14 master students are studying in the Agroecosystems program (5 of them are first year students, 9 are second year students). They are taught by 20 teachers (compulsory and optional courses of the study field). The number of teachers is sufficient. The ratio of the number of teachers of the field courses to the number of students is as follows: 1 teacher for 0.7 students. The majority of teachers of the same faculty teach both in the first cycle study program and in other programs at the University.
Qualification of pedagogical and scientific staff (scientific, didactic, professional competences) sufficiency to achieve the position and study outcomes is determined during employment and periodic certifications. The Description of the Minimum Qualification Requirements for Positions of VMU Teachers and Researchers Working in the Fields of Nature, Technology and Agricultural Sciences approved by Resolution No. 2–6 of VMU Senate of March 13, 2019 is followed.

5.2. Evaluation of conditions for ensuring teaching staffs' academic mobility

All VMU teachers are eligible to apply to Erasmus+ programs and to benefit from the following opportunities:

- Erasmus+ teaching visit to VMU partnership universities in the EU as well as EEA/candidate countries (516 partner institutions) or outside the EU (99 partner institutions). About 200 VMU teachers take the advantage of this opportunity per year (under usual conditions, not during a pandemic period). .
- Erasmus+ training visits to any institution or organization (including other higher education institutions) in the EU as well as EEA/candidate countries or to any partnership university outside the EU. About 180 VMU teachers take the advantage of this opportunity per year(under usual conditions, not during a pandemic period)..

Number of teachers of the Faculty of Forest Sciences and Ecology and of the Faculty of Agronomy who participated in mobility is given in Table 28.

Table 28. Mobility of ERASMUS+ study program teachers

	2017/2018	2018/2019	2019/2020
A graduate of the Applied Ecology program			
Teaching and learning visits to partner countries	4	10	1
Agroecosystems			
Teaching and learning visits to partner countries	9	15	1
Most popular countries: Portugal, Germany, Sweden, Latvia, Serbia, Croatia, Italy, Kazakhstan			

Information on teaching visits (selection, organization and other procedures) for those going on Erasmus+ teaching and learning visits is public and available on the VMU website. [43]
The teachers of the program are active participants in ERASMUS+ studies (six Applied Ecology teachers made 15 visits in 2018–2020). And the number of visits is increasing – there were 10 of them in the 2018/2019 academic year. The pandemic that started in March 2020 prevented travel to other countries. Teaching and learning visits take place according to the course(s) or research direction (subjects) being taught. During the visits, the topics of research carried out by peers, infrastructure, opportunities for joint research projects are introduced in detail. Teachers are more likely to go on teaching visits, as study visits take more than 3 working days to be effective (a full ERASMUS visit takes 5 working days). Due to employment in studies, longer visits during the semester are problematic. Research visits (longer ones) take place within the framework of international research projects. It would be difficult to overestimate the benefits of mobility for teachers and studies: ideas for projects are born during communication; teachers become acquainted with teaching and research, their methodologies and equipment. Innovative solutions are implemented in studies. If we do not assess the period of COVID-19 pandemic (visits are limited), there is a greater need to go on visits than ERASMUS+ funding allows. During the pandemic,

43 https://www.vdu.lt/lt/tarptautiniai-rysiai/destytojams-personalui/

thoughts on virtual mobility were expressed in the team, but this would provide very limited cognitive benefits.

5.3. Evaluation of the conditions to improve the competences of the teaching staff

The professional development activities of teachers at the University are regulated by the VMU Description on Professional Development Procedure (2018). At VMU, teacher professional development is organized under 8 groups of competences: higher education didactics competences, digital competences, research competences, management competences, foreign language competences, inter-cultural competences, subject-related competences and personal competences.

Teachers are encouraged to participate in professional development seminars from all eight competence groups. Professional development includes teacher participation in the University-provided courses as well as in the courses organized by other national or international higher education institutions. The University-provided options for professional development are free of charge for all VMU teachers. The training courses for competences of higher education didactics encompass such topics as active learning and student involvement into learning, learning outcome assessment and feedback for students, teaching and learning in distance studies, etc. Teachers also choose professional development possibilities outside the University regarding their teaching and research interests. If such opportunities require funds, the University lecturers can apply for financial support to their departments or science and research clusters, take advantage of the Erasmus+ program and other opportunities. In recent years, the development of the University teacher didactic skills has been focused on the training covering more active involvement of students in their studies, distance teaching and learning, providing feedback to students, other relevant trainings were also organized.

In 2019, two topics were especially popular among teachers: "Active learning methods and student involvement" as well as "Feedback for students: how can we help them to learn better"? Trainings are organized several times per year, using the University's internal resources: University lecturers were invited to conduct trainings, they shared useful recommendations, professional insights and their experiences. In 2020, based on the previous years' experience, both VMU lecturers and external experts provided training for teachers at the University. Trainings covered such issues as innovative teaching/learning methods, provision of effective feedback, assessment of learning outcomes, student involvement in studies and research, renewal of curriculum and quality improvement.

In 2020 and 2021, the University teachers got actively involved in the trainings conducted by VMU Institute of Innovative Studies. The topics of these trainings focused on the organization of online teaching and learning, cooperation and assessment tools in distance studies, responsible use of technology, etc. Teachers were also interested in the trainings conducted by VMU Institute of Foreign Languages for the development of teachers' English language skills. At the end of each training, participants provide feedback on the training taken. This allows to adjust the content of training and reveals other areas of interest for the professional development of academic staff. Training topics are also selected taking into account the teachers' suggestions for future training presented in the University Teachers' Survey.

Due to the relatively low funding of studies, there are limited opportunities to go on short-term or long-term internships to research institutions abroad with university funding. However, practically every teacher can participate in short-term research trips (conferences) and internships in foreign research institutions organized by the Research Council of Lithuania every year.[44] Competence development in scientific events abroad. Participation in the conference in Singapore No. 09.3.3-LMT-K-712-06-0258 (L. Česonienė) RESEARCHER'S TRIP – GENERAL MISSION FUNDING AGREEMENT NO. LINO-LYR-No. 358 MI- 27/18, 10-09-2018 – 13-09-2018 to Brussels, search for partners in the HORIZON project (L. Česonienė).

44 https://www.lmt.lt/en/competitive-research-funding/786

Recommendations of external evaluations conducted in 2014 and 2016 and implementation of these recommendations are presented in Table 29.

A summary of the evaluation area, its strengths and areas for improvement is presented in Table 30.

Table 29. Recommendations from the 2014 and 2016 external evaluations

Expert recommendations provided during the last external evaluation *Teachers*			
Applied Ecology (evaluation in 2014)			
1.	*Recommendation*	*Actions taken by the HEI*	*Notes*
	Active and passive English language skills of teachers should be improved. All members of the academic staff should have sufficient knowledge of English.	Courses for the development of foreign language skills are organized at the University every year. Employees actively participate in them. 90% of teachers have knowledge of English at level B1-C2. Not only English is considered an official language in the EU (French, German are also official languages of the EU).	
2.	*Recommendation*	*Actions taken by the HEI*	*Notes*
	To make teaching more effective. Teachers would then have more time to do research and publish their publications. The program would become more sustainable because it is currently not sustainable due to the low number of entrants.	In order to reduce the teaching load, teachers from foreign universities are invited to give lectures.	
Agroecosystems (external evaluation in 2016)			
1.	*Recommendation*		
	It is necessary to improve the results of staff research (ISI publications, international project activities) in order to meet the new standards.	New qualification requirements implemented in order to fill the positions of teachers and researchers (approved by the ASU Senate resolution of October 24, 2016, protocol No. 560; http://asu.lt/wp-content/uploads/2015/05/ASI-kvalikaciniai-reikalavimai-2016-09-28-senato-patvirtinti.doc).	

Table 30. Summary of the area to be evaluated. Strengths and areas for improvement.

Main results of the self-evaluation in the evaluation area Teachers
Strengths
1. *The qualification of teachers working in the program fully meets the requirements. 100% of teachers have PhD degree, 40–54% are professors.* *2. Teachers are active in the mobility program ERASMUS+.* *3. Conditions for improving the competences of teachers are good (participation in national and international research project competitions, trips to scientific events through the competitions of the Research Council of Lithuania).* 4.The university has good conditions for improving didactic activities
Areas for improvement
Involvement of teachers in international projects. Teachers applying for project activities but not receiving funding have minimal opportunities to conduct scientific activities. <u>Improvement.</u> The staff of the Open Access Center and the staff of the Communication and Technology Transfer Center assist in submitting scientific applications. Better results are expected.

6. MATERIAL RESOURCES OF STUDIES

6.1. Evaluation of the suitability and adequacy of the physical, informational and financial resources of the field studies to ensure an effective learning process.

Studies are provided effectively using VMU material resources that are organized in order to create appropriate conditions for student learning and teacher work aiming at study quality assurance.

There are 222 rooms at the University, which can be used for the study process in accordance with teaching and learning needs. The size of the rooms varies from 5 to 150 working places for students. Rooms for lectures are chosen according to the size of the student group and the number of work places in the room, thus selecting the optimal size for the provision of study courses.

General study courses are mainly delivered in the central buildings of the University which are located closely each to other that is why it is convenient for students to change rooms during breaks. Special courses are mainly delivered in the buildings of the Faculties and of the Academies, where the administrative staff and teachers of special courses are working, and this allows administrative and teaching staff members become more accessible for students.

The general lectures of the Applied Ecology study program and some courses of the main study field take place in the Central Building of Agriculture Academy, in rooms 527 (120 seats), 419, 421, 421a and 520, which can accommodate 60 students each. Rooms 402, 403, 407, 412, 419 of the Central Building are used to work with separate groups of students (for exercises). Some rooms are specialized. They are equipped with appropriate visual aids and equipment, for example, Room 412 – prof. Tadas Ivanauskas Animal and Bird Room, 403 – Dendrology Room, Hunting Laboratory rooms in building VI (106, 102), 331 – Phytopathology, 328 – Entomology. All rooms are equipped with stationary multimedia projectors, while portable multimedia projectors are used in other rooms.

Eleven laboratories with 25 seats are used for laboratory work during the courses of the program. The laboratories are equipped with equipment suitable not only for studies, but also for scientific work. Students of both study programs use laboratories of General Chemistry (Building III, 36 seats), 3 laboratories of Soil Sciences (Central Building, 15 seats), Plant Anatomy (Central Building, 32 seats), Plant Physiology (Central Building, 20 seats), Physics (Building III, 30 seats), Meteorology (Building III, 30 seats) . Laboratory works of specialized courses and research of final theses are performed in the Environmental Research Laboratory. This Laboratory was established specifically for the studies of ecology and environmental research. It is equipped with the newest equipment and hardware. It contains an Analyst 100 atomic absorption spectrometer, automatic Kjeldahl steam distillation unit UKD-130, spectrophotometer Genesys 5, equipment complex for oxygen consumption Oxy 597, pH/ion meter METROM 692, conductometer inoLab WTW, chemical oxygen demand equipment, automatic Kjeldahl equipment; soil drill set; Helios gamma spectrophotometer; bath for permanganate oxidation. Spectrophotometer UV/VIS mod. T70, microwave oven Microwave 3000, etc.

The Faculty of Forest Sciences and Ecology has 3 computer classes (MMI 214, 17 working places for students; MMI 107, 12 working places for students; MMI 108, 14 working places for students). The following software is used: Microsoft Office, ArcGIS 9.0, Statistica v. 6.0, Bird Atlas, LMIIIS, Frgastat, Garden Composer, Spectrum, Wintran, Winflow, QUAL2E. On average, computer classes of the Faculty, including student independent work, are occupied 6–7 academic hours a day. Students can work on the computers independently when classroom activities are not taking place. The dormitories have free access to the internet.

Other infrastructure of the University is used for the final theses: arboretum, Agroecological Center, as well as educational objects in national and regional parks.

Premises of the Faculty of Agronomy at the VMU AA Central Building (321, 422, 520, 524, 316, 324), Agrobiology (J10, J333), Agriculture (Central Building, 526) and Herbology (Central Building, 527) laboratories of the Institute of Agroecosystems and Soil Sciences are used for the studies of Agroecosystems students. Laboratory of Environmental Science of the Institute of Environment and Ecology (J306-309), Biogas Laboratory of Energy and Biotechnology

Engineering (B228)), Laboratory and Auditoriums of Soil and Crop Ecology at the VMU-AA Test Station (216, 302).
A new modern material base at the Joint Research Center (opened in December 2012) is used for Agroecosystems studies. In the laboratories, the installation of which is financed from the funds of the project "Nemunas Valley", students use the equipment of the Agrobiology (J102, J333) laboratory, soil sample preparation and storage system, soil pore and moisture analysis system, Microtox 500 soil and aquatic toxicity tester, equipment for determining the durability of soil aggregates, calcimeter, 44abil.44s44k Megafuge 40R with Tx750 rotor, laser diffractometer Mastersiser 2000, instrument Zetasizer Nano ZS, plant biochemical test system (NIR spectrophotometer, fiber analyzer Fibertec M6), etc.; Plant raw material quality laboratory (J208) equipment, texture (consistency) determination system, product lyophilizer, sensory research complex with a specialized computer program, etc.; Environmental laboratory equipment (J306-309), ion exchange chromatograph, biocrystallization chamber, TOC system, gas chromatography system with mass selective detector GC/M, total organic carbon analyzer TOC/TN; Biogas laboratory (B228) equipment, biogas production laboratory stand and adjacent measuring equipment. A phytotronic greenhouse (400 m^2) is built next to the Building No. 8, where the students can perform vegetation experiments.
The Soil and Crop Ecology Laboratory is installed at the VMU AA Test Station, where the students use the services of a small-sized (up to 2.0 m) computerized combine with a weighing and moisture determination system for field experiments, small seed drills with a high-precision plant seed placement system, equipment for modifying the physical properties of the soil and other equipment.
The infrastructure required for the formation of practical study skills has been renewed and improved in recent years through the implementation of the "Nemunas" Valley Development Program and other projects. In 2012, the renovation and modernization projects of the 3rd and the Central Buildings were implemented. This has substantially improved the study conditions in these buildings, meeting international standards with heating systems, electrical and internet installations, new furniture, visualization and other study facilities.
Students of the programs will use VMU and VMU Agriculture Academy libraries and reading rooms, where there are good conditions for students to study independently. The University Library is an attractive information environment for studies and research, ensuring effective services for members of the University community, providing access to information resources necessary for studies, science and professional qualification.
A modern physical infrastructure of Library departments has been created in faculties and academies (5510 m^2 in total) allowing to provide conditions for effective response to the research and study needs of academic units.[45] Members of the University community can visit all departments of the Library and use its all services, regardless of which Faculty or Academy they study or work in. The Library has created a total of 770 working places for them, visitors can work with 237 Library or personal computers. Visitors also have an opportunity to access to individual and group work rooms, workplaces for visitors with disabilities, discussion spaces and recreation areas. Opening hours for individual / group work can be booked in advance via the Library website.[46]
The Library has self-taking / returning devices (RFID), which allow users to borrow/return publications themselves and extend the deadlines for returning publications.
All departments of the Library are equipped with 19 seats for users with special needs. The Library is equipped with special equipment for visitors with special needs: software JAWS 14 for Windows, Win Taker Voice 1.6, Super Nova Magnifier, Electronic Braille device ESYS 40, tactile printer, stationary magnifier TOPAZ XL XD 24, keyboards for the visually impaired, alternative computer mice, height-adjustable tables, ergonomic chairs.

45 https://biblioteka.vdu.lt/apie-biblioteka/struktura/padaliniai/ (LT)
46 https://biblioteka.vdu.lt/studijoms/galimybes-ir-studiju-erdves/patalpu-uzsakymas/ (LT)

One of the most important tasks of the Library is to accumulate document collections and organize access to traditional and electronic information resources. The Library Fund accumulated 1.1 million traditional (printed) documents in 2020. The dominant type of information sources is electronic information resources, which is clearly revealed by the constantly growing indicators of their demand and usage. VMU community members can use purchased, licensed and library-digitalized electronic information resources at any time of the day. The newest and most relevant information required for studies and research is available to members of VMU in subscribed databases[47], VMU Research Management System (CRIS), VMU virtual library and directory.[48] Information resources for studies can be found in the Literature Catalog of Study Courses.[49]
The University community can use almost 676 thousand e-resources (410 thousand e-books, 38 thousand e-magazines, 228 thousand conference reports, audio recordings, other documents), 61 licensed databases. The latter ones can be accessed on the University premises and from remote computers (via EZproxy[50]). In the guide by subjects (SubjectPlus[51]), users have the opportunity to find systematic links to thematic information contained in the University's licensed or open access academic resources according to the study courses.
The aim of the Library is to create user-friendly conditions for access to information resources. The most necessary printed documents are freely available to users and arranged on shelves according to scientific fields (almost 300 thousand publications in open collections), the search for publications on the shelves is facilitated by information notes and various virtual assistance. All information about the available collections and access to them is available on the Library website, electronic catalogues, in the virtual library, in the institutional Research Management System.
Research Management System VMU CRIS is an open science infrastructure that has been in use since 2019. With its help, the University's study and research production is accumulated and its dissemination in the world is ensured. The interactive cross-links among scientific publications, their authors, departments and ongoing projects help the user to fully get acquainted with the research and study production and activities of the University. The system contains over 65 thousand publications, almost 19 thousand thesis records (ETD), almost 30 thousand electronic documents: books, magazine articles, ETDs and other documents, over 10 thousand external links to full- text documents. VMU CRIS repository contains 41 archived electronic scientific University journals.
In order to prevent plagiarism and copyright infringement, the Library administers text matching programs for teachers iThenticate[52] and Oxsico.
The Library conducts information literacy training, the aim of which is to provide knowledge about information resources, their search and access possibilities, to develop effective information search and selection skills, to acquaint with the principles of academic integrity, to provide information on correct citation of information sources in studies or research. Video presentations prepared for distance learning.[53]

All VMU buildings are adapted for the disabled: elevators and lifts for wheelchair of disabled people with mobility disabilities have been installed. Students with disabilities have access to parking near the University buildings; the entrance to the buildings is constantly maintained and renovated; libraries have equipment for the disabled to create working places for them, classrooms are with the necessary furniture. Students with disabilities have the opportunity to stay in dormitory rooms adapted for them, if necessary, with an accompanying person. The study process is organized according to the individual needs of students; disability education campaigns are organized; data on

47 https://biblioteka.vdu.lt/duomenu-bazes/licencijuojamos-duomenu-bazes-a-z/ (LT)
48 https://www.vdu.lt/cris/ (LT)
49 http://vdu.library.lt/dalykai (LT)
50 https://biblioteka.vdu.lt/studijoms/galimybes-ir-studiju-erdves/nuotoline-prieiga/ (LT)
51 http://temos.vdu.lt/subjects/index.php (LT)
52 https://biblioteka.vdu.lt/studijoms/bibliografines-nuorodos/ (LT)
53 https://biblioteka.vdu.lt/studijoms/mokymai/ (LT)

students with disabilities are integrated into the databases, thus allowing facilitate the entire study process for students with disabilities.
Classes are delivered in rooms with the necessary equipment, rooms are computerized and have internet connection as well as multimedia projecting equipment, audio and video equipment. If needed, additional technical equipment can be supplied to properly organize specific study courses and enable appropriate application of different study methods to assure quality of student learning outcomes. 46 computer rooms have been equipped for the study process. The size of computer rooms varies from 5 to 31 working places.
Students and teachers are provided with a virtual learning environment and collaboration systems – Moodle. This tool allows teachers to choose different forms of organization of study courses, to organize practical activities in various ways, to share teaching and learning instruments. All the functions necessary for teamwork have been realized in Moodle: communication within the University, storage and dissemination of information, shared calendars, contact databases, link lists, user directory, authentication of other systems, authorized access to databases, synchronization with mobile devices, Internet e-mail, Websites.
The University ensures good opportunities for distance learning. During the implementation of distance studies, the use of Adobe Connect video conferencing and BigBlueButton video conferencing tools have been created for the organization of teachers' work with students. VMU Office 365 Teams is often used as a tool for organizing other distance activities.
Important VMU IT tools for presenting study information are the Student Portal and the Teacher Portal. The main principles of the Student Portal: centralized (based on integrated services) provision of information on the study process to students; possibility to integrate other information systems. The portal operates in a bilingual mode – In Lithuanian and English. The Teacher Portal is an analogue to the Student Portal, and its main functionalities include monitoring of registration in study courses, electronic student achievement records, review of teaching quality assessment results. The system operates in bilingual mode.
The Library's information resources for Ecology study field are sufficient (Table 3). Printed documents of the study field of Ecology are collected in the Agriculture Academy's Library, which is the traditional library of the Study Program's students.
Table 31. Library information resources for Ecology study field
Agroecosystems (Master's degree studies), Faculty of Agronomy and Applied Ecology (Bachelor's degree + Master's degree studies), Faculty of Forest Sciences and Ecology

Basic information	Traditional documents	E-resources
Fund in total (pcs.)	1 216 523 (including 378 916 at the Library of VMU Agriculture Academy)	623 763, 58 licensed databases, works published by the University and researchers in the VMU Research Management System (VMU CRIS), VMU Virtual Library
Resources for Ecology studies (pcs.)	~ 30000 (including 19 600 at the Library of VMU Agriculture Academy	11 167 (240 e- journals, 10365 e- Book, 562 ETD works
Documents in open funds (pcs.)	293 550 (including 54 185 at the Library of VMU Agriculture Academy)	24-hour access to online resources on the VMU computer network and from remote computers.
Total use of documents	241 648 (including 51 187 searches at the Library of VMU Agriculture	4 050 675 searches 1 419 880 full-text document downloads

	Academy)	
Information resources purchased by the Library (2019) in the amount of (EUR):	152 027.33	529 786.11 (from the funds of the University and project funds)
Expenditures for studies in the field of Ecology in 2019, EUR	6700.00	9007.00

VMU licensed databases recommended for Ecology study field: Academic Search Complete (EBSCO). Multi-topic, including ecology. Full-text. Cambridge Core. Multi-topic, including ecology. Full-text. Ebook Central (Academic Complete). E-books. Multi-topic, including ecology. Full-text. eBooks on ScienceDirect. E-books. Multi-topic, including environmental protection, ecology. Full-text. EBSCO eBook Academic Collection. E-books. Multi-topic, including environmental protection, ecology. Full-text. Environment Complete (EBSCO). Environmental protection, ecology. Full-text. GreenFILE (EBSCO). Environmental protection. Bibliographic. InCites Benchmarking & Analytics (Clarivate Analytics). Tool for evaluating scientific results. InCites Journals and Highly Cited Data (Clarivate Analytics). Tool for evaluating scientific results. JSTOR. Multi-topic, including ecology. Full-text. E-books of KTU publishing house. Multi-topic, including ecology. Full-text. MasterFILE Premier (EBSCO). Multi-topic, including ecology. Full-text. Nature. Weekly journal on natural, physical and biomedical sciences. OECD iLibrary. Multi-topic, including environmental protection, ecology. Full-text. Oxford Journals Collection. Multi-topic, including environmental protection, ecology. Full-text. SAGE Journals Online. Multi-topic, including environmental protection, ecology. Full-text. ScienceDirect. Multi-topic, including environmental protection, ecology. Full-text. SpringerLink. Multi-topic, including ecology. Full-text. SpringerLink Archive. Multi-topic, including ecology. Full-text. Taylor & Francis. Multi-topic, including ecology. Full-text. E-books of VGTU publishing house. Multi-topic, including ecology. Full-text. Web of Science (Clarivate Analytics). Tool for evaluating scientific results. Wiley Online Library. Multi-topic, including ecology. Full-text. EndNote. Bibliographic reference management software. RefWorks. Bibliographic reference management software.

6.2. Evaluation of the planning and upgrading of resources needed to carry out the field studies.

Every year, VMU upgrades computers and purchases multimedia equipment according to the resource development plans submitted by the faculties and academies, which they prepare according to the study needs. About 20% of computers are renewed annually. All computers are connected to a common network and have an Internet connection. VMU computer network security systems are constantly updated.

VMU uses a centralized system for monitoring and updating hardware and software, and only legal software is used in computer classrooms and other computerized workplaces. Every six months, the software is audited and updated or supplemented. The commercial software used in the study process is used with educational licenses and is available to students free of charge.

When planning the renewal of information resources relevant to studies, the necessary documents for study programs are coordinated with the Library by the teachers responsible for study programs and courses. Also, the analysis of the flow of study scientific publications is performed and recommended for acquisition by teachers and responsible Library employees – faculty curators (course librarians). Faculty curators maintain constant contacts with the councils of individual faculties, institutes and academies, inviting teachers to participate in the development of information resource collections, offering to purchase new printed and electronic documents relevant to studies.

An interactive document ordering service is installed on the Library website. Requests are based on the reasons of the need for the quantity, form and storage space of resources required for studies or research. Teachers receive feedback on the availability of the requested resources, deadlines, storage location and access conditions.

Physical, information and financial resources of the studies are vitally important for studying. Physical resources (laboratories, rooms) are excellent, the basic laboratory equipment is good. The basic information resources are updated by the University, while the special software packages are updated using the Faculty's funds. In case of increased need, funds of the Faculties for studies and research are used. Much of the funds for the Laboratories' renewal are allocated from scientific research. According to VMU procedures, 8 percent of the total agreement amount is allocated for the institute's further scientific research. Great conditions are provided for studies at the Faculty: the campus is compact, and the layout of the academic buildings and dormitories is compact as well. All those who want accommodation are provided a room at the dormitory, the rooms have internet, which makes it possible to use all databases that are relevant to the studies.
During the external evaluations carried out in 2014 and 2016, the experts did not provide any recommendations in this area. A summary of the evaluation area, the strengths of the area and the aspects to be improved are presented in Table 32.

Table 32. Summary of the area to be evaluated. Strengths and areas for improvement.

Main results of the self-evaluation in the evaluation area *Material resources of studies*
Strengths
1. The study infrastructure (rooms, laboratories) is well equipped, there is enough equipment suitable for carrying out both study programs. 2. The study equipment and facilities are sufficient to teach the basic courses of Ecology study field and specialty. 3. The information resources for carrying out the study programs are appropriate and sufficient to ensure the study process.
Areas for improvement
1. The publication of methodical books related to the teaching of the study courses does not receive sufficient recognition in the assessment of teachers' qualification and scientific/teaching activities. For this reason, it has been diminished. Teachers focus on writing of scientific articles instead of preparing of methodical publications. Improvement: review of support mechanism for methodical publications.

7. STUDY QUALITY MANAGEMENT AND PUBLICITY

7.1. Evaluation of the effectiveness of the internal quality assurance system of the studies

Studies are managed and decisions are made by the participation of the following parties: the Academy Council, the Chancellor of the Academy, the Faculty Council, the Study Program Committee (hereinafter refered to as the Committee), the Dean of the Faculty, and the Director of the Institute.
The Academy Council is responsible for approving major updates to new study programs and study programs that are carried out, e.g., the change of the program name, introduction/abolition of specializations.
The Faculty Council is responsible for the quality assurance of the whole study field: it considers the composition of the Study Program Committee and plans for improving the programs and also makes decisions on improvement.
The Committee's main responsibilities include coordinating the program implementation regarding the study program-related questions and assurance of the program quality. The Committee performs internal program quality assessment and renewal; it is responsible for preparing and implementing the program quality improvement plans. The Committee assures correspondence of the program learning outcomes to the labor market and society needs; it keeps contact with various interested parties (stakeholders) and assures their direct/indirect involvement in the program course. The

Committee carries out the attestation of study courses at least every three years in accordance with the VMU Description of Procedure for Study Course Attestation [54].
The Committee makes decisions by common agreement, and they are documented as meeting minutes.
The Study Program Committee of *Applied Ecology* (common for bachelor's and master's programs) consists of 9 members: 6 teachers, 2 students, and 1 representative of employers. The Study Program Committee of *Agroecosystems* consists of 8 members: 5 teachers, 2 students, and 1 representative of employers. The Committees are announced on the Faculty's website[55];[56].
The members of the Committee perform the following functions:
- The chairperson of the Committee is in charge of the coordination of program quality assurance and effective Committee work; (s)he organizes annual program assessment and preparation of quality improvement plans and monitors implementation of these plans.
- Teachers' representatives are responsible for ensuring that the study program's learning outcomes and structure meet the requirements, i.e., research/art, field, didactic requirements. They disseminate information and good practices related to the quality of the study program to the participants of the study program, carry out program assessment, make proposals for the improvement of the study program and implement program improvement activities.
- Employer's representative is involved in assessing the relevance of the study program to the needs of the labor market and proposing improvements to the study program.
- The student representative is responsible for providing the necessary recommendations for the development of the study program, taking into account his/her own and other students' suggestions, and is also involved in implementing these recommendations.
In case of discrepancies in the quality of studies (e.g., in case of repeated negative evaluation of students), the Committee makes decisions and informs the Directors of the Institutes and the Dean, who have the authority, on reasonable grounds, to change the teacher, as well as provide workplaces with necessary resources and safety measures.
The Chancellor of the Academy coordinates the quality of the implementation of the study process (approves the composition of the Study Program Committee, topics and scientific advisors of Bachelor theses, Bachelor theses defence committees, etc.).
The Dean of the Faculty is responsible for ensuring the quality of the implementation of the study process. For example, it reviews and updates implementation plans, deals with the organization and technical administration of the study space, is responsible for the dissemination of information, student registration, study documentation, etc.
The Director of the Institute is responsible for the recruitment of teachers (together with the Study Program Committee and the Dean) and their workload accounting, the implementation of research related to the study program and the implementation of the program itself.
The general resources of the University are used for the effective management and improvement of the field of studies, taking into account the need for their use.
Decisions on the quality of studies and their management are made regarding the Standards and Guidelines for Quality Assurance in the European Higher Education Area (2015) and national and VMU legal acts. The following issues are regulated in the main documents of VMU:
- Statute of VMU (2018) outlines the main principles of quality of studies and research.
- VMU Study Regulations (2020, new version) outline the processes of study quality and the division of responsibilities for ensuring study quality.
- Description of Procedure for Study Quality Assurance at VMU (2019, new version) describes in more detail the processes and measures of study quality assurance in the planning, execution and renewal of studies.

[54] https://www.vdu.lt/wp-content/uploads/2019/12/VDU_dalyku_atestavimo_aprasas_2019-11-20_redakcija.pdf
[55] https://zua.vdu.lt/fakultetai/misku-ir-ekologijos-fakultetas/studiju-programos/
[56] https://zua.vdu.lt/fakultetai/agronomijos-fakultetas/studiju-programu-komitetai/

- Description of Procedure of Feedback for Improvement of Quality of Studies at VMU (2019, new version) regulates the process of collecting feedback from social stakeholders and using data for the purposes of evaluating and improving the quality of studies.
Description of Procedure for Study Course Attestation at VMU (2019, new version) determines the evaluation of the compliance of the courses with the goals and learning outcomes of the study program. This description provides for a review of subjects every 3 years.
The above-mentioned documents are publicly available on the website of VMU in Lithuanian[57] and English.[58]

7.2. Evaluation of the effectiveness of the involvement of social stakeholders (students and other stakeholders) in internal quality assurance

The information required for decision-making and study quality assurance comes from the results of periodic surveys aimed at gathering information from different stakeholders:

- The student survey about teaching and learning in the study courses is conducted at the end of each semester. The students are asked about teaching quality regarding a list of criteria (organization of teaching, methods of active student participation, clarity of the course delivery, content illustration by examples, clarity of evaluation criteria, feedback on completed assignments, information delivery in online learning environments, teacher's compliance with academic/ethical performance requirements). Students are also asked about their involvement in the studies – about the completed tasks, attending classes, and self-assessment of their work during studies.
- A survey of the first cycle integrated studies students about the reasons for choosing studies, expectations, and opinions about studies is conducted at the beginning of the second semester.
- The graduates of studies (EXIT) survey about the studies, final theses, and the preparation for the labor market are conducted at the end of the studies.
- The survey of alumni on the labor market and career placement is conducted 12 months after graduation;
- The survey of teachers on teaching, professional development, student engagement, and teaching conditions is conducted at the end of the academic year.
- Other surveys are also performed under demand to find out specific information about studies.

The surveys' results and other information about the studies are used as the basis for annual analysis of studies performed by the Committee to identify strengths/weaknesses and prospects of studies. The analysis is based on the following evaluation criteria: relevance of the study program to the latest scientific and art trends and the needs of the labor market, the demand for the study program, the adequacy and sufficiency of the material resources, the professionalism of the study program teachers, the student's progress, the mobility of students and teachers, and other relevant criteria. The results of the study program analysis are discussed with the Head of Department/Director of the Institute and the Dean of the Faculty, the Chancellor of the Academy, and presented in meetings with students.
This annual analysis is used to make study program improvement plans and implement them in order to address identified shortcomings. The Committee meets twice a year to discuss and monitor the implementation of the quality improvement plans.
Social stakeholders of studies are involved in quality assurance through the following actions:

- Teachers shall submit their comments and suggestions to improve studies at the Institute and Committee meetings and participate in the ongoing surveys.
- Students express their views on their studies through surveys, through the student representative on the Committee, or by communicating directly with teachers.

[57] https://www.vdu.lt/lt/apie-vdu-kaune/svarbiausi-vdu-dokumentai/senato-dokumentai/ (LT).
[58] https://www.vdu.lt/en/about-vmu/important-documents/ (EN).

- Social partners' representatives in the Committee provide their recommendations regarding the program correspondence to labor market requirements, the relevance of student practical skills, etc. Information from social partners is also collected through surveys during the Career Days at the University, in special discussions, such as discussing student internships and research projects, opportunities for joint projects, etc.
- Alumni suggestions are identified through surveys and meetings organized by the Faculty Alumni Association, where the program alumni are active participants.
- The suggestions of various social stakeholders are discussed in the Committee meetings, and decisions are taken to use them for quality improvement.

Within 3 months after the surveys are completed, the summarized results are presented to the social stakeholders who
participated in the provision of feedback and to other stakeholders of the University. The results are published on the VMU website, emailed to students and teachers, hosted in Outlook public folders, presented on social media, and made available through other dissemination channels. The social partners of the Applied Ecology study program are the Public Institution *"Ekoagros"* and the *Department of Environmental Protection under the Ministry of Environment. A representative of "Ekoagros"* is a member of the FFSE Council and is directly involved in evaluating and updating the studies and implementing decisions.

The main social partners of the Agroecosystems Study Program are the Chamber of Agriculture of the Republic of Lithuania, Public Institution "Ekoagros", the Lithuanian Agricultural Advisory Service, the Ministry of Agriculture of the Republic of Lithuania, the Committee on Rural Affairs of the Seimas of the Republic of Lithuania, and the Lithuanian Research Centre for Agriculture and Forestry. A representative of the Lithuanian Research Centre for Agriculture and Forestry is a member of the FA Council.

7.3. Evaluation of the collection, use, and publication of information on studies, their evaluation and improvement processes, and outcomes

Information about studies is collected, analyzed, and evaluated to ensure continuous self-evaluation and improvement. The annual analysis of studies allows identifying weaknesses of studies in time and take urgent action to overcome them. The assessment of teaching and learning in each study course allows teachers to monitor their teaching quality and respond to student suggestions when delivering the study course to another group of students. The latter assessment encourages students to rethink their studies and identify opportunities for improvement.

Quality assessment means have been chosen to achieve effective learning outcomes. The annual analysis of studies covers issues that need to be evaluated annually. In contrast, a more detailed analysis is carried out in preparation for the external evaluation of studies when different study areas are discussed. All University surveys include the most relevant questions in order to avoid burdening respondents with less important ones. In addition, all surveys have open-ended questions that allow respondents to write comments, which are later used for improving the studies.

In 2019, following an internal evaluation, the Committee decided to undertake actions to improve the quality of studies: to analyze all the causes reducing student mobility and minimize their impact. These planned activities are expected to be completed in 2020/2021; however, changes are only possible after pandemic Covid 19 is over.

In 2018-2020, the semester survey of VMU Agroecosystems program students on teaching and studying revealed that the graduating students gave a score of 9.13 in the summarised evaluation of the study program in a ten-point scale. Students rated the presentation of basic study information by teachers in VMU Moodle or other distance learning environments (9.94 points) and teachers' introduction of examples to the study content (9.74 points) as the essential areas, while the teachers' teaching methods, which encouraged students to engage in the study courses actively, were identified as an area for improvement in the study program (8.94 points). Following an internal evaluation, the Committee decided to undertake the following actions to improve the quality of studies: to encourage the participation of teachers in courses on active learning methods and student

involvement, to hold more discussions with students on improving the quality of studies, and to reinforce the link between studies and business. These activities were completed by December 2020.
The results of the assessment of teaching quality are used to improve the quality of teaching and in the professional development of teachers. Teachers have access to the survey results concerning the study courses they teach and are aware of the opinions expressed by students. The survey results are also communicated to the Chair of the Committee, and the main trends in the assessment of teaching are discussed at the Committee meetings, and decisions are taken on what actions should be taken to improve the quality of teaching.
Key study decisions (including assessment and improvement) are made publicly available to social stakeholders through various information channels. The Chair of the Committee shall provide information to the teachers, social partners, and other social stakeholders, Head of Department, Dean of Faculty. The student representative in the Committee shall share the decisions with the other students in the study program.

7.4. Evaluation of the opinion of students in the field (collected in the ways and by the means chosen by the Centre or the HEI) on the quality of studies at the HEI

An example of several answers regarding study-related issues for the final year students (the sample of Applied Ecology study program is 6 students). The questions ranged from expectations at the time of enrolment to the preparation of the final thesis and activities after graduation. Nearly all segments of the student's life and learning, leisure and university adaptation to learning, and job and professional prospects were positively rated (3.83-4.00 on a four-point scale).
EXIT survey of study program graduating students is conducted. In June 2020, the Unit of Study Quality of the Department of Studies conducted it, and 6 out of 10 graduates participated. The main results are presented in Table 33.

Table 33. Summary of the EXIT graduate survey (scale from 0 to 4).

Claims about studies	Avg. score
The content of the study courses corresponding to the purpose of the study program	3.83
Study materials and literature sources were available in the library and/or in a virtual environment	3.83
The quality of the study program is adequate.	3.83
I would recommend others to study in this study program	3.83
The administrative staff provided the necessary support	4.00

In 2014, the external evaluation of the Applied Ecology study program did not make any recommendations in this area. The recommendations of the 2016 external evaluation of the Agroecosystems Program and their implementation are presented in Table 34.
A summary of the evaluation area, its strengths, and areas for improvement are presented in Table 35.

Table 34. Recommendations from the 2014 and 2016 external evaluations

Expert recommendations provided during the last external evaluation *Study quality management and publicity*			
Agroecosystems (external evaluation in 2016)			
1.	*Recommendation*	*Actions taken by the HEI*	*Notes*
	To ensure that the quality assurance procedures of the study program contribute to the improvement of the program.	In accordance with Description of Procedure for Study Quality Assurance at VMU, the Committee carries out an annual analysis of the study program, prepares a program improvement plan based on the results, implements it, and monitors its implementation. This helps to ensure systematic and consistent improvement of the quality of the study program. Improvement	

		actions are based on the results of surveys, discussions, and interviews with social stakeholders, statistical and other relevant study information. Communication is ensured between the different groups involved in the study process: students, teachers, social partners. Discussions on improving the quality of studies with members of the Faculty community and social partners are held in April each year and the results of surveys are presented.	

Table 35. Summary of the area to be evaluated. Strengths and areas for improvement

Main results of the self-evaluation in the evaluation area *Study quality management and publicity*
Strengths
1. The system of internal quality management and publicity of the field of studies is efficient and functional. 2. The internal study quality assurance system of the study programs involves all social stakeholders (administration, teachers, students, employers). 3. Students/ graduating students rate the quality of the study program highly.
Areas for improvement
Lack of communication with the social partners issues of study quality. Lack of awareness and involvement of employers in solving problems/improvement: more active involvement of sponsors, social partners in the implementation of the study process, and completion of final theses.

ANNEXES

ANNEX 1. STUDY PLANS OF SECOND CYCLE STUDY PROGRAMS OF THE STUDY FIELD OF ECOLOGY

Study curriculum of the second cycle study program ***Applied Ecology***

	Study course	ECTS	Contact hours	Independent student work hours	Assessment method	Teacher
Semester I	***Courses of the study field***					
	Compulsory:					
	Statistical methods in Ecology	6	60	100	Exam	Prof. Dr. P. Rupšys
	GIS in Ecological Research	6	60	100	Exam	Assoc. Prof. Dr. D. Jonikavičius
	Environmental Bioindication	6	60	100	Exam	Assoc. Prof. Dr. A. Gavenauskas
	Total during the semester:	**18**				
	Study course	**ECTS**	**Contact hours**	**Independent student work hours**	**Assessment method**	**Teacher**
Semester II	***Courses of the study field***					
	Compulsory:					
	Diversity and Protection of Terrestrial Ecosystems	6	60	100	Exam	Prof. Dr. V. Marozas
	Research Methodology in Ecology	6	60	100	Exam	Assoc. Prof. Dr. D. Šileikienė
	Diversity and Protection of Hydroecosystems	6	60	100	Exam	Assoc. Prof. Dr. A. Dautartė
	Total during the semester:	**18**				
S	**Study course**	**ECTS**	**Contact hours**	**Independent**	**Assessment**	**Teacher**

				student work hours	**method**	
	Courses of the study field					
	Compulsory:					
	Diffusion of Pollution in Ecosystems	6	60	100	Exam	Prof. Dr. L. Česonienė
	Nature Management	6	60	100	Exam	Lect. dr. Ž. Preikša
	Environmental Policy	6	60	100	Exam	Assoc. Prof. Dr. D. Šileikienė
	Total during the semester:	**18**				
Semester IV	**Study course**	**ECTS**	**Contact hours**	**Independent student work hours**	**Assessment method**	**Teacher**
	Courses of the study field					
	Compulsory:					
	Research Paper	6	4	156	Defence	Scientific advisors of the final theses
	Optional **(students choose two study courses (12 ECTS) from a choice of courses in the study field or other study fields):**					
	Courses of the study field					
	Plant Diversity and Protection	6	60	100	Exam	Prof. Dr. V. Marozas
	Vertebrate Diversity and Conservation	6	60	100	Exam	Prof. Dr. G. Brazaitis
	Invertebrate Diversity and Conservation	6	60	100	Exam	Assoc. Prof. Dr. P. Mulerčikas
	Ecological-evolutionary Genetics	6	60	100	Exam	Prof. Dr. A. Pliūra
	Environmental Epidemiology	6	60	100	Exam	Prof. Dr. V. Dulskienė
	Ecohydrology	6	60	100	Exam	Prof. Dr. L. Česonienė
	Radioecology	6	60	100	Exam	Prof. Dr. L. Česonienė
	Heavy Metals in the Environment	6	60	100	Exam	Assoc. Prof. Dr. D.

						Šileikienė
	Courses of other fields of studies					
	Optional:	6				
	Ecological Basics of Forest Regeneration	6	60	100	Exam	Prof. Dr. V. Suchockas
	Sustainable Forest Stand Formation	6	60	100	Exam	Assoc. Prof. Dr. R. Žalkauskas
	Sustainable Forestry Development	6	60	100	Exam	Prof. Dr. V. Marozas
	Forest Management Planning in Protected Areas	6	60	100	Exam	Prof. Dr. G. Mozgeris
	Optional study courses are designed to prepare for doctoral studies or professional activities (one course of 6 ECTS shall be selected). Students shall choose a study course from the following alternatives:					
	Courses of the study field					
	Planning and Organising of Ecological Studies	**6**	60	100	Exam	Prof. Dr. L. Česonienė
	Application of Multiannual Statistical Methods in Ecological Studies	**6**	60	100	Exam	Prof. Dr. P. Rupšys
	Courses of other fields of studies					
	Career Education	**6**	60	100	Exam	Prof. Dr. S. Daukilas
	Methodology of Extension	**6**	60	100	Exam	Lect. dr. J. Stankevičiūtė
	Total during the semester:	**18**				
Semester V	**Study course**	**ECTS**	**Contact hours**	**Independent student work hours**	**Assessment method**	**Teacher**
	Optional:					
	Courses of the study field					
	Optional (students choose three study courses from a list of courses in the study field or other study fields):					
	Plant Diversity and Protection	6	60	100	Exam	Prof. Dr. V. Marozas

	Vertebrate Diversity and Conservation	6	60	100	Exam	Prof. Dr. G. Brazaitis
	Invertebrate Diversity and Conservation	6	60	100	Exam	Assoc. Prof. Dr. P. Mulerčikas
	Ecological-evolutionary Genetics	6	60	100	Exam	Prof. Dr. A. Pliūra
	Environmental Epidemiology	6	60	100	Exam	Prof. Dr. V. Dulskienė
	Ecohydrology	6	60	100	Exam	Prof. Dr. L. Česonienė
	Radioecology	6	60	100	Exam	Prof. Dr. L. Česonienė
	Heavy Metals in the Environment	6	60	100	Exam	Assoc. Prof. Dr. D. Šileikienė
	Courses of other fields of studies					
	Optional:					
	Ecological Basics of Forest Regeneration	6	60	100	Exam	Prof. Dr. V. Suchockas
	Sustainable Forest Stand Formation	6	60	100	Exam	Assoc. Prof. Dr. R. Žalkauskas
	Sustainable Forestry Development	6	60	100	Exam	Prof. Dr. V. Marozas
	Forest Management Planning in Protected Areas	6	60	100	Exam	Prof. Dr. G. Mozgeris
	Total during the semester:	**18**				
Semester	***Courses of the study field***					
	Compulsory:					
	Final thesis	30	4	796	Public Defence	Scientific advisors of the final theses

Total in the program:	**120**
Total for courses of the field of studies:	**90**
Total for courses of other fields of studies:	**30**
Totally fot the final theses:	**30**

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Study Plan of the second cycle study program Agroecosystems

	Study course	ECTS	Contact hours	Independent student work hours	Assessment method	Teacher
Semester I	***Courses of the study field***					
	Compulsory:					
	Agroecology	6	60	100	Exam	Prof. Dr. R. Velička, Assoc. Prof. Dr. R. Pupalienė
	Soil Management in Agroecosystems	6	60	100	Exam	Prof. Dr. V. Bogužas
	Courses of other fields of studies					
	Compulsory:					
	Agrobiological Potential of Plants	6	60	100	Exam	Prof. Dr. P. Duchovskis
	Total during the semester:	**18**	60	100	Exam	
Semester II	**Study course**	**ECTS**				**Teacher**
	Courses of the study field					
	Compulsory:					
	Weed Ecology	6	60	100	Exam	Assoc. Prof. Dr. D. Jodaugienė
	Crop Communities and Their Investigations	6	60	100	Exam	Prof. Dr. A. Marcinkevičienė, Assoc. Prof. Dr. L. M. Butkevičienė
	Courses of other fields of studies					
	Compulsory:					
	Biology and Fertility of Soil	6	60	100	Exam	Assoc. Prof. Dr. J. Aleinikovienė
	Total during the semester:	**18**				
Semester III	**Study course**	**ECTS**				**Teacher**
	Courses of the study field					
	Compulsory:					
	Organic Farming	6	60	100	Exam	Prof. Dr. K. Romaneckas, Assoc. Prof. Dr. Aida Adamavičienė

	Courses of other fields of studies					
	Compulsory:					
	Methodology of Extension	6	60	100	Exam	Assoc. Prof. Dr. I. Vagusevičienė
	Experimental Design and Analysis	6	60	100	Exam	Assoc. Prof. Dr. R. Pupalienė
	Total during the semester:	**18**				
Semester IV	**Study course**	**ECTS**				**Teacher**
	Courses of the study field					
	Compulsory:					
	Optional:	**6**	60	100	Exam	
	Environmental Protection	6	60	100	Exam	Lect. Dr. D. Šileikienė
	Modeling of Agroecosystems	6	60	100	Exam	Prof. Dr. K. Romaneckas
	Courses of other fields of studies					
	Compulsory:					
	Optional:	**12**				
	Bioeconomy	6	60	100	Exam	Prof. Dr. V. Vitunskienė
	Physics and Fertility of Soil	6	60	100	Exam	Prof. Dr. V. Bogužas
	Renewable Agricultural Resources and Waste Treatment	6	60	100	Exam	Assoc. Prof. Dr. Z. Kriaučiūnienė
	Quality and Safety of Plant Food Products	6	60	100	Exam	Prof. Dr. E. Jarienė
	Soils resources and GIS	6	60	100	Exam	Assoc. Prof. Dr. R. Vaisvalavičius, Prof. Dr. G. Mozgeris
	Plant Protection in Organic Farming	6	60	100	Exam	Assoc. Prof. Dr. J. Sinkevičienė
	Total during the semester:	**18**				
Semester V	**Study course**	**ECTS**				**Teacher**
	General university study courses					
	Courses of the study field					
	Compulsory:					

	Scientific Research Work 1	6	60	100	Exam	Scientific advisors of the final theses
	Scientific Research Work 2	6	60	100	Exam	Scientific advisors of the final theses
	Biological Diversity Conservation	6	60	100	Exam	Lect. Dr. Ž. Preikša
	Courses of other fields of studies					
	Compulsory:					
	Total during the semester:	**18**				
Semester VI	**Study course**	**ECTS**				**Teacher**
	General university study courses					
	Courses of the study field					
	Compulsory:					
	Master's Thesis	30			Public Defence	Scientific advisors of the final theses
	Courses of other fields of studies					
	Compulsory:					
	Total during the semester:	**30**				

Total in the program:	**120**
Total for courses of the field of studies:	**84**
Total for courses of other fields of studies:	**36**

ANNEX 2. THE AIM OF THE STUDY PROGRAM, THE EXPECTED LEARNING OUTCOMES AND THE LINKS BETWEEN STUDY COURSES

The Applied Ecology program aims to train Masters in Ecology study field who have knowledge of the individual, ecosystem-level processes and methods of their assessment, principles, and frameworks for nature management and environmental protection, biodiversity, species distribution, and their whole, who are able to understand fundamental ecological processes and are able to carry out research and apply the latest knowledge and methods in ecology and environmental protection in environmental activities that require innovation and knowledge integration.

Coherence of the field study Applied Ecology p programme aims and intended learning outcomes with the programme courses

Description of learning outcomes of each study cycle	Learning outcomes	Study course
Knowledge and its application	A graduate is able to analyze the structure, relationships, functioning, pollution processes, and change of ecosystems under changing environmental conditions of anthropogenic impact, explain the principles and methods of biodiversity conservation and environmental management, compare environmental policy concepts, principles and measures, and apply them in professional practice.	Environmental Bioindication; Environmental Policy; Nature Management; Diversity and Protection of Hydroecosystems; Diversity and Protection of Terrestrial Ecosystems; Diffusion of Pollution in Ecosystems
	A graduate is able to analyze and compare the main theories, principles, techniques, and frameworks in a chosen field, integrate interdisciplinary knowledge and provide suggestions for environmental management solutions.	Optional courses Plant Diversity and Protection Vertebrate Diversity and Conservation Invertebrate Diversity and Conservation Ecological-evolutionary Genetics Environmental Epidemiology Ecohydrology Radioecology Heavy Metals in the Environment Ecological Basics of Forest Regeneration Sustainable Forest Stand Formation Sustainable Forestry Development Forest Management Planning in Protected Areas
Research skills	A graduate is able to select ecological research methods and mathematical statistics methods for specific studies and plan and carry out essential and applied ecological research.	GIS in Ecological Research; Research Methodology in Ecology; Statistical methods in Biology; Optional courses: Applying Long-term Statistical Methods in Ecological Research;

		Planning and Organising of Ecological Studies
	A graduate is able to analyze, summarize, integrate and evaluate research data, draw conclusions and make recommendations based on synthesized ecological research results.	Scientific Research Work, Final thesis
Specific abilities	A graduate is able to critically evaluate and propose new concepts and strategic measures for the protection of ecosystems and environmental policy and follow the principles of sustainable development and the legal acts of the European Union and the Republic of Lithuania in his/her professional activity.	Environmental Bioindication; Environmental Policy; Nature Management; Diversity and Protection of Hydroecosystems; Diversity and Protection of Terrestrial Ecosystems; Diffusion of Pollution in Ecosystems
	The graduate is able to plan and organize ecological research, nature conservation, and environmental management, apply the latest interdisciplinary knowledge, mathematical and statistical analysis methods, and use information technologies to solve environmental problems.	GIS in Ecological Research; Research Methodology; Statistical methods in Biology; Nature Management; Optional courses: Plant Diversity and Protection Vertebrate Diversity and Conservation Invertebrate Diversity and Conservation Ecological-evolutionary Genetics Environmental Epidemiology Ecohydrology Radioecology Heavy Metals in the Environment Ecological Basics of Forest Regeneration Sustainable Forest Stand Formation Sustainable Forestry Development Forest Management Planning in Protected Areas Methodology of Extension Career Education
Social abilities	A graduate is able to organize individual and teamwork in environmental protection and management activities and take responsibility for the quality and improvement of activities.	All study courses
	A graduate is able to communicate reasonably with various target groups of the society, publicly present the results of professional activities of an ecologist and environmentalist in the national and international professional area.	Environmental Policy; Scientific Research Work Final thesis Research Methodology; Optional courses: Methodology of Extension Career Education

Personal abilities	A graduate is able to evaluate innovations in the field of study critically, has the skills of strategic ecological thinking, and seeks to implement innovative solutions in ecology and nature protection.	All study courses

The aim of the second cycle study program in Agroecosystems is to train Master degree students in life sciences with in-depth theoretical knowledge in the field of agroecology, organic and sustainable agriculture, who are able to assess and shape the conditions influencing the development and productivity of agricultural plants, design analytical technologies of intensive, sustainable and organic agricultural systems, assess the environmental impact of farming in terms of agroecological impact on agro-ecological aspects as well as assess the influence of agro-climatic factors on agroecosystems.
Coherence of the field Agroecosystems study programme aims and intended learning outcomes with the programme courses:

Description of learning outcomes of each study cycle	**Learning outcomes**	**Study courses**
Knowledge and its application	A graduate is able to describe the characteristics of agroecosystems of various intensities, explain the regularities of their formation and regulation, modelling possibilities, describe renewable and biological resources and their potential, define the peculiarities of intensive, sustainable and organic agriculture systems, development directions and trends, interpret the strategic documents of Lithuania and the EU in the field of environment and agriculture. A graduate is able to analyze the significance of biodiversity in natural and artificial ecosystems and propose ways to preserve it.	Organic Farming, Agroecology, Renewable Agricultural Resources and Waste Treatment, Modeling of Agroecosystems, Environmental Protection, Biological Diversity Conservation, Plant Protection in Organic Farming, Biology and Fertility of Soil, Physics and Fertility of Soil, Soil Management in Agroecosystems.
	A graduate is able to analyze and model ecological processes in agriculture, the productivity of crop communities and agroecosystems in relation to factors determining the quality of production, and describe ecosystem services.	Agrobiological Potential of Plants, Crop Communities and Their Investigations, Weed Ecology, Quality and Safety of Plant Food Products, Physics and Fertility of Soil, Soil Management in Agroecosystems, Soils resources and GIS, Methodology of Extension, Bioeconomy
Research skills	A graduate is able to define modern research methods, explain the principles of selection of these methods and the possibilities of their application in research on the environmental impact of agroecosystems and agricultural production. A graduate is able to plan and carry out research, evaluate research results, analyze them, evaluate them statistically, interpret them, prepare scientific recommendations and proposals.	Experimental Design and Analysis, Scientific Research Work1, Scientific Research Work 2, Final Thesis, Methodology of Extension, Crop Communities and Their Investigations.

Special abilities	A graduate is able to evaluate the impact of environmental factors on the development and productivity of crop communities and select effective crop establishment measures according to the intensity of farming.	Agrobiological Potential of Plants, Agroecology, Crop Communities, and Their Investigations, Organic Farming, Weed Ecology, Scientific Research Work 1, Scientific Research Work 2, Final Thesis
	A graduate is able to assess the environmental impact of farming from an agro-ecological point of view, the links to the circular bio-economy, make proposals for the sustainable use of renewable and biological resources, optimize and model the components of intensive, sustainable and ecological farming systems.	Organic Farming, Agroecology, Renewable Agricultural Resources and Waste Treatment, Modeling of Agroecosystems, Bioeconomy, Environmental Protection, Biology and Fertility of Soil, Biological Diversity Conservation, Plant Protection in Organic Farming, Physics and Fertility of Soil, Soil Management in Agroecosystems, Weed Ecology.
	A graduate is able to use search engines for scientific and professional information and geographic information systems (GIS), formulate scientific and professional problems, identify strategies for solving them, and provide advice on the application of alternative farming systems.	Experimental Design and Analysis, Agrobiological Potential of Plants, Crop Communities and Their Investigations, Organic Farming, Quality and Safety of Plant Food Products, Physics and Fertility of Soil, Soils resources and GIS, Methodology of Extension
Social abilities	A graduate is able to present summarised information on professional issues to professionals and others in a clear, reasoned manner, and evaluate critically and apply knowledge from other fields (management, economics, technology) in practice creatively. A graduate has managerial skills in information management, planning, organization and problem-solving in the application of mixed-intensity farming systems. A graduate has team-working skills and is able to interact with specialists from other scientific fields.	All taught courses
Personal abilities	A graduate is able to continuously improve professional knowledge and competences, evaluate and apply innovations in his/her field of work, solve problems independently and creatively, and justify conclusions and recommendations.	All taught courses

ANNEX 3. LIST OF FINAL THESES

Second cycle study program ***Applied Ecology***

Full-time studies

No.	Title of the final thesis	Scientific advisor	Evaluation
2018			
1.	Cheminių ir holistinių tyrimo metodų taikymas aktinidijų *(Actinidia kolomikta)* vaisių rodikliams vertinti. The application of chemical and holistic test methods to assess actinidia (*Actinidia kolomikta*) fruits parameters.	Assoc. Prof. Dr. Daiva Šileikienė	10
2.	Oro temperatūros ir kritulių kiekio įtaka balinių vėžlių *(Emys orbicularis Linnaeus, 1758)* reprodukcijai pietų Lietuvoje. The effect of air temperature and precipitation on the European pond turtle (*Emys orbicularis Linnaeus, 1758*) reproductiuon in East Lithuania.	Lect. Dr. Žydrūnas Preikša	10
3.	Dirvožemio kvėpavimo intensyvumas vegetacijos metu skirtinguose medelynuose. Soil respiration intensity during vegetation in different stands.	Lect. Dr. Jurgita Sasnauskienė	10
4.	Mikroskopinių grybų gausumas skirtingų medynų viršutiniame mineraliniame dirvožemio sluoksnyje. The abundance of soil microscopic fungi in different tree stands.	Assoc. Prof. Dr. Nijolė Maršalkienė	9
5.	Cheminių ir holistinių tyrimo metodų taikymas aviečių uogų *(lot. Rubus subgen)* kokybės tyrimuose. Application of chemical and holistic research methods in raspberry quality research.	Assoc. Prof. Dr. Daiva Šileikienė	10
6.	Mūšos tyrelio pelkinio komplekso augalijos vertinimas. Evaluation of Musa tyrelis swamp complex flora.	Lect. Dr. Jolita Abraitienė	9
7.	Saulėgrąžų aliejaus peresterinimo proceso optimizavimas naudojant dolomitą kaip gamtinį katalizatorių. Optimization of transesterification process of sunflower oil when dolomite is used as a natural catalyst.	Prof. Dr. Violeta Makarevičienė	9
2019 the final thesis was not defended that year			
2020			
1.	Biomasės deginimo atliekų (pelenų) panaudojimas kelių ir trinkelių takų pagrindams. The Use of Biomass Incineration Waste (Ash) for Foundations in Road Construction and Paving.	Prof. Dr. Valdas Paulauskas	9

List of the final theses

Second cycle study program ***Applied Ecology***

Part-time studies

No.	Title of the final thesis	Scientific advisor	Evaluation
2018			
1.	Pakuočių atliekų rūšiuojamojo surinkimo ir tvarkymo analizė Kaišiadorių savivaldybės teritorijoje 2013-2016 m. laikotarpiu. Analysis of sorting of garbage packaging in the territory of Kaisiadorys municipality for 2013-2016 period of time.	Assoc. Prof. Dr. Daiva Šileikienė	9
2.	Holistinių tyrimo metodų taikymas skirtingų auginimo technologijų dirbtinai auginamų pievagrybių (*lot. Agaricus)* kokybės tyrimuose. Application of holistic testing Methods for Quality studies of Varieties of Agricultural	Assoc. Prof. Dr. Daiva Šileikienė	9
3.	Segetalinės floros tyrimai ekologinio ir intensyvaus ūkio sąlygomis. Segetal Flora Studies under the Ecological and Intemsive Farming Conditions.	Assoc. Prof. Dr. Anželika Dautartė	9
4.	Ariogalos miesto nuotekų įtaka Dubysos upės vandens kokybei. The influence of Ariogala city to the quality of the Dubysa river.	Prof. Dr. Laima Česonienė	9
2019			
1.	Nedestrukcinių metodų taikymas ekologiškos ir įprastinės pieno	Assoc. Prof. Dr. Daiva	9

	produkcijos tyrimuose. Application of Nedestructural Methods in Organic and Conventional milk and their Production Research.	Šileikienė	
2.	Paprastųjų miežių (*Hordeum vulgare* L.), purkštų ozonuotu vandeniu, grūdų kokybės vertinimas cheminiais ir holistiniais tyrimo metodais. Evaluation of Sprayed with Ozonated Water Spring Barley (*Hordeum vulgare* L.) Grain Quality by Chemical and Holistic Methods.	Assoc. Prof. Dr. Daiva Šileikienė	10
3.	Šakių nuotekų valyklos išvalytų nuotekų poveikis Siesarties upės vandens būklei. The Impact of Wastewater Treated by Sakiai Wastewater Treatment Plant on the Water Status of the River Siesartis.	Prof. Dr. Laima Česonienė	10
4.	Indų ploviklių poveikis mažosios plūdenos (*Lemna Minor L.)* biometriniams rodikliams. The impact of Dishwashing Detergents on *Lemna minor* L. Biometric Indicators.	Assoc. Prof. Dr. Anželika Dautartė	10
5.	Europos Bendrijos svarbos natūralių miškų buveinių tyrimai Utenos miesto teritorijoje. Research on Natural Forest Habitats of European Community Importance in the Territory of Utena City.	Lect. Dr. Jolita Abraitienė	9
6.	Kelių transporto sektoriaus aplinkos oro teršalų analizė 2013 - 2018 laikotarpiu. Environmental Air Pollution Induced by Road Transport During the 2013 – 2018 Period.	Assoc. Prof. Dr. Daiva Šileikienė	8
7.	Marijampolės nuotekų valyklos poveikis Šešupės upės vandens kokybei. Impact of Marijampole Wastewater Treatment Plant on Šešupe River Water Quality.	Assoc. Prof. Dr. Midona Dapkienė	9
8.	Žėlinių formavimasis pušynuose po atvejinių kirtimų Svilonių ir Upninkų girininkijose. Formation of the Undergrowth in Pine Forests After Shelter-wood Cuttings in Sviloniai and Upninkai Forest Districts.	Prof. Dr. Vitas Marozas	9
2020			
1.	Urbanizacijos įtaka paukščių bendrijoms Kauno mieste. The Influence of Urbanization on the Bird Communities in Kaunas City.	Prof. Dr. Gediminas Brazaitis	10
2.	Medžio mikrobuveinių Europos Bendrijos svarbos natūraliose miškų buveinėse vertinimas. The Assessment of Tree Microhabitats in the Natural Forest Habitats of European Importance.	Lect. Dr. Žydrūnas Preikša	9
3.	VMU Dubravos regioninio padalinio kertinių miško buveinių medžių milžinų įvairovės tyrimai. The Study of Diversity of Giant Trees in Key Forest Habitats of Dubrava Regional Division of State Forest Enterprise.	Lect. Dr. Jolita Abraitienė	8
4.	Uosialapio klevo (*Acer negund*o L.) formuojamos fitocenozės ir įtaka natūralių paupių bendrijų sudėčiai. Phytocoenoses, Formed by Box-elder (*Acer negundo* L.) and its Influence on the Composition of Natural Riparian Plant Communities.	Prof. Dr. Vitas Marozas	9
5.	Novos upės ekologinės būklės vertinimas. The Assessment of Ecological Condition of River Nova.	Assoc. Prof. Dr. Algirdas Gavenauskas	8
6.	Nuokritų biocheminės sudėties įtaka mikroskopinių grybų paplitimui paklotėje ir viršutiniuose dirvožemio sluoksniuose. The Influence of Biochemical Composition of Litter on the Distribution of Microscopic Fungi in the Forest Floor and Upper Layers of Soil.	Lect. Dr. Nijolė Maršalkienė	9
7.	Neries upės atkarpos ties Jonavos miestu vandens būklės įvertinimas pagal makrozoobentosą. Water Condition Assessment of the Neris River Section Near the City of Jonava According to Macrozoobenthos.	Assoc. Prof. Dr. Anželika Dautartė	9

8.	Makrofitų populiacijų vertinimas Kupiškio mariose. The Assessment of Macrophyte Populations in Kupiškis Lagoon.	Assoc. Prof. Dr. Anželika Dautartė	10
9.	Skystų organinių ir birių mineralinių trąšų bei dirvonavimo įtakos kalvoto ir eroduoto reljefo agroekosistemai tyrimai. The Use of Biomass Incineration Waste (Ash) for Foundations in Road Construction and Paving.	Assoc. Prof. Dr. Algirdas Gavenauskas	9

List of the final theses
Second cycle study program ***Agroecosystems Part-time studies***

No.	Title of the final thesis	Scientific advisor	Evaluation
2018			
1.	Spragšių (*Coleoptera: Elateridae*) gausumo tyrimai skirtingose agroekosistemose	Assoc. Prof. Dr. Povilas Mulerčikas	10
2.	Vidurio Lietuvos dirvožemių išteklių organinės anglies vertinimas skirtingose ekosistemose	Assoc. Prof. Dr. Romutė Mikučionienė, Consult. Assoc. Prof. Dr. Rimantas Vaisvalavičius	9
3.	Vasarinių rapsų sėjos laiko įtaka žaladarių paplitimui kintančio klimato sąlygomis	Assoc. Prof. Dr. Lina Marija Butkevičienė	10
4.	Supaprastinto žemės dirbimo ir tiesioginės sėjos įtaka žieminių rapsų agrocenozei	Assoc. Prof. Dr. Darija Jodaugienė	10
2019			
1.	Paprastojo kmyno alelopatinė įtaka bekvapiui šunramuniui (*Tripleurospermum perforatum* M. Lainz)	Assoc. Prof. Dr. Zita Kriaučiūnienė	7
2.	Organinių mulčių įtaka svogūnų agrocenozei	Assoc. Prof. Dr. Rita Pupalienė	10
3.	Paprastojo kmyno alelopatinis poveikis žemės ūkio augalų dygimui	Lect. dr. Rita Čepulienė	9
4.	Biologinių preparatų ir piktžolių kontrolės sistemų poveikis žieminių rapsų agrocenozei ekologinėje žemdirbystėje	Prof. Dr. Aušra Marcinkevičienė	8
5.	Aplinką tausojančio žemės dirbimo poveikis pupų agrocenozės komponentams	Prof. Dr. Kęstutis Romaneckas	10
6.	Žemės dirbimo intensyvumo poveikis vasarinių miežių agrocenozei	Assoc. Prof. Dr. Steponas Raudonius	9
7.	Dirvožemio biologinių savybių palyginimas javų agrocenozėse įvairiose sėjomainose	Prof. Dr. Aušra Marcinkevičienė	8
8.	Skirtingų agrofitocenozių poveikis dirvožemio savybėms kalvotame Žemaičių aukštumos regione	Assoc. Prof. Dr. Darija Jodaugienė	10
2020			
1.	Neariminio žemės dirbimo, šiaudų ir žaliosios trąšos poveikis miežių agroekosistemos komponentams	Prof. Dr. Vaclovas Bogužas	9
2.	Skirtingų organinių mulčių poveikis svogūnų agrocenozei taikant ekologinę žemdirbystės sistemą.	Assoc. Prof. Dr. Rita Pupalienė	10
3.	Priešsėlių poveikis vasarinių miežių agrocenozei įvairiose sėjomainose	Prof. Dr. Aušra Marcinkevičienė	10
4.	Žieminių kviečių tręšimo optimizavimo galimybės naudojant biologinius preparatus	Assoc. Prof. Dr. Rūta Dromantienė	9
5.	Biologinės kilmės preparatų ir jų mišinių naudojimo įtaka dirvožemio savybėms	Assoc. Prof. Dr. Lina Marija Butkevičienė	9
6.	Žieminių rapsų veislių tyrimai, taikant ekologinę	Assoc. Prof. Dr.	9

	žemdirbystės sistemą	Darija Jodaugienė	
7.	Organinių mulčių įtaka valgomojo burokėlio (*Beta vulgaris* L.) agrocenozei.	Assoc. Prof. Dr. Aušra Sinkevičienė	10
8.	Sėjos laiko ir sėklos normos įtaka paprastojo kviečio (*Triticum aestivum* L.) produktyvumui	Assoc. Prof. Dr. Ilona Vagusevičienė	10
9.	Mikrobiologinės taršos mažinimo priemonių tyrimai bičių surinktose žiedadaulkėse	Assoc. Prof. Dr. Jolanta Sinkevičienė	9
10.	Dirvožemio savybių palyginimas daugiafunkciniuose pasėliuose	Prof. Dr. Aušra Marcinkevičienė	9
11.	Skirtingo žemės dirbimo poveikis žieminiams rapsams, dirvožemio savybėms ir CO_2 emisijai	Assoc. Prof. Dr. Aušra Sinkevičienė	9
12.	Skirtingų trąšų įtaka ekologiškai augintų bulvių ligotumui	Assoc. Prof. Dr. Jolanta Sinkevičienė	9

4 PRIEDAS. LIST OF TEACHERS IN ECOLOGY FIELD OF STUDIES

Table 1. Teachers in the Applied Ecology study program of the second cycle field of studies

No.	Name, surname	Academic title; scientific degree	Research interests and three major works in three years (2015-2020)	The course taught	Teaching experience (years)	Practical work experiencein the course being taught	Workload at VMU
1.	Gediminas Brazaitis	Prof. Dr.	Classification of research fields: A 004 Selected works: 1. Vitas Marozas, Artūras Kibiša, Gediminas Brazaitis, Kalev Jõgiste, Kastytis Šimkevičius and Edmundas Bartkevičius. 2019. Distribution and Habitat Selection of Free-Ranging European Bison (Bison bonasus L.) in a Mosaic Landscape—A Lithuanian Case. Forests, 10 (4), 345; https://doi:10.3390/f10040345 2. Sabalinkiene G., Danusevicius D., Manton M., Brazaitis G., Simkevicius K. 2017. Differentiation of European roe deer populations and ecotypes in Lithuania based on DNA markers, cranium and antler morphometry. Silva Fennica vol. 51 no. 3 article id 1743. https://doi.org/10.14214/sf.1743 3. Zizas, R., Mozgeris, G., Baliuckas, V., Brazaitis, G., Belova, O., Grašytė, G. and Kurlavičius, P. 2017. The Effect of Forest Landscape Structure on the Location and Occupancy of Capercaillie.	TEK2008 Vertebrate Biology. Vertebrate Diversity and Conservation.	17	20	1.0
2.	Laima Česonienė	Prof. Dr.	Classification of research fields: N12 Selected works: **1.Česonienė, Laima**; Dapkienė, Midona; Šileikienė, Daiva. The impact of livestock farming activity on the quality of surface water // Environmental science and pollution research. Heidelberg: Springer. ISSN 0944-1344, 2019, vol. 26, iss. 32, p. 32678-32686. Doi:10.1007/s11356-018-3694-3. Science Citation Index Expanded (Web of Science); MEDLINE; Scopus; SpringerLink. [20.500.12259/99854] [2019] [S1] [WOS => title: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, if: 2.914, aif: 3.98, aif_min: 3.98, aif_max: 3.98, cat: 1, av: 0.732, year: 2018, quartile: Q2] [SCOPUS => title: Environmental Science and	MEAEB07 Soil and Water Quality And Assessment; MEAEB10 Environmental Engineering, MEAEM002 Diffusion of Pollution in Ecosystems; MEAEM13 Radioecology; MEAEM12 Eco hydrology; Environmental Pollution (PhD)	17	20	1.0

			Pollution Research, citescore: 3.14, snip: 1.032, sjr: 0.828, year: 2018, quartile: Q1] [ai: 0,999, na: 3, nia :3, nip: 0, pai: 2,462] **2. Česonienė, Laima**; Mažuolytė-Miškinė, Edita; Šileikienė, Daiva; Lingytė, Kristina; Bartkevičius, Edmundas. Analysis of Biogenic Secondary Pollution Materials from Sludge in Surface Waters // International journal of environmental research and public health. Basel: Molecular diversity preservation international (MDPI). ISSN 1660-4601, 2019, Vol. 16, iss. 23, p. 1-17. Doi:10.3390/ijerph16234691. < https://hdl.handle.net/20.500.12259/102014 >. Science Citation Index Expanded (Web of Science); IndexCopernicus; PubMed; Chemical Abstracts; Scopus. [20.500.12259/102014] [2019] [S1] [WOS => title: International Journal of Environmental Research and Public Health, if: 2.468, aif: 2.977, aif_min: 2.192, aif_max: 3.98, cat: 3, av: 0.843, year: 2018, quartile: Q1] [SCOPUS => title: International Journal of Environmental Research and Public Health, citescore: 2.81, snip: 1.129, sjr: 0.818, year: 2018, quartile: Q1] [ai: 1, na: 5, nia :5, nip: 0, pai: 2,658] **3.** Treinytė, Jolanta; Bridžiuvienė, Danguolė; Fataraitė-Urbonienė, Eglė; Rainosalo, Egidija; Rajan, Rathish; **Česonienė, Laima**; Gražulevičienė, Violeta. Forestry wastes filled polymer composites for agricultural use // Journal of cleaner production. Oxford: Elsevier. ISSN 0959-6526, 2018, vol. 205, p. 388-406. Doi:10.1016/j.jclepro.2018.09.012. Science Citation Index Expanded (Web of Science); Academic Search Premier; Business Source Complete; CAB Abstracts; Compendex; Inspec; ScienceDirect. [20.500.12259/92252] [2018] [S1] [WOS => title: JOURNAL OF CLEANER PRODUCTION, if: 6.395, aif: 5.132, aif_min: 3.98, aif_max: 5.803, cat: 3, av: 1.481, year: 2018, quartile: Q1] [SCOPUS => title: Journal of Cleaner Production, citescore: 7.32, snip: 2.308, sjr: 1.62, year: 2018, quartile: Q1] [ai: 0,606, na: 7, nia :3, nip: 1, pai: 2,553] The conditions and systematic nature (formal arrangements, funding, areas of development, methods of development) for the development of teachers in research, artistic, didactic or professional activities are described.				

3.	Anželika Dautartė	Assoc. Prof. Dr.	Classification of research fields: N12 Selected works: 1. Cole, Lorna J., Kleijn, David, Dicks, Lynn V., Stout, Jane C., Potts, Simon G., Albrecht, Matthias, Balzan, Mario V., Bartomeus, Ignasi, Bebeli, Penelope J., Bevk, Danilo, Biesmeijer, Jacobus C., Chlebo, Robert, Dautartė, Anželika, Emmanouil, Nikolaos, Hartfield, Chris, Holland, John M., Holzschuh, Andrea, Knoben, Nieke T.J., A critical analysis of the potential for EU Common Agricultural Policy measures to support wild pollinators on farmland. // Journal of Applied Ecology. Hoboken: Wiley. ISSN 0021-8901. 2020, Vol. 57, iss. 4, p. 681-694. 2. Marozas, Vitas, Augustaitis, Algirdas, Pivoras, Ainis, Baumgarten, Manuela, Mozgeris, Gintautas, Sasnauskienė, Jurgita, Dautartė, Anželika, Abraitienė, Jolita, Byčenkienė, Steigvilė, Mordas, Genrik, Ulevičius, Vidmantas, Matyssek, Rainer, Comparative analyses of gas 73abil.73s characteristics and chlorophyll fluorescence of three dominant tree species during the vegetation season in hemi-boreal zone, Lithuania. // Journal of Agricultural Meteorology. Tokyo: Society of Agricultural Meteorology of Japan. ISSN 0021-8588. 2019, Vol. 75, iss. 1, p. 3-12. 3. Marozas, Vitas, Sasnauskienė, Jurgita, Dautartė, Anželika, Gavenauskas, Algirdas, Sabienė, Nomeda, Armolaitis, Kęstutis, Effect of shelterwood cuttings on soil chemical properties in Scots pine (Pinus sylvestris L.) forests in Europe's hemiboreal zone, in Lithuania. // Journal of Elementology. Olsztyn: Polskie Towarzystwo Magnezologiczne. ISSN 1644-2296. 2018, Vol. 23, iss. 1, p. 353-367	TEK2004 General Ecology. TEK2008 Aquatic Ecology and Biology.	22	15	0.75
4.	Algirdas Gavenauskas	Assoc. Prof. Dr.	Classification of research fields: N12 Selected works: 1. Marozas, Vitas, Sasnauskienė, Jurgita, Dautartė, Anželika, Gavenauskas, Algirdas, Sabienė, Nomeda, Armolaitis, Kęstutis, Effect of shelterwood cuttings on soil chemical properties in Scots pine (Pinus sylvestris L.) forests in Europe's hemiboreal zone, in Lithuania. // Journal of Elementology. Olsztyn: Polskie Towarzystwo Magnezologiczne. ISSN 1644-2296. 2018, Vol. 23, iss. 1, p.	MEAEM001 Environmental Bioindication; MEAEM006 Anthropogenic Ecosystems	22	25	1.0

			353-367				
5.	Vitas Marozas	Prof. Dr.	Classification of research fields: N12; A 004 Selected works: 1. Fujita Saki, Watanabe Hanami, Marozas Vitas, Tamai Yutaka, Satoh Fuyuki, Koike Takayoshi. Effects of biochar and litter on water relations of Japanese black pine (Pinus thunbergii) seedlings //Journal of Forest Research, 25:2, 76-82,2020: DOI: 10.1080/13416979.2020.1731071. 2. Marozas, Vitas, Kibiša, Artūras, Brazaitis, Gediminas, Jõgiste, Kalev, Šimkevičius, Kastytis, Bartkevičius, Edmundas. Distribution and Habitat Selection of Free-Ranging European Bison (Bison bonasus L.) in a Mosaic Landscape—A Lithuanian Case. // Forests. Basel: MDPI AG. ISSN 1999-4907. 2019, Vol. 10, iss. 4, art. No. 345, p. 1-13. 3. Jõgiste, Kalev, Frelich, Lee E., Laarmann, Diana, Vodde, Floortje, Baders, Endijs, Donis, Janis, Jansons, Aris, Kangur, Ahto, Korjus, Henn, Köster, Kajar, Kusmin, Jürgen, Kuuluvainen, Timo, Marozas, Vitas, Metslaid, Marek, Metslaid, Sandra, Polyachenko, Olga, Poska, Anneli, Rebane, Sille, Stanturf, John A. Imprints of management history on hemiboreal forest ecosystems in the Baltic States // Ecosphere. Hoboken, NJ: Wiley-Blackwell. ISSN 2150-8925. (2018) Vol. 9, iss. 11:e02503.10.1002/ecs2.2503.	MEMMM007 Specialized Ecology (Forest Ecology). MEAEM010 Sustainable Forestry Development. MEAEM003 Diversity and Protection of Terrestrial Ecosystems.	25	27	0.75
6.	Žydrūnas Preikša	Lect. Dr.	Classification of research fields: N12 Selected works: Project promoter: 1. Optimizing the management of NATURA 2000 network. 2. Training services for inventorying woodland key habitats. The client – the State Forest Enterprise (lit. VĮ Valstybinių miškų urėdija). 3. Implementation of the Alytus city monitoring program. The client – the Alytus City Municipality Administration. 4. Assessing the impact of long-range transport of air pollutants on components of relatively natural ecosystems	TEK3007 Biological Diversity Conservation. MEAEM007 Nature Management. TEK3004 Biogeography. TEK2008 Vertebrate Diversity and Conservation.	10	29	0.9
7.	Petras Rupšys	Prof. Dr.	Classification of research fields: A 004 Selected works: 1. Rupšys, Petras. Understanding the evolution of tree size diversity within the multivariate nonsymmetrical difusion process and 74abil.74s74kon measures // Mathematics. Basel:	MEMMM001 Statistical Methods in Ecology.	41	41	0.75

			MDPI. ISSN 2227-7390, 2019, vol. 7, iss. 8, p. 1-22. Doi:10.3390/math7080761. Science Citation Index Expanded (Web of Science); Scopus; Zentralblatt MATH. [2019] [S1] [WOS => title: Mathematics, if: 1.105, aif: 0.917, aif_min: 0.917, aif_max: 0.917, cat: 1, av: 1.205, year: 2018, quartile: Q1] [SCOPUS => title: Mathematics, citescore: 1.04, snip: 0.739, sjr: 0.244, year: 2018, quartile: Q2]. 2. Rupšys, Petras. Modeling 75abil.75s of structural components of forest stands based on trivariate stochastic differential equation // Forests. Basel : MDPI AG. ISSN 1999-4907, 2019, Vol. 10, iss. 6, p. 1-24. Doi:10.3390/f10060506. Science Citation Index Expanded (Web of Science); Scopus. [2019] [S1] [WOS => title: Forests, if: 2.116, aif: 2.02, aif_min: 2.02, aif_max: 2.02, cat: 1, av: 1.048, year: 2018, quartile: Q2] [SCOPUS => title: Forests, citescore: 2.32, snip: 0.943, sjr: 0.734, year: 2018, quartile: Q1] 3. Rupšys, Petras. Univariate and bivariate diffusion models: computational aspects and applications to forestry // Stochastic Differential Equations: Basics and Applications / Tony G. Deangelo (Editor). New York: Nova Science Publisher's, 2018. ISBN 9781536138092, p. 1-77. Scopus. [2018] [Y].			
8.	Daiva Šileikienė	Assoc. Prof. Dr.	Classification of research fields: N12 Selected works: 1. Česonienė, Laima; Dapkienė, Midona; Šileikienė, Daiva. The impact of livestock farming activity on the quality of surface water // Environmental science and pollution research. Heidelberg: Springer. ISSN 0944-1344, 2019, vol.26, iss.32, p.32678-32686. Doi:10.1007/s11356-018-3694-3.Science Citation Index Expanded (Web of Science); MEDLINE; Scopus; SpringerLink. [20.500.12259/99854] [2019] [S1] [WOS => title: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, if: 2.914, aif: 3.98, aif_min: 3.98, aif_max: 3.98, cat: 1, av: 0.732, year: 2018, quartile: Q2] [SCOPUS => title: Environmental Science and Pollution Research, citescore: 3.14, snip: 1.032, sjr: 0.828, year: 2018, quartile: Q1] [ai: 0,999, na: 3, nia :3, nip: 0, pai: 2,462]	MEAEM008 Environmental Policy. TEK4009 Environmental Law. MEAEM004 Research Methodology. Heavy Metals in the Environment	25	20	1.0

			2. Česonienė, Laima; Mažuolytė-Miškinė, Edita; Šileikienė, Daiva; Lingytė, Kristina; Bartkevičius, Edmundas. Analysis of Biogenic Secondary Pollution Materials from Sludge in Surface Waters // International journal of environmental research and public health. Basel: Molecular diversity preservation international (MDPI). ISSN 1660-4601, 2019, Vol. 16, iss. 23, p. 1-17. Doi:10.3390/ijerph16234691. Science Citation Index Expanded (Web of Science); IndexCopernicus; PubMed; Chemical Abstracts; Scopus. [20.500.12259/102014] [2019] [S1] [WOS => title: International Journal of Environmental Research and Public Health, if: 2.468, aif: 2.977, aif_min: 2.192, aif_max: 3.98, cat: 3, av: 0.843, year: 2018, quartile: Q1] [SCOPUS => title: International Journal of Environmental Research and Public Health, citescore: 2.81, snip: 1.129, sjr: 0.818, year: 2018, quartile: Q1] [ai: 1, na: 5, nia :5, nip: 0, pai: 2,658]; 3. Česonienė, Laima; Šileikienė, Daiva; Dapkienė, Midona; Radzevičius, Algirdas; Räsänen, Kati. Assessment of chemical and microbiological parameters on the Leite River Lithuania // Environmental science and pollution research. Heidelberg: Springer. ISSN 0944-1344, 2019, vol. 26, iss. 18, p. 18752–18765. Doi:10.1007/s11356-019-04665-6. Science Citation Index Expanded (Web of Science); MEDLINE; Scopus. [20.500.12259/99308] [2019] [S1] [WOS => title: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, if: 3.056, aif: 4.311, aif_min: 4.311, aif_max: 4.311, cat: 1, av: 0.709, year: 2019, quartile: Q2] [SCOPUS => title: Environmental Science and Pollution Research, citescore: 4.9, snip: 1.027, sjr: 0.788, year: 2019, quartile: Q1] [ai: 0,283, na: 5, nia: 4, nip: 1, aip: 1, pai: 0,684].				
9.	Donatas Jonikavicius	Lect. Dr.	Classification of research fields: A 004 Selected works: 1. Forzier, Giovanni; Pecchi, Matteo; Girardello, Marco; Mauri, Achill; Klaus, Marcus; Nikolov, Christo; Ruetschi, Marius; Gardiner, Barry; Tomaštík, Julián; Small, David; Nistor, Constantin; Jonikavičius, Donatas; Spinoni, Jonathan; Feyen, Luc; Giannetti, Francesca; Comino, Rinaldo; Wolynski, Alessandro; Pirotti, Francesco; Maistrelli, Fabio; Savulescu, Ionut; Wurpillot-Lucas, Stephanie; Karlsson,	MEMMM002 GIS in Ecological Research	8	10	0.6

			Stefan; Zieba-Kulawik, Karolina; Strejczek-Jazwinska, Paulina; Mokroš, Martin; Franz, Stefan; Krejci, Lukas; Haidu, Ionel; Nilsson, Mats; Wezyk, Piotr; Catani, Filippo; Chen, Yi-Ying; Luyssaert, Sebastiaan; Chirici, Gherardo; Cescatti, Alessandro; Beck, Pieter S. A. A spatially explicit database of wind disturbancesin European forests over the period 2000–2018 // Earth system science data. Göttingen: Copernicus Gesellschaft mbH, 2020, vol.12, iss. 1. ISSN 1866-3508, doi:10.5194/essd-12-257-2020, WOS:000514087800001, handle:20.500.12259/104459 [Research article] [Science Citation Index Expanded (Web of Science), Scopus, Current Contents (Physical, Chemical & Earth Sciences)] 2. Mozgeris, Gintautas; Jonikavičius, Donatas; Jovarauskas, Darius; Zinkevičius, Remigijus; Petkevičius, Sigitas; Steponavičius, Dainius. Imaging from manned ultra-light and unmanned aerial vehicles for estimating properties of spring wheat // Precision Agriculture. Dordrecht: Springer, 2018, Vol. 19, iss. 5. ISSN 1385-2256, doi:10.1007/s11119-018-9562-9, WOS:000443394400006, handle:20.500.12259/92019. [Research article] [Science Citation Index Expanded (Web of Science), SpringerLink] 3. Mozgeris, Gintautas; Juodkienė, Vytautė; Jonikavičius, Donatas; Straigytė, Lina; Gadal, Sébastien; Ouerghemmi, Walid. Ultra-Light Aircraft-Based Hyperspectral and Colour-Infrared Imaging to Identify Deciduous Tree Species in an Urban Environment // Remote sensing. Basel: MDPI AG, 2018, Vol. 10, iss. 10, Article 1668. ISSN 2072-4292, doi:10.3390/rs10101668, WOS:000448555800168, handle:20.500.12259/92354. [Research article] [Science Citation Index Expanded (Web of Science), Scopus]				
10	Virginija Dulskienė	Prof. Dr.	Key works: 1. Kuciene R., Dulskiene V. Associations between body mass index, waist circumference, waist-to-height ratio, and high blood preessure among adolescents: a cross-sectional study // Scientific reports. London; Nature Publishing Group. ISSN 2045-2322. 2019, Vol. 9, no. 1, 9493, p. 1-11. DOI: 10.1038/s41598-019-45956-9. 2. Simonyte S, Kuciene R, Dulskiene V, Lesauskaite V.	Environmental Epidemiology	22	22	0.5

			Associations of the adrenomedullin gene polymorphism with prehypertension and hypertension in Lithuanian children and adolescents: a cross-sectional study // Scientific reports. London; Nature Publishing Group. ISSN 2045-2322. 2019, Vol. 9, no. 1, p. 1-9. DOI: 10.1038/s41598-019-43287-3. 3. NCD Risc Factor Collaboration (NCD-RisC). Heterogeneous contributions of change in population distribution of body mass index to change in obesity and underweight // Elife. PMID: 33685583. 2021				
11	Gintautas Mozgeris	Prof. Dr.	Classification of research fields: A 004 1. Mozgeris, G., Mörtberg, U.; Pang, X.-L.; Trubins, R.; Treinys, R. Future projection for forest management suggests a decrease in the availability of nesting habitats for a mature-forest-nesting raptor. *Forest Ecology and Management* 491 (2021) 119168. https://doi.org/10.1016/j.foreco.2021.119168 2. Mozgeris, G.; Kazanavičiūtė, V.; Juknelienė, D. Does Aiming for Long-Term Non- Decreasing Flow of Timber Secure Carbon Accumulation: A Lithuanian Forestry Case. *Sustainability*. 2021, 13, 2778. https://doi.org/10.3390/su13052778 3. Mozgeris, G., Brukas, V., Pivoriūnas, N., Činga, G., Makrickienė, E., Byčenkienė, S., Marozas, V., Mikalajūnas, M., Dudoitis, V., Ulevičius, V., Augustaitis, A. Spatial Pattern of Climate Change Effects on Lithuanian Forestry. *Forests*, 2019, 10, 809; doi:10.3390/f10090809	Forest Management Planning in Protected Areas	25	25	1
12	Darius Danusevičius	Prof. Dr.	Classification of research fields: A 004 1. Danusevičius, D. and Lindgren, D. 2003. Clonal testing may be the best approach to long-term breeding of Eucalyptus. In: Eucalyptus plantations: research, management and development. R-P. Wei and D. Xu (eds.). World Scientific Publishing Co. Pte. Ltd, Singapore, ISBN 981-238-557-6 (http://www.wspc.com.sg/) (Document-Statistic Character-Count 44 000) 2. Jansson, G., Danusevičius, D. Grotehusman, H., Kowalczyk, J., Krajmerova, D., Skrøppa, T., Wolf, H. 2013. Norway Spruce (Picea abies (L.) H.Karst.). In: Forest Tree Breeding in Europe. Series: Managing Forest Ecosystems, Vol. 25, Pâques, Luc E (Ed.), 2013, Springer, VI, 527 p. 178 illus., 149 illus. ISBN 978-94-007-6146-9	Ecological-evolutionary Genetics	25	25	1

			3. Danusevičius, Darius; Kerpauskaitė, Vilma; Kavaliauskas, Darius; Fussi, Barbara; Konnert, Monika; Baliuckas, Virgilijus. 2016. The effect of tending and commercial thinning on the genetic diversity of Scots pine stands. European Journal of Forest Research DOI 10.1007/s10342-016-1002-7 [Science Citation Index Expanded (Web of Science);				
13	Assoc. Prof. Dr.	Povilas Mulerčikas	Classification of research fields: A 004 Selected works: 1. Bilican, Ismail, Sami Pekdemir, M. Serdar Onses, Lalehan Akyuz, Ergin Murat Altuner, Behlul Koc-Bilican, Lian-Sheng Zang, Muhammad Mujtaba, Povilas Mulerčikas, and Murat Kaya. "Chitosan Loses Innate Beneficial Properties after Being Dissolved in Acetic Acid: Supported by Detailed Molecular Modeling." ACS Sustainable Chemistry & Engineering (2020). [Databases: Science Citation Index Expanded (Web of Science); Scopus; Science Direct]; [Citescore: 7.632. 2. Baran, Talat; Sargın, İdris; Kaya, Murat; Mulerčikas, Povilas; Kazlauskaitė, Sonata; Menteş, Ayfer. Production of magnetically recoverable, thermally stable, bio-based catalyst: Remarkable turnover frequency and reusability in Suzuki coupling reaction // Chemical engineering journal. Lausanne: Elsevier. ISSN 1385-8947. 2018, vol. 331, p. 102-113. Databases: Science Citation Index Expanded (Web of Science); Scopus; Science Direct]; [Citescore: 6.735; total citescore: 4.301; quartile: Q1 (2017, SCIE)] [SNIP: 1,843; SJR: 1,743 (2015, Scopus)]. 3. Kaya, Murat; Salaberria, Asier M.; Mujtaba, Muhammad; Labidi, Jalel; Baran, Talat; Mulerčikas, Povilas; Duman, Fatih. An inclusive physicochemical comparison of natural and synthetic chitin films // International journal of biological macromolecules. Amsterdam: Elsevier B.V. ISSN 0141-8130. 2018, vol. 106, p. 1062-1070. [Databases: Science Citation Index Expanded (Web of Science); Scopus; MEDLINE]; [Citescore: 3.909; total citescore: 3.589; quartile: Q1 (2017, SCIE)] [SNIP: 1,241; SJR: 0,815 (2015, Scopus)].	Invertebrate Diversity and Conservation	12	12	0.8

Table 2. Teachers in the Agroecosystems study program of the second cycle field of studies

No.	Name, surname	Academic title; scientific degree	Research interests and three major works in three years (2015-2020)	The course taught	Teaching experience (years)	Practical work experiencein the course being taught	Workload at VMU
1.	Rimantas Velička	Prof. Habil. Dr.	Classification of research fields: Research on technological parameters of oilseed rape cultivation, patterns of formation of oilseed rape bio-potential, the effect of oilseed rape on soil fertility; patterns of oilseed rape cultivation under changing climatic conditions; plant allelopathy; crop rotations (01 A). Selected works: 1. Čepulienė, Rita; Kriaučiūnienė, Zita; Velička, Rimantas; Maruška, Audrius; Stankevičius, Mantas; Marcinkevičienė, Aušra; Kosteckas, Robertas. Effects of allelochemicals in Brassica napus L. residues on the germination of weeds // Allelopathy Journal. Haryana: International Allelopathy Foundation. ISSN 0971-4693. vol. 46, iss. 2 (2019), p. 277-290. Online access: [Science Citation Index Expanded (Web of Science)]. [Citescore: 0.705 (2017)] 2. 2. Sujetovienė, Gintarė; Velička, Rimantas; Kanapickas, Arvydas; Kriaučiūnienė, Zita; Romanovskaja, Danuta; Bakšienė, Eugenija; Vagusevičienė, Ilona; Klepeckas, Martynas; Juknys, Romualdas. Climate-change-related long-term historical and projected changes to spring barley phenological development in Lithuania // Journal of agricultural science. New York: Cambridge univ press. ISSN 0021-8596. 2018, Vol. 156, iss. 9, p. 1061-1069. DOI: 10.1017/S0021859618000904. [Science Citation Index Expanded (Web of Science)] [Citescore: 1.330, sv(if/aif): 0.698, highest quartile: Q2 (2018, CA JCR)] [CiteScore: 1.55, SNIP: 0.809, SJR: 0.577 (2018, Scopus Journal Metrics)] 3. Marcinkevičienė, Aušra; Velička, Rimantas; Butkevičienė, Lina Marija; Keidan, Marina; Pupalienė, Rita; Kriaučiūnienė, Zita; Kosteckas, Robertas; Čekanauskas, Sigitas; Raudonius, Steponas. The impact of non-chemical weed control methods on the disease occurrence in the organically grown winter oilseed rape crop // Žemdirbystė = Agriculture / Lietuvos agrarinių ir miškų mokslų centras, Aleksandro Stulginskio universitetas. Akademija, (Kėdainių r.). ISSN 1392-3196. T. 105, Nr. 4 (2018), p. 331-338. [Science Citation Index Expanded (Web of Science); CAB Abstracts; Scopus]. [Citescore: 0.746; total citescore: 1.653 (2017, SCIE)]	Agroecology	32	32	0.50
2.	Kęstutis Romaneckas	Prof. Dr.	Classification of research fields: Agricultural sustainability and energy efficiency (01 A) Selected works:	Organic Farming Modeling of	24	24	1.00

			1. Romaneckas, Kęstutis ; Adamavičienė, Aida ; Šarauskis, Egidijus ; Balandaitė, Jovita . The impact of intercropping on soil fertility and sugar beet productivity // Agronomy-Basel. Basel: MDPI AG. ISSN 2073-4395, 2020, vol. 10 iss. 9, p. 1-13. doi:doi:10.3390/agronomy10091406. Online access: < https://doi.org/10.3390/agronomy10091406 >. Science Citation Index Expanded (Web of Science); Current Contents (Agriculture, Biology & Environmental Sciences); Scopus. [20.500.12259/110180] [2020] [S1] [WOS => title: Agronomy-Basel, if: 2.603, aif: 2.643, aif_min: 2.281, aif_max: 3.005, cat: 2, av: 0.943, year: 2019, quartile: Q1]; 2. Šarauskis, Egidijus ; Romaneckas, Kęstutis ; Jasinskas, Algirdas ; Kimbirauskienė, Rasa ; Naujokienė, Vilma . Improving energy efficiency and environmental mitigation through tillage management in faba bean production // Energy. Oxford : Pergamon-Elsevier Science Ltd. ISSN 0360-5442, 2020, vol. 209, p. 1-9. doi:10.1016/j.energy.2020.118453. Online access: < https://doi.org/10.1016/j.energy.2020.118453 >. Science Citation Index Expanded (Web of Science); ScienceDirect; Academic Search Complete (EBSCO); Scopus. [20.500.12259/109380] [2020] [S1] [WOS => title: ENERGY, if: 6.082, aif: 5.104, aif_min: 3.861, aif_max: 6.347, cat: 2, av: 1.176, year: 2019, quartile: Q1]; 3. Šarauskis, Egidijus ; Romaneckas, Kęstutis ; Masilionytė, Laura; Buragienė, Sidona . Energy and environment friendly soil tillage and sowing : monograph Saarbrücken : LAP LAMBERT Academic Publishing 2016. 117 p. [20.500.12259/89543] [2016] [K1a] [ai: 0,75, na: 4, nia :3, nip: 0, pai: 0,75].	Agroecosystems			
3.	Aušra Marcinkevičienė	Prof. Dr.	Classification of research fields: Organic farming, intercropping, research on allelopathic properties of weeds, research on multifunctional crops, the impact of climate change on agricultural crops (01 A). Selected works: 1. Čepulienė, Rita; Kriaučiūnienė, Zita; Maruška, Audrius; Stankevičius, Mantas; Marcinkevičienė, Aušra; Kosteckas, Robertas. Effects of allelochemicals in Brassica napus L. residues on the germination of weeds // Allelopathy Journal. Haryana: International Allelopathy Foundation. ISSN 0971-4693. Vol. 45, iss.1 (2019), p. 277-290. [Science Citation Index Expanded (Web of Science); Scopus; Current Contents; BIOSIS Previews]. [Citescore: 0.705; total citescore: 1.946 (2017, SCIE)] 2. Kriaučiūnienė, Zita; Čepulienė, Rita; Velička, Rimantas; Marcinkevičienė, Aušra; Lekavičienė, Kristina; Šarauskis, Egidijus. Oilseed Rape Crop Residues: Decomposition, Properties and Allelopathic Effects // Sustainable Agriculture Reviews 32 : Waste Recycling and Fertilisation. Cham: Springer International Publishing AG, 2018. ISBN 9783319989136, p. 169-205. doi:10.1007/978-3-319-98914-3. Online access: < https://www.springer.com/us/book/9783319989136 >. 3. Marcinkevičienė, Aušra ; Keidan, Marina; Pupalienė, Rita; Velička, Rimantas; Kriaučiūnienė, Zita; Butkeviičenė, Lina, Marija; Kosteckas, Robertas. Nonchemical	Crop Communities and Their Investigations	17	15	1.12

			Weed Control in Winter Oilseed Rape Crop in the Organic Farming System. Organic Agriculture. IntechOpen, 2020. DOI: 10.5772/intechopen. 91044. Online access: <https: // www.intechopen.com / online-first / nonchemical-weed-control-in-winter-oilseed-rape-crop-in-the-organic-farming-system> 0,326 (2015, Scopus)].				
4.	Vaclovas Bogužas	Prof. Dr.	Classification of research fields: Sustainability of agroecosystems, tillage and soil quality, sustainable and organic farming, weed control, intercropping, crop change (01 A). Selected works: 1. Steponavičienė, Vaida; Bogužas, Vaclovas; Sinkevičienė, Aušra; Skinulienė, Lina; Sinkevičius, Alfredas; Klimas, Evaldas. Soil physical state as influenced by long-term reduced tillage, no-tillage and straw management // Žemdirbystė = Agriculture. Akademija (Kėdainių r.), 2020, Vol. 107, No. 3. ISSN 1392-3196, doi:10.13080/z-a.2020.107.025, WOS:000575725200001, handle:20.500.12259/109645. Online access: <http://www.zemdirbyste-agriculture.lt/wp-content/uploads/2020/07/107_3_str25.pdf> [Research article] [Science Citation Index Expanded (Web of Science), CAB Abstracts, Scopus] 2. Bogužas, Vaclovas; Sinkevičienė, Aušra; Romaneckas, Kęstutis; Steponavičienė, Vaida; Skinulienė, Lina; Butkevičienė, Lina Marija. The impact of tillage intensity and meteorological conditions on soil temperature, moisture content and CO2 efflux in maize and spring barley cultivation // Žemdirbystė = Agriculture / Lietuvos agrarinių ir miškų mokslų centras, Aleksandro Stulginskio universitetas. Akademija, (Kėdainiai district), Vol. 105, No. 4 (2018). ISSN 1392-3196, doi:10.13080/z-a.2018.105.039, WOS:000449721100003, handle:20.500.12259/92380. Online access: <http://www.zemdirbyste-agriculture.lt/wp-content/uploads/2018/11/105_4_str39.pdf> [Research article] [Science Citation Index Expanded (Web of Science), CAB Abstracts, Scopus] 3. Romaneckas, Kęstutis; Avižienytė, Dovilė; Bogužas, Vaclovas; Šarauskis, Egidijus; Jasinskas, Algirdas; Marks, Marek. Impact of tillage systems on chemical, biochemical and biological composition of the soil // Journal of Elementology. Olsztyn: Polskie Towarzystwo Magnezologiczne, 2016, Vol. 21, iss. 2. ISSN 1644-2296, doi:10.5601/jelem.2015.20.2.923, WOS:000376796700016, handle:20.500.12259/89321. Online access: <http://jsite.uwm.edu.pl/index/getfile/923> [Research article] [Science Citation Index Expanded (Web of Science)]	Soil Management in Agroecosystems Physics and Fertility of Soil	34	34	1.00
5.	Gintautas	Prof. Dr.	Classification of research fields: A 004	Soils	25	5	1.00

	Mozgeris		Forest management, geomatics, environmental policy Selected works: 1. Mozgeris, G., Mörtberg, U.; Pang, X.-L.; Trubins, R.; Treinys, R. Future projection for forest management suggests a decrease in the availability of nesting habitats for a mature-forest-nesting raptor. Forest Ecology and Management 491 (2021) 119168. https://doi.org/10.1016/j.foreco.2021.119168 2. Mozgeris, G.; Kazanavičiūtė, V.; Juknelienė, D. Does Aiming for Long-Ter m Non-Decreasing Flow of Timber Secure Carbon Accumulation: A Lithuanian Forestry Case. Sustainability. 2021, 13, 2778. https://doi.org/10.3390/su13052778 3. Mozgeris, G., Brukas, V., Pivoriūnas, N., Činga, G., Makrickienė, E., Byčenkienė, S., Marozas, V., Mikalajūnas, M., Dudoitis, V., Ulevičius, V., Augustaitis, A. Spatial Pattern of Climate Change Effects on Lithuanian Forestry. Forests, 2019, 10, 809; doi:10.3390/f10090809	resources and GIS			
6.	Elvyra Jariene	Prof. Habil. Dr.	Classification of research fields: 01A Safety and quality of plant-based food raw materials, storage and processing of plant-based raw materials, organic biodynamic food, functional food Selected works: 1. Medveckienė, Brigita; Kulaitienė, Jurgita; Jarienė, Elvyra; Vaitkevičienė, Nijolė; Hallmann, Ewelina. Carotenoids, polyphenols, and ascorbic acid in organic rosehips (Rosa spp.) cultivated in Lithuania // Applied sciences. Basel: MDPI, 2020, Vol. 10, iss. 15. ISSN 2076-3417, doi:10.3390/app10155337, WOS:000567689200001, handle:20.500.12259/109381. Online access: <https://www.vdu.lt/cris/bitstream/20.500.12259/109381/2/ISSN2076-3417_2020_V_10_15.PG_1-13.pdf> [Research article] [Science Citation Index Expanded (Web of Science), Scopus, Applied Science & Technology Source (EBSCO)] 2. Kulaitienė, Jurgita; Medveckienė, Brigita; Levickienė, Dovilė; Vaitkevičienė, Nijolė; Makarevičienė, Violeta; Jarienė, Elvyra. Changes in fatty acids content in organic rosehip (Rosa spp.) seeds during ripening // Plants-Basel. Basel: MDPI AG, 2020, Vol. 9 iss. 12. ISSN 2223-7747, doi:10.3390/plants9121793, WOS:000602574900001, handle:20.500.12259/115320. Online access: <https://www.vdu.lt/cris/bitstream/20.500.12259/115320/2/ISSN2223-7747_2020_V_9_12.PG_1-15.pdf> [Research article] [Science Citation Index Expanded (Web of Science), Current Contents (Agriculture, Biology & Environmental Sciences), Scopus, Biological Abstracts, BIOSIS Previews] 3. Vaitkevičienė, Nijolė; Kulaitienė, Jurgita; Jarienė, Elvyra; Levickienė, Dovilė; Danilčenko, Honorata; Srednicka-Tober, Dominika; Rembiałkowska, Ewa; Hallmann, Ewelina. Characterization of bioactive compounds in Colored potato (Solanum Tuberosum L.) cultivars grown with conventional, organic, and biodynamic methods // Sustainability. Basel: MDPI AG, 2020, Vol. 12, iss. 7. ISSN 2071-1050,	Quality and Safety of Plant Food Products	29	8	1.00

			doi:10.3390/su12072701, WOS:000531558100126, handle:20.500.12259/104751. Online access: <https://www.vdu.lt/cris/bitstream/20.500.12259/104751/2/ISSN2071-1050_2020_V_12_7.PG_1-13.pdf> [Research article] [Social Sciences Citation Index (Web of Science), Science Citation Index Expanded (Web of Science), Current Contents (Agriculture, Biology & Environmental Sciences), Current Contents (Social And Behavioral Sciences), Food Science Source (EBSCO), Scopus]				
7.	Pavelas Duchovskis	Prof. Habil. Dr.	Classification of research fields: Physiology of plant development, morphogenesis, photophysiology, ecophysiology, physiology of plant productivity (01 A). Selected works: 1. Tarasevičienė, Živilė; Viršilė, Akvilė; Danilčenko, Honorata; Duchovskis, Pavelas; Paulauskienė, Aurelija; Gajewski, Marek. Effects of germination time on the antioxidant properties of edible seeds // CyTA - Journal of food. Oxon: Taylor & Francis, 2019, Vol. 17, iss. 1. ISSN 1947-6337, doi:10.1080/19476337.2018.1553895, WOS:000473023100006, handle:20.500.12259/99447. Online access: <https://www.tandfonline.com/doi/full/10.1080/19476337.2018.1553895> [Research article] [Science Citation Index Expanded (Web of Science), Scopus, CAB Abstracts, Academic Search Complete (EBSCO), Chemical Abstracts (CAplus)] 2. Gruznova, Kristina A; Bashmakov, Dmitry I; Miliauskienė, Jurga; Vaštakaitė, Viktorija; Duchovskis, Pavelas; Lukatkin, Alexander S. The effect of a growth regulator Ribav-Extra on winter wheat seedlings exposed to heavy metals // Žemdirbystė = Agriculture / Lietuvos agrarinių ir miškų mokslų centras, Aleksandro Stulginskio universitetas. Akademija, (Kėdainių r.), Vol. 105, No. 3 (2018). ISSN 1392-3196, doi:10.13080/z-a.2018.105.029, WOS:000440675900005, handle:20.500.12259/92091. Online access: <http://www.zemdirbyste-agriculture.lt/wp-content/uploads/2018/08/105_3_str29.pdf> [Research article] [Science Citation Index Expanded (Web of Science), CAB Abstracts, Scopus] Samuolienė, Giedrė; Viršilė, Akvilė; Brazaitytė, Aušra; Jankauskienė, Julė; Sakalauskienė, Sandra; Vaštakaitė, Viktorija; Novičkovas, Algirdas; Viškelienė, Alina; Sasnauskas, Audrius; Duchovskis, Pavelas. Blue light dosage affects carotenoids and tocopherols in microgreens // Food chemistry. Oxford: Elsevier, 2017, Vol. 228. ISSN 0308-8146, doi:10.1016/j.foodchem.2017.01.144, WOS:000398751700007, handle:20.500.12259/90384. Online access: <https://www.sciencedirect.com/science/article/pii/S0308814617301644?via%3Dihub> [Research article] [Science Citation Index Expanded (Web of Science), Scopus]	Agrobiological Potential of Plants	26	22	0.5
8.	Vladzė Vitunskienė	Prof. Dr.	Classification of research fields: Sustainable development of the bioeconomy, agricultural competitiveness and sustainability, agriculture and rural development policy Selected works:	Bioeconomy	30	3	1.00

			1. Vitunskienė, Vlada; Droždz, Jolanta; Bendoraitytė, Asta; Lauraitienė, Lina. Mažų ūkių interesų atstovavimas rinkoje per kooperatyvus: poveikis gamintojų kainai // Management theory and studies for rural business and infrastructure development = Vadybos mokslas ir studijos - kaimo verslų ir jų infrastruktūros plėtrai: mokslo darbai. Akademija (Kauno r.): Vytauto Didžiojo universiteto Žemės ūkio akademija, 2020, Vol. 42, No. 4. ISSN 2345-0355, doi:10.15544/mts.2020.57, WOS:000609182500016, handle:20.500.12259/127398 [Research article] [Emerging Sources Citation Index (Web of Science), Business Source Complete (EBSCO), IndexCopernicus] 2. Vitunskienė, Vlada; Droždz, Jolanta; Bendoraitytė, Asta; Sapa, Agnieszka. Small farms in Lithuania // Small farms in the paradigm of sustainable development: case studies of selected Central and Eastern European countries / edited by Sebastian Stępień, Silvia Maican. Toruń: Wydawnictwo Adam Marszałek, 2020. ISBN 9788381802505, handle:20.500.12259/111292. Online access: <https://marszalek.com.pl/small_farms.pdf> [Research article] 3. Vitunskienė, Vlada. Žalio pieno vidaus rinkos struktūra ir koncentracija Lietuvoje // Management theory and studies for rural business and infrastructure development = Vadybos mokslas ir studijos - kaimo verslų ir jų infrastruktūros plėtrai: mokslo darbai. Akademija (Kauno r.): Vytauto Didžiojo universiteto Žemės ūkio akademija; Vilnius: Lietuvos agrarinės ekonomikos institutas, 2019, Vol. 41, No. 4. ISSN 2345-0355, doi:10.15544/mts.2019.47, WOS:000505752300012, handle:20.500.12259/102729. Online access: <https://ejournals.vdu.lt/index.php/mtsrbid/article/view/930> [Research article] [Emerging Sources Citation Index (Web of Science), Business Source Complete (EBSCO), IndexCopernicus]				
9.	Rita Pupalienė	Assoc. Prof. Dr.	Classification of research fields: Organic farming, mulching, rape agrotechnics (01 A). Selected works: 1. Juknys, Romualdas; Velička, Rimantas; Kanapickas, Arvydas; Kriaučiūnienė, Zita; Masilionytė, Laura; Vagusevičienė, Ilona; Pupalienė, Rita; Klepeckas, Martynas; Sujetovienė, Gintarė. Projecting the impact of climate change on phenology of winter wheat in northern Lithuania // International journal of biometeorology. Berlin: Springer Verlag. ISSN 0020-7128. 2017, vol. 61, iss. 10, p. 1765-1775. [Databases: Science Citation Index Expanded (Web of Science); MEDLINE; SpringerLINK; Scopus]; [Citescore: 2.577; total citescore: 3.28; quartile: Q2 (2017, SCIE)] [SNIP: 1,167; SJR: 0,708 (2015, Scopus)]. 2. Jodaugienė, Darija; Sinkevičienė, Aušra; Pupalienė, Rita; Ninkovic, Velemir; Kriaučiūnienė, Zita. Allelopathic effect of organic mulches on vegetable germination and early development // Acta Scientiarum Polonorum: Hortorum Cultus. Lublin. ISSN	Experimental Design and Analysis Agroecology	19	19	0.50

			1644-0692. 2018, Vol. 17, iss. 3, p. 73-82. [Databases: Science Citation Index Expanded (Web of Science); CAB Abstracts]; [Citescore: 0.448; total citescore: 1.434; quartile: Q4 (2017, SCIE)] [SNIP: 0,648; SJR: 0,326 (2015, Scopus)]. 3. Romaneckas, Kęstutis; Adamavičienė, Aida; Eimutytė, Edita; Pupalienė, Rita; Šarauskis, Egidijus; Marks, Marek; Kimbirauskienė, Rasa; Čekanauskas, Sigitas. Impact of non-chemical weed control methods on soil and sugar beet root chemical composition // Journal of Elementology. Olsztyn: Polskie Towarzystwo Magnezologiczne. ISSN 1644-2296. 2018, Vol. 23, iss. 4, p. 1215-1227. [Duomenų bazės: Science Citation Index Expanded (Web of Science); Scopus]; [Citescore: 0.684; total citescore: 3.487; quartile: Q4 (2017, SCIE)] [SNIP: 0,632; SJR: 0,311 (2015, Scopus)].				
10.	Aušra Sinkevičienė	Assoc. Prof. Dr.	Classification of research fields: Studies on soil physical properties, CO2 emissions, weediness, organic mulches (01 A). Selected works: 1. Bogužas, Vaclovas; Sinkevičienė, Aušra; Romaneckas, Kęstutis; Steponavičienė, Vaida; Skinulienė, Lina; Butkevičienė, Lina Marija. The impact of tillage intensity and meteorological conditions on soil temperature, moisture content and CO2 efflux in maize and spring barley cultivation. // Žemdirbystė = Agriculture / Lietuvos agrarinių ir miškų mokslų centras, Aleksandro Stulginskio universitetas. ISSN 1392-3196. T. 105, Nr. 4 (2018), p. 307-314. Online access: < http://www.zemdirbyste-agriculture.lt/wp-content/uploads/2018/11/105_4_str39.pdf >. Science Citation Index Expanded (Web of Science); CAB Abstracts; Scopus. [20.500.12259/92380] [2018] [S1] [WOS => if: 1.02, aif: 1.903, aif_min: 1.903, aif_max: 1.903, cat: 1, av: 0.536, year: 2018, quartile: Q3] [SCOPUS => citescore: 1.24, snip: 0.758, sjr: 0.422, year: 2018, quartile: Q2] [ai: 0,167, na: 6, nia: 6, nip: 0, aip: 1, pai: 0,346] 2. Jodaugienė, Darija; Sinkevičienė, Aušra; Pupalienė, Rita; Ninkovic, Velemir; Kriaučiūnienė, Zita. Allelopathic effect of organic mulches on vegetable germination and early development. // Acta Scientiarum Polonorum: Hortorum Cultus. ISSN 1644-0692. 2018, Vol. 17, iss. 3, p. 73-82. Online access: < http://www.hortorumcultus.actapol.net/volume17/issue3/abstract-73.html >. Science Citation Index Expanded (Web of Science); CAB Abstracts. [20.500.12259/92066] [2018] [S1] [WOS => if: 0.443, aif: 1.597, aif_min: 1.597, aif_max: 1.597, cat: 1, av: 0.277, year: 2018, quartile: Q4] [SCOPUS => citescore: 0.62, snip: 0.513, sjr: 0.258, year: 2018, quartile: Q3] [ai: 0,283, na: 5, nia: 4, nip: 1, aip: 1, pai: 0,44] 3. Romaneckas, Kęstutis; Kimbirauskienė, Rasa; Adamavičienė, Aida; Buragienė, Sidona; Sinkevičienė, Aušra; Šarauskis, Egidijus; Jasinskas, Algirdas; Minajeva, Aleksandra. Impact of sustainable tillage on biophysical properties of Planosol and on faba bean yield // Agricultural and food science. Helsinki: Scientific Agricultural Society of Finland. ISSN 1459-6067, 2019, vol. 28, iss. 3, p. 101-111.	Soil Management in Agroecosystems	11	2	1.00

			doi:10.23986/afsci.83337. Online access: < https://journal.fi/afs/article/view/83337/44636 > < https://hdl.handle.net/20.500.12259/100776 >. Science Citation Index Expanded (Web of Science); Scopus. [20.500.12259/100776] [2019] [S1] [WOS => title: AGRICULTURAL AND FOOD SCIENCE, if: 0.731, aif: 2.73, aif_min: 2.184, aif_max: 3.277, cat: 2, av: 0.256, year: 2019, quartile: Q3] [SCOPUS => title: Agricultural and Food Science, citescore: 1.7, snip: 0.654, sjr: 0.285, year: 2019, quartile: Q3] [ai: 0,125, na: 8, nia: 8, nip: 0, aip: 1, pai: 0,192]				
11.	Lina Marija Butkevičienė	Assoc. Prof. Dr.	Classification of research fields: Studies on soil physical properties, studies on nutrient leaching from soil, studies on the timing of sowing of oilseed rape, studies on the optimisation of technological parameters in intensive and organic farming, studies on crop weediness, studies on the effects of climate change on agricultural crops (01 A). Selected works: 1.Bogužas, Vaclovas; Sinkevičienė, Aušra; Romaneckas, Kęstutis; Steponavičienė, Vaida; Skinulienė, Lina; Butkevičienė, Lina Marija. The impact of tillage intensity and meteorological conditions on soil temperature, moisture content and CO2 efflux in maize and spring barley cultivation // Žemdirbystė = Agriculture / Lietuvos agrarinių ir miškų mokslų centras, Aleksandro Stulginskio universitetas. Akademija, (Kėdainių r.). ISSN 1392-3196, T. 105, Nr. 4 (2018), p. 307-314. doi:10.13080/z-a.2018.105.039. (Web of Science); CAB Abstracts; Scopus. [20.500.12259/92380] [2018] [S1] [WOS => title: Zemdirbyste-Agriculture, if: 1.02, aif: 1.891, aif_min: 1.891, aif_max: 1.891, cat: 1, av: 0.539, year: 2018, quartile: Q3] [SCOPUS => title: Zemdirbyste, citescore: 1.7, snip: 0.766, sjr: 0.422, year: 2018, quartile: Q2] [ai: 0,167, iai: 0,167, na: 6, nia :6, nip: 0, pai: 0,347, piai: 0,347, al: 0.571] 2. Velička, Rimantas; Pupalienė, Rita; Butkevičienė, Lina Marija; Kosteckas, Robertas; Kriaučiūnienė, Zita; Kosteckienė, Silvija. Weed density in the spring rape crops sown at different dates // Žemdirbystė = Agriculture / Lietuvos agrarinių ir miškų mokslų centras, Aleksandro Stulginskio universitetas. Akademija, (Kėdainių r.). ISSN 1392-3196, T. 105, No.1 (2018), p. 21–26. doi:10.13080/z-a.2018.105.003. Science Citation Index Expanded (Web of Science); CAB Abstracts; Scopus. [20.500.12259/91530] [2018] [S1] [WOS => title: Zemdirbyste-Agriculture, if: 1.02, aif: 1.891, aif_min: 1.891, aif_max: 1.891, cat: 1, av: 0.539, year: 2018, quartile: Q3] [SCOPUS => title: Zemdirbyste, citescore: 1.7, snip: 0.766, sjr:	Crop Communities and Their Investigations Agroecology	9	5	1.00

			0.422, year: 2018, quartile: Q2] [ai: 0,167, iai: 0,167, na: 6, nia :6, nip: 0, pai: 0,347, piai: 0,347, al: 0.429] 3. Marcinkevičienė, Aušra ; Keidan, Marina; Pupalienė, Rita; Velička, Rimantas; Kriaučiūnienė, Zita; Butkeviičenė, Lina, Marija; Kosteckas, Robertas. Nonchemical Weed Control in Winter Oilseed Rape Crop in the Organic Farming System. Organic Agriculture. IntechOpen, 2020. DOI: 10.5772/intechopen. 91044. Online access: <https: // www.intechopen.com / online-first / nonchemical-weed-control-in-winter-oilseed-rape-crop-in-the-organic-farming-system> 0,326 (2015, Scopus)].				
12.	Jolanta Sinkevičienė	Assoc. Prof. Dr.	Classification of research fields: Diseases and protection of agricultural plants; Plant protection in organic farming; Contamination of vegetable raw materials by microscopic fungi (01 A). Selected works: 1. Vasinauskienė, Regina; Šilingienė, Gerda; Sinkevičienė, Jolanta. Surface sterilization of English oak (Quercus robur L.) acorns using wet water steam // Baltic forestry. Girionys: Lietuvos agrarinių ir miškų mokslų centras. Miškų institutas et al. ISSN 1392-1355, 2020, Vol. 26, No. 1, p. 1-8. 2. Sinkevičienė, Jolanta; Amšiejus, Algirdas. Mycobiota in bee pollen collected by different types of traps // Žemdirbystė = Agriculture. Akademija (Kėdainių r.). ISSN 1392-3196, 2019, Vol. 106, No. 4, p. 377–382. 3. Sinkevičienė, Jolanta; Amšiejus, Algirdas. Prevalence of microscopic fungi in bee pollen // Biologija = Biology. Vilnius: Lietuvos mokslų akademijos leidykla. ISSN 1392-0146, 2019, T. 65, nr. 1, p. 34-40. doi:10.6001	Plant Protection in Organic Farming	13	10	1.00
13.	Ilona Vagusevičienė	Assoc. Prof. Dr.	Classification of research fields: Productivity shaping of field crops (01 A). Selected works: 1. Juknys, Romualdas; Velička, Rimantas; Kanapickas, Arvydas; Kriaučiūnienė, Zita; Masilionytė, Laura; Vagusevičienė, Ilona; Pupalienė, Rita; Klepeckas, Martynas; Sujetovienė, Gintarė. Projecting the impact of climate change on phenology of winter wheat in northern Lithuania // International journal of biometeorology. Berlin: Springer Verlag. ISSN 0020-7128. 2017, Vol. 61, iss. 10, p. 1765-1775. [Science Citation Index Expanded (Web of Science); MEDLINE; SpringerLINK]. [Citescore: 2.577; total citescore: 3.28 (2017, SCIE)] 2. Smalstienė, Vita; Pranckietienė, Irena; Dromantienė, Rūta; Šidlauskas, Gvidas; Vagusevičienė, Ilona; Jodaugienė, Darija. The relationship between nitrogen fertilizer forms and meteorological conditions on nitrogen transformation in the soil and loss via volatilization. Žemdirbystė = Agriculture. Akademija (Kėdainių r.), 2019, Vol. 106, No. 3. p. 195–202. Science Citation Index Expanded (Web of Science); CAB Abstracts; Scopus. [20.500.12259/92380] [2018] [S1] [WOS => if: 1.02, aif: 1.903, aif_min: 1.903, aif_max: 1.903, cat: 1, av: 0.536, year: 2018, quartile: Q3] [SCOPUS =>	Agrobiological Potential of Plants Methodology of Extension	20	20	1.00

			citescore: 1.24, snip: 0.758, sjr: 0.422, year: 2018, quartile: Q2] [ai: 0,167, na: 6, nia: 6, nip: 0, aip: 1, pai: 0,346]. 3. Klepeckas, Martynas; Januškaitienė, Irena; Vagusevičienė, Ilona; Juknys, Romualdas. Effects of different sowing time to phenology and yield of winter wheat. Agricultural and food science. Helsinki: Scientific Agricultural Society of Finland, 2020, Vol. 29, iss. 4. p. 346–358. https://doi.org/10.23986/afsci.90013.]. [Citescore: (2019): 0.73(5-years 1.21)				
14.	Darija Jodaugienė	Assoc. Prof. Dr.	Classification of research fields: Herbology, weed ecology, sustainability of agroecosystems, crop rotations, intercropping, organic mulches to simplify tillage (01 A). Selected works: 1. Jodaugienė, Darija; Sinkevičienė, Aušra; Pupalienė, Rita; Ninkovic, Velemir; Kriaučiūnienė, Zita. Allelopathic effect of organic mulches on vegetable germination and early development // Acta Scientiarum Polonorum: Hortorum Cultus. Lublin. ISSN 1644-0692, 2018, Vol. 17, iss. 3, p. 73-82. doi:10.24326/asphc.2018.3.7. 2. Vita Smalstienė; Pranckietienė, Irena; Dromantienė, Rūta; Šidlauskas, Gvidas; Vagusevičienė, Ilona; Jodaugienė, Darija. The relationship between nitrogen fertilizer forms and meteorological conditions on nitrogen transformation in the soil and loss via volatilization // Žemdirbystė = Agriculture. Akademija (Kėdainių r.). ISSN 1392-3196, 2019, Vol. 106, No. 3, p. 195–202. doi:10.13080/z-a.2019.106.025. 3. Pranckietienė, Irena; Dromantienė, Rūta; Smalstienė, Vita; Jodaugienė, Darija; Vagusevičienė, Ilona; Paulauskienė, Aurelija; Marks, Marek. Effect of liquid amide nitrogen fertilizer with magnesium and sulphur on spring wheat chlorophyll content, accumulation of nitrogen and yield // Journal of elementology. Olsztyn: Polskie Towarzystwo Magnezologiczne. ISSN 1644-2296, 2020, Vol. 25, iss. 1, p. 139-152. doi:10.5601/jelem.2019.24.2.1742.	Herbology Experimental Design and Analysis	22	12	1.00
15.	Zita Kriaučiūnienė	Assoc. Prof. Dr.	Classification of research fields: Tillage technology, decomposition of crop residues, information technology in agriculture (01 A). Selected works: 1. Juknevičius, Darius; Kriaučiūnienė, Zita; Jasinskas, Algirdas; Šarauskis, Egidijus. Analysis of changes in soil organic carbon, energy consumption and environmental impact using bio-products in the production of winter wheat and oilseed rape // Sustainability. Basel : MDPI AG, 2020, Vol. 12, iss. 19. ISSN 2071-1050, doi:10.3390/su12198246, WOS:000586594700001, handle:20.500.12259/110541. Online access: <https://www.vdu.lt/cris/bitstream/20.500.12259/110541/2/ISSN2071-1050_2020_V_12_19.PG_1-15.pdf> [Mokslo straipsnis / Research article] [Social Sciences Citation Index (Web of Science), Food Science Source (EBSCO), Scopus, Science Citation Index Expanded (Web of Science), Current Contents (Agriculture,	Renewable Agricultural Resources and Waste Treatment	16	3	1.00

			Biology & Environmental Sciences), Current Contents (Social And Behavioral Sciences)] 2. Romaneckas, Kęstutis; Avižienytė, Dovilė; Adamavičienė, Aida; Buragienė, Sidona; Kriaučiūnienė, Zita; Šarauskis, Egidijus. The impact of five long-term contrasting tillage systems on maize productivity parameters // Agricultural and food science. Helsinki: Scientific Agricultural Society of Finland, 2020, Vol. 29, iss. 1. ISSN 1459-6067, doi:10.23986/afsci.83737, WOS:000523432600002, handle:20.500.12259/104141 [Research article] [Science Citation Index Expanded (Web of Science), Scopus] 3. Lekavičienė, Kristina; Šarauskis, Egidijus; Naujokienė, Vilma; Kriaučiūnienė, Zita. Effect of row cleaner operational settings on crop residue translocation in strip-tillage // Agronomy-Basel. Basel: MDPI AG, 2019, Vol. 9, iss. 5. ISSN 2073-4395, doi:10.3390/agronomy9050247, WOS:000472668300036, handle:20.500.12259/93063. Online access: <https://www.vdu.lt/cris/bitstream/20.500.12259/93063/2/ISSN2073-4395_V_9.N_5.AN_247.pdf> [Research article] [Scopus, Science Citation Index Expanded (Web of Science), Current Contents (Agriculture, Biology & Environmental Sciences)]				
16.	Rimantas Vaisvalavičius	Assoc. Prof. Dr.	Classification of research fields: Studies on changes in soil properties under natural and anthropogenic influences; monitoring and assessment of soil quality in urban areas (01 A). Selected works: 1. Volungevičius, Jonas; Amalevičiūtė - Volungė, Kristina; Feizienė, Dalia; Feiza, Virginijus; Šlepetienė, Alvyra; Liaudanskienė, Inga; Veršulienė, Agnė; Vaisvalavičius, Rimantas. The effects of agrogenic transformation on soil profile morphology, organic carbon and physico-chemical properties in Retisols of Western Lithuania // Archives of Agronomy and Soil Science. Oxon: Taylor & Francis., Vol. 64, No. 13 (2018). ISSN 0365-0340, doi:10.1080/03650340.2018.1467006, WOS:000452305500010, handle:20.500.12259/92127. Online access: <https://www.tandfonline.com/doi/pdf/10.1080/03650340.2018.1467006?needAccess=true> [Research article] [Science Citation Index Expanded (Web of Science), Scopus] 2. Volungevičius, Jonas; Jukna, Laurynas; Veteikis, Darijus; Vaisvalavičius, Rimantas; Amalevičiūtė, Kristina; Šlepetienė, Alvyra; Skorupskas, Ričardas; Jankauskaitė, Margarita. The problem of soil interpretation according to the WRB 2014 classification system in the context of anthropogenic transformations // Acta Agriculturae Scandinavica. Section B, Soil and plant science. OSLO: Taylor & Francis, Vol. 66, Issue 5 (2016). ISSN 0906-4710, doi:10.1080/09064710.2016.1164231, WOS:000373954400010, handle:20.500.12259/89466. Online access:	Soils resources and GIS	22	5	1.00

			<https://www.tandfonline.com/doi/full/10.1080/09064710.2016.1164231> [Mokslo straipsnis / Research article] [Science Citation Index Expanded (Web of Science), Scopus, Biological Abstracts, BIOSIS Previews, Current Contents / Agriculture, Biology & Environmental Sciences] 3. Świtoniak, Marcin; Kabała, Cezary; Karklins, Aldis; Charzyński, Przemysław; Hulisz, Piotr; Mendyk, Łukasz; Michalski, Adam; Novak, Tibor Jozsef; Penizek, Vit; Reintnam, Endla; Repe, Blaž; Saksa, Martin; Vaisvalavičius, Rimantas; Waroszewski, Jarosław. Guidelines for Soil Description and Classification Central and Eastern European Students' Version. Toruń, 2018. ISBN 9788393409662, handle:20.500.12259/91806 [Book]				
17.	Jūratė Aleinikovienė	Assoc. Prof. Dr.	Classification of research fields: Biological assessment of ecosystem quality, monitoring of soil microbiota, assessment of the impact of soil microbiota on nutrient and carbon cycling; agrocenosis productivity studies, soil microbial potential and quality (01 A). Selected works: 1. Šiaudinis, Gintaras; Karčauskienė, Danutė; Aleinikovienė, Jūratė; Repšienė, Regina; Skuodienė, Regina. The effect of mineral and organic fertilization on common osier (Salix viminalis L.) productivity and qualitative parameters of naturally acidic Retisola // Agriculture-Basel. Basel: MDPI AG, 2021, Vol. 11 iss. 1. ISSN 2077-0472, doi:10.3390/agriculture 11010042, WOS:000609683100001, handle:20.500.12259/127129. Online access: <https://www.vdu.lt/cris/bitstream/20.500.12259/127129/2/ISSN2077-0472_2021_V_11_1.PG_1-12.pdf> [Research article] [Science Citation Index Expanded (Web of Science), Current Contents (Agriculture, Biology & Environmental Sciences), Scopus] 2. Vaitkevičienė, Nijolė; Jarienė, Elvyra; Kulaitienė, Jurgita; Danilčenko, Honorata; Černiauskienė, Judita; Aleinikovienė, Jūratė; Średnicka-Tober, Dominika; Rembiałkowska, Ewa. Influence of agricultural management practices on the soil properties and mineral composition of potato tubers with different colored fles // Sustainability. Basel: MDPI AG, 2020, Vol. 12, iss. 21. ISSN 2071-1050, doi:10.3390/su12219103, WOS:000589278400001, handle:20.500.12259/111252. Online access: <https://www.vdu.lt/cris/bitstream/20.500.12259/111252/2/ISSN2071-1050_2020_V_12_21.PG_1-12.pdf> [Research article] [Science Citation Index Expanded (Web of Science), Food Science Source (EBSCO), Current Contents (Agriculture, Biology & Environmental Sciences), Current Contents (Social And Behavioral Sciences), Social Sciences Citation Index (Web of Science), Scopus] 3. Šilinskas, Benas; Varnagirytė-Kabašinskienė, Iveta; Aleinikovas, Marius;	Biology and Fertility of Soil	12	5	1.00

			Beniušienė, Lina; Aleinikovienė, Jūratė; Škėma, Mindaugas. Scots Pine and Norway Spruce wood properties at sites with different stand densities // Forests. Basel: MDPI AG, 2020, Vol. 11, iss. 5. ISSN 1999-4907, doi:10.3390/f11050587, WOS:000542736000048, handle:20.500.12259/105608. Online access: <https://www.vdu.lt/cris/bitstream/20.500.12259/105608/2/ISSN19994907_2020_V_11_5.PG_1-15.pdf>, <http://dx.doi.org/10.3390/f11050587> [Research article] [Science Citation Index Expanded (Web of Science), Scopus, Current Contents (Agriculture, Biology & Environmental Sciences)]				
18.	Aida Adamavičienė	Assoc. Prof. Dr.	Classification of research fields: Agriculture, intercropping, physical-mechanical, biological soil properties, herbology, tillage technologies (01 A). Selected works: 1. Romaneckas, Kęstutis; Kimbirauskienė, Rasa; Sinkevičienė, Aušra; Jaskulska, Iwona; Buragienė, Sidona; Adamavičienė, Aida; Šarauskis, Egidijus. Weed diversity, abundance, and seedbank in differently tilled faba bean (Vicia faba L.) cultivations // Agronomy-Basel. Basel: MDPI AG. ISSN 2073-4395, 2021, vol. 11 iss. 3, p. 1-18. doi:10.3390/agronomy11030529. Online access: < https://www.vdu.lt/cris/bitstream/20.500.12259/128075/2/ISSN2073-4395_2021_V_11_3.PG_1-18.pdf >. Science Citation Index Expanded (Web of Science); Current Contents (Agriculture, Biology & Environmental Sciences); Scopus. [20.500.12259/128075] [2021] [S1] [WOS => title: Agronomy-Basel, if: 2.603, aif: 2.643, aif_min: 2.281, aif_max: 3.005, cat: 2, av: 0.943, year: 2019, quartile: Q1] [SCOPUS => title: Agronomy, citescore: 1.8, snip: 1.266, sjr: 0.7, year: 2019, quartile: Q2] [ai: 0,202, iai: 0,202, na: 7, nia :6, nip: 1, pai: 0,6, piai: 0,6, al: 1.286] 2. Romaneckas, Kęstutis; Adamavičienė, Aida; Šarauskis, Egidijus; Balandaitė, Jovita. The impact of intercropping on soil fertility and sugar beet productivity // Agronomy-Basel. Basel: MDPI AG. ISSN 2073-4395, 2020, Vol. 10 iss. 9, p. 1-13. doi:doi:10.3390/agronomy10091406. Online access: < https://www.vdu.lt/cris/bitstream/20.500.12259/110180/2/ISSN2073-4395_2020_V_10_9.PG_1-13.pdf > < https://hdl.handle.net/20.500.12259/110180 > < https://doi.org/10.3390/agronomy10091406 >. Science Citation Index Expanded (Web of Science); Current Contents (Agriculture, Biology & Environmental Sciences); Scopus. [20.500.12259/110180] [2020] [S1] [WOS => title: Agronomy-Basel, if: 2.603, aif: 2.643 aif_min: 2.281, aif_max: 3.005, cat: 2, av: 0.943, year: 2019, quartile: Q1] [SCOPUS => title: Agronomy, citescore: 1.8, snip: 1.266, sjr: 0.7, year: 2019, quartile: Q2] [ai: 0,25, iai: 0,25, na: 4, nia :4, nip: 0, pai: 0,742, piai: 0,742, al: 0.929] 3. Romaneckas, Kęstutis; Avižienytė, Dovilė; Adamavičienė, Aida; Buragienė, Sidona; Kriaučiūnienė, Zita; Šarauskis, Egidijus . The impact of five long-term contrasting tillage systems on maize productivity parameters // Agricultural and food science.	Organic Farming	7	5	0.50

			Helsinki: Scientific Agricultural Society of Finland. ISSN 1459-6067, 2020, Vol. 29, iss. 1, p. 6-17. doi:10.23986/afsci.83737. Online access: < https://doi.org/10.23986/afsci.83737 >. Science Citation Index Expanded (Web of Science); Scopus. [20.500.12259/104141] [2020] [S1] [WOS => title: AGRICULTURAL AND FOOD SCIENCE, if: 0.731, aif: 2.73, aif_min: 2.184, aif_max: 3.277, cat: 2, av: 0.256, year: 2019, quartile: Q3] [SCOPUS => title: Agricultural and Food Science, citescore: 1.7, snip: 0.654, sjr: 0.285, year: 2019, quartile: Q3] [ai: 0,167, iai: 0,167, na: 6, nia :6, nip: 0, pai: 0,256, piai: 0,256, al: 0.857]				
19.	Daiva Šileikienė	Assoc. Prof. Dr.	Classification of research fields: Environmental policy and law, environmental protection, environmental chemistry and toxicology, human ecology (N12) Selected works: 1. Česonienė, Laima; Dapkienė, Midona; Šileikienė, Daiva. The impact of livestock farming activity on the quality of surface water // Environmental science and pollution research. Heidelberg: Springer. ISSN 0944-1344, 2019, vol.26, iss.32, p.32678-32686. doi:10.1007/s11356-018-3694-3.Science Citation Index Expanded (Web of Science); MEDLINE; Scopus; SpringerLink. [20.500.12259/99854] [2019] [S1] [WOS => title: ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH, if: 2.914, aif: 3.98, aif_min: 3.98, aif_max: 3.98, cat: 1, av: 0.732, year: 2018, quartile: Q2] [SCOPUS => title: Environmental Science and Pollution Research, citescore: 3.14, snip: 1.032, sjr: 0.828, year: 2018, quartile: Q1] [ai: 0,999, na: 3, nia :3, nip: 0, pai: 2,462] 2. Česonienė, Laima; Mažuolytė-Miškinė, Edita; Šileikienė, Daiva; Lingytė, Kristina; Bartkevičius, Edmundas. Analysis of Biogenic Secondary Pollution Materials from Sludge in Surface Waters // International journal of environmental research and public health. Basel: Molecular diversity preservation international (MDPI). ISSN 1660-4601, 2019, vol. 16, iss. 23, p. 1-17. doi:10.3390/ijerph16234691. Science Citation Index Expanded (Web of Science); IndexCopernicus; PubMed; Chemical Abstracts; Scopus. [20.500.12259/102014] [2019] [S1] [WOS => title: International Journal of Environmental Research and Public Health, if: 2.468, aif: 2.977, aif_min: 2.192, aif_max: 3.98, cat: 3, av: 0.843, year: 2018, quartile: Q1] [SCOPUS => title: International Journal of Environmental Research and Public Health, citescore: 2.81, snip: 1.129, sjr: 0.818, year: 2018, quartile: Q1] [ai: 1, na: 5, nia :5, nip: 0, pai: 2,658]; 3. Česonienė, Laima; Šileikienė, Daiva; Dapkienė, Midona; Radzevičius, Algirdas; Räsänen, Kati. Assessment of chemical and microbiological parameters on the Leite River Lithuania // Environmental science and pollution research. Heidelberg: Springer. ISSN 0944-1344, 2019, vol. 26, iss. 18, p. 18752–18765. doi:10.1007/s11356-019-04665-6. Science Citation Index Expanded (Web of Science); MEDLINE; Scopus. [20.500.12259/99308] [2019] [S1] [WOS => title: ENVIRONMENTAL SCIENCE	Environmental Protection	25	20	0.95

			AND POLLUTION RESEARCH, if: 3.056, aif: 4.311, aif_min: 4.311, aif_max: 4.311, cat: 1, av: 0.709, year: 2019, quartile: Q2] [SCOPUS => title: Environmental Science and Pollution Research, citescore: 4.9, snip: 1.027, sjr: 0.788, year: 2019, quartile: Q1] [ai: 0,283, na: 5, nia: 4, nip: 1, aip: 1, pai: 0,684].				
20.	Žydrūnas Preikša	Lect. dr.	Classification of research fields: Biodiversity in a forest ecosystem, species ecology, habitat requirements (N12) Selected works: 1. Preikša, Žydrūnas; Brazaitis, Gediminas; Marozas, Vitas; Jaroszewicz, Bogdan. Dead wood quality influences species diversity of rare cryptogams in temperate broadleaved forests // iForest-Biogeosciences and Forestry. Potenza: Societa Italiana di Selvicoltura ed Ecologia Forestale, 2016, Vol. 9, No. 2. ISSN 1971-7458, doi:10.3832/ifor1483-008, WOS:000378114200001, handle:20.500.12259/89283. Online access: <http://www.sisef.it/iforest/pdf/?id=ifor1483-008> [Research article] [Science Citation Index Expanded (Web of Science), Academic Search Complete (EBSCO)] 2. Raudonikis, Liutauras; Riauba, Gintaras; Brazaitis, Gediminas; Čerkauskas, Arūnas; Dagys, Mindaugas; Morkūnas, Julius; Pakštytė, Eglė; Pranaitis, Arūnas; Preikša, Žydrūnas; Skuja, Saulis; Stanevičius, Vitas; Vaitkuvienė, Daiva. Europos Bendrijos svarbos paukščių rūšių monitoringo metodikos. Vilnius: Aplinkos apsaugos agentūra, 2016. ISBN 9786099581613, handle:20.500.12259/90101 [Book] 3. Marozas, Vitas; Preikša, Žydrūnas; Tamutis, Vytautas; Armolaitis, Kęstutis; Plaušinytė, Erika; Abraitienė, Jolita; Augustaitis, Algirdas. Impact of nitrogen pollution on herbs, bryophytes, fungi and beetles in pine dominated forests near the nitrogen fertilizer factory // IUFRO Tokyo 2017: Actions for Sustainable Forest Ecosystems under Air Pollution and Climate Change: Programme and Abstract, 22-26 October, 2017. Tokyo: Tokyo University of Agriculture and Technology, 2017. handle:20.500.12259/91156 [Conference paper]	Biological Diversity Conservation	10	29	0.90