



CENTRE FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

EVALUATION REPORT
STUDY FIELD of BIOLOGY
at Vytautas Magnus University

Expert panel:

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5. Mr. Arūnas Leipus, *representative of social partners*;
6. Dr. Marcel Tarbier, *students' representative*.

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Report language – English

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Vilnius
2021

Study Field Data*

Title of the study programme	Biology and Genetics
State code	6121DX011
Type of studies	University
Cycle of studies	First
Mode of study and duration (in years)	Full time, 4 years
Credit volume	240 ECTS
Qualification degree and (or) professional qualification	Bachelor of Life Sciences
Language of instruction	Lithuanian, English
Minimum education required	Secondary
Registration date of the study programme	31 August, 2008

** if there are **joint / two-fields / interdisciplinary** study programmes in the study field, please designate it in the foot-note*

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I. INTRODUCTION

1.1. BACKGROUND OF THE EVALUATION PROCESS

The evaluation of study fields is based on the Methodology of External Evaluation of Study Fields approved by the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC) 31 December 2019 Order [No. V-149](#).

The evaluation is intended to help higher education institutions to constantly improve their study process and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: 1) *self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI); 2) site visit of the expert panel to the higher education institution; 3) production of the external evaluation report (EER) by the expert panel and its publication; 4) follow-up activities.*

On the basis of this external evaluation report of the study field SKVC takes a decision to accredit study field either for 7 years or for 3 years. If the field evaluation is negative then the study field is not accredited.

The study field and cycle are **accredited for 7 years** if all evaluation areas are evaluated as exceptional (5 points), very good (4 points) or good (3 points).

The study field and cycle are **accredited for 3 years** if one of the evaluation areas was evaluated as satisfactory (2 points).

The study field and cycle are **not accredited** if at least one of evaluation areas was evaluated as unsatisfactory (1 point).

1.2. EXPERT PANEL

The expert panel was assigned according to the Experts Selection Procedure (hereinafter referred to as the Procedure) as approved by the Director of Centre for Quality Assessment in Higher Education on 31 December 2019 [Order No. V-149](#). The site visit to the HEI was conducted by the panel on *16 November 2021*.

Prof. dr. Mark S. Davies (panel chairperson) *Professor Emeritus of Dep. of Life Sciences, University of Sunderland, U. K.;*

Prof. dr. Trine Johansen Meza, *Professor of Dep. of Health Sciences, Pro-rector of Research and Artistic Development, Kristiania University College, Norway;*

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Mr Arūnas Leipus, *Product Manager in Biomatter Designs Ltd., Business Development Consultant in UAB Baltymas, Ltd., Lithuania;*

Dr. Marcel Tarbier, *Postdoc in Computational Biology at Karolinska institutet and Science of Life Laboratory, PhD student in Molecular Bioscience at Stockholm University (PhD defended in 2021), Sweden.*

1.3. GENERAL INFORMATION

The documentation submitted by the HEI follows the outline recommended by SKVC. Along with the Self-evaluation report and annexes, the following additional documents have been provided by the HEI before, during and/or after the site visit:

No.	Name of the document
1.	A list of additional evidence and factual questions
2.	Survey on teaching and learning
3.	Survey on graduating students
4.	Supplementary study programs
5.	Staff training
6.	Staff Erasmus+ Incoming
7.	Reports from 2019 for three staff members
8.	Compulsory study courses
9.	Changes made in response to survey results

1.4. BACKGROUND OF THE STUDY FIELD/STUDY FIELD POSITION/STATUS AND SIGNIFICANCE IN THE HEI

Vytautas Magnus University (VMU) is a classical university established 100 years ago and is mostly oriented towards humanistic culture and based on approaches of freedom, openness and dialogue. Its vision is focused on organizing studies, scientific research and academic community life. VMU provides degree studies of all three cycles in the fields of humanities, social sciences and arts and life sciences in 15 academic institutions. Since its reestablishment in 1989 VMU defined principles of its strategies which follow a commitment to foster a liberal and democratic learning environment and expose the importance of aesthetics, honesty, tolerance and independent thought.

A liberal study policy of VMU offers its students a great flexibility within the programs and individuality in choice of general and field study courses. Studying at VMU offers competencies and abilities such as a broader understanding of global issues and society, the capacity for problem analysis and critical thinking and promoting an attitude of lifelong learning.

VMU is an international and multilingual institution involved in international networks, projects as well as in staff and student mobility within Erasmus and other exchange programs. VMU is currently conducting about 100 projects in the fields of biotechnology, biophysics, technology, law, education, sociology, philosophy, computational linguistics, language acquisition, creative industries, and others.

Important annual cultural events and festivals of Kaunas take place here, such as the already 20 years old International Kaunas Jazz Festival and the International Festival of Modern Dance. Most of the events organized by or at VMU are open to the general public. VMU has a reputation as a university with a globally oriented, free-spirited, liberal mindset.

Vytautas Magnus University is managed by two collegial bodies, the Council and the Senate, and the separate managerial body of the Rector. The Rector's advisory institution is the Rector's Council.

The Faculty of Natural Sciences VMU offers four first cycle programmes in the field of biology from 1990.

The Faculty of Natural Sciences has excellent studying facilities which have been financially supported by EU structural funds for the last couple of years. Students can be involved in research in the modern labs at VMU and in the research centres of other Lithuanian institutions.

Given the trends and interest in life sciences, biotechnology and bioeconomy world-wide, individuals with the type of education provided by BSc program in Biology and Genetics are in high demand world-wide. The *Biology* study programme at VMU started in 1990 and was certified by the Centre for Quality Assessment in Higher Education in 2009 and evaluated in 2013 which resulted in 3-years accreditation. The main recommendations from this evaluation considered the improvement of the aims and learning outcomes of the programme, learning outcomes of the subjects and curricula design, and internal quality assurance system. In 2017 BSc program was renamed to Biology and Genetics and according to the suggestion of the international evaluation team, accreditation for 6 years was given.

II. GENERAL ASSESSMENT

Biology study field and first cycle at Vytautas Magnus University is given **positive** evaluation.

Study field and cycle assessment in points by evaluation areas

No.	Evaluation Area	Evaluation of an Area in points*
1.	Intended and achieved learning outcomes and curriculum	2
2.	Links between science (art) and studies	3
3.	Student admission and support	3
4.	Teaching and learning, student performance and graduate employment	3
5.	Teaching staff	3
6.	Learning facilities and resources	4
7.	Study quality management and public information	2
	Total:	20

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;

2 (satisfactory) - meets the established minimum requirements, needs improvement;

3 (good) - the field is being developed systematically, has distinctive features;

4 (very good) - the field is evaluated very well in the national and international context, without any deficiencies;

5 (excellent) - the field is exceptionally good in the national and international context/environment.

III. STUDY FIELD ANALYSIS

3.1. INTENDED AND ACHIEVED LEARNING OUTCOMES AND CURRICULUM

Study aims, outcomes and content shall be assessed in accordance with the following indicators:

3.1.1. Evaluation of the conformity of the aims and outcomes of the field and cycle study programmes to the needs of the society and/or the labour market (not applicable to HEIs operating in exile conditions)

(1) Factual situation

The SER contains a very detailed text on this indicator. In summary, biology studies at the Faculty of Natural Sciences of Vytautas Magnus University (VMU) have been conducted since 1990. Currently, VMU offers *Biology and Genetics* undergraduate programme, which was introduced in 2017 and until then (since 1990) was titled Biology. According to SER, the *Biology and Genetics* programme provides students with a broad knowledge of biology and genetics, as well as basic physics and chemistry, environmental science and sustainable development. During the bachelor's programme, students also take general education courses such as humanities, social sciences, computer science and foreign languages. The Bachelor's programme in *Biology and Genetics* at VMU aims to train qualified professionals or managers with biological and genetic research skills who can: i) successfully work in educational institutions, research and higher education institutions, research and development and manufacturing companies (i.e. in various fields of molecular life sciences and biotechnology); ii) start new businesses; or iii) continue their studies in the second cycle.

According to the SER, demand for the BSc *Biology and Genetics* programme at VMU is driven by policy, market and university trends and initiatives. The policy basis of the programme is the action and strategic plans of the Lithuanian Ministry of Science and Education, the Lithuanian Government and the European Commission, including the EU document A Vision for an EU Life Science and Biotechnology Strategy. The feasibility studies "Top-level specialist training, research and experimental development in science intensive business in the field of biotechnology" (2021) and "Lithuanian Bioeconomy Development Feasibility Study" (2017) highlight the needs of the Lithuanian labour market, including the importance of molecular biology and biotechnology research laboratories, biotechnology companies and commercial organisations. It indicates an increasing demand for professionals in biotechnology, biopharmacy and healthcare, but (as the SER notes) there is also a demand for bioscientists in environmental protection, product development, forensics and government agencies. The B.Sc. *Biology and Genetics* programme at VMU has therefore been designed to provide the basic theoretical and practical knowledge and skills in the fields of molecular cell biology, microbiology, genetics, biotechnologies and bioinformatics, but also the skills that are transferable to other areas of life sciences and are needed in the Lithuanian labour market.

(2) Expert judgement/indicator analysis

The part of the SER, dedicated to indicator 1.1, is too long (almost 5 pages) and should be reduced to the most important facts and evidence in the future. The panel judges that the aims and outcomes of the *Biology and Genetics* programme are relevant to the needs of society and the labour market. This judgement is based on the following. Alumni and social partners were overwhelmingly positive about the programme during the site visit, stating that VMU students have a very broad knowledge and ability to navigate a wide range of biological topics. Graduates indicated that the B.Sc. programme prepared them well for the job market and employers confirmed that the programme provided graduates with relevant theoretical and practical skills. However, they did not clearly indicate whether they meant B.Sc. or M.Sc. students from other fields of study offered at the VMU (e.g., Applied Biotechnology, Environmental Management, Molecular Biology and Biotechnology). Several responses indicated that, in addition to a broad theoretical factual knowledge, students would benefit from having the opportunity to acquire practical skills (i.e. emerging biological – molecular and genetic - methods) more intensively during their studies. Some students indicated that they would like to have more field practise.

On the other hand, VMU staff stated that they pride themselves on providing their B.Sc. students with a broad theoretical base, as they consider this very important for the acquisition of applied knowledge in the later stages of their studies (i.e. M.Sc. and PhD studies). As indicated by the students and social partners during the site visit, the B.Sc. graduates have a good employment rate. In their estimation, 33% of B.Sc. graduates are studying just to get a degree (and are employed in another sector outside of life sciences), 33% are continuing their studies at M.Sc. and PhD level, and 33% are employed in companies related to life sciences (e.g. Thermo Fisher Scientific).

Students emphasised that they deliberately chose the VMU *Biology and Genetics* study programme because they like biology and genetics and because the programme is 4 years long (they do not want to compress the programme into 3 years). Similarly to VMU staff, students agree that the BSc *Biology and Genetics* programme provides an excellent foundation for future research at the M.Sc. and PhD level. Panel members agree with the input of some social partners who indicate that the programme would benefit from more active involvement of social partners in the development of the B.Sc. programme, as they could help VMU to better meet the rapidly changing demands of society and the labour market (e.g. by listing the types of skills they expect from their future employees).

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

(1) Factual situation

The goals and learning outcomes of the *Biology and Genetics* programme at VMU are based on VMU's strategy for 2012-2020. From 2021, VMU has a new strategy for 2021-2027 based on 5 goals: 1. Harmonious and united university community, 2. International research university, 3. Study 360, 4. Coherence between self-governance and responsibility, 5. The role of the university in the development of society. With the new strategy, the study programmes will also be reviewed and, if necessary, changed according to the strategy. According to SER, the *Biology and Genetics* programme also follows the mission of VMU, emphasising: 1) the community-based research and study focus of the university in a broad area of biological sciences (SER Part 1.2. emphasises biology and environmental sciences); 2) liberal learning conditions for individuals based on interdisciplinarity and the development of practical skills, research and professional activities related to environmental issues and their management; 3) development of partnerships and progress for the future of the country; 4) contribution to global cultural and academic development.

(2) Expert judgement/indicator analysis

The SER indicates that the outcomes of the study programme are consistent with the strategic documents. The panel members conclude that the aims and outcomes of VMU's *Biology and Genetics* programme are substantially consistent with VMU's major mission, goals, and strategy. Indeed, the programme focuses on providing broad theoretical knowledge in a wide area of biology, which is part of VMU's mission. The broad theoretical knowledge and solid laboratory/practical skills are often well received by students, especially those who are undecided about their future careers and want to acquire broad biological knowledge. Alumni and social partners stated that VMU successfully cooperates with national centres and institutions from the fields of biotechnology and environmental protection, which is indeed beneficial for achieving the goal of developing partnerships for the progress of Lithuanian society.

However, during the site visit, in discussions with VMU management and teaching staff, panel members were not convinced that there was coherence between self-management and responsibility (e.g., staff could not identify the head of the study programme). There was also no accurate evidence of increasing internationalization and international visibility at VMU, although VMU staff (and Annex 3 of SER) indicated that there were some successful collaborations with Ukrainian, Kazakh, Polish, Turkish and other Eastern European/Central Asian countries, as well as the successful enrolment of foreign students from these countries in VMU's degree programmes. VMU's mission statement indicates that the university's focus is on promoting environmental literacy in higher education, while the emerging biological sciences (e.g., genetics) are not emphasised in the mission statement (as one would expect from a university offering the *Biology and Genetics* major). The panel concluded that the *Biology and Genetics* study programme would certainly benefit from developing an effective and appropriate strategy to support VMU's mission statement to design an interdisciplinary study programme that appropriately incorporates emerging biological sciences (e.g., genetics) and classical biological topics (e.g., ecology and environment). The strategy should also be supported by the curriculum and associated learning outcomes. On the other hand, if the current strategy and long tradition of teaching broad theoretical biology is to be supported,

the title of the programme should be changed (i.e., genetics should be excluded from the current title of the programme)(further addressed in section 3.1.4. of this evaluation area).

3.1.3. Evaluation of the compliance of the field and cycle study programme with legal requirements

(1) Factual situation

The curriculum of the VMU *Biology and Genetics* programme and its correspondence to the descriptor of the study cycles and the descriptor of the field of study is shown in the Annex 1 of SER. The composition of the programme is consistent with the general requirements of the degree and the descriptor of the study field of Biology as shown in Table 1 of the SER. The SER states that the learning outcomes of the programme meet the legal requirements of the Descriptor of Study Cycles document and that the learning outcomes are based on modern comparative studies in the field of Biomedicine, and the experience of foreign universities running similar programmes.

(2) Expert judgement/indicator analysis

The panel finds that VMU's *Biology and Genetics* programme meets the respective legal requirements. Not less than 15 credits is appointed to final thesis (15 credits); not less than 120 credits of courses (modules) are in the field of study (188 credits); not more than 120 credits are appointed to studies specified by University or optional studies (71 credits) and not less than 15 credits can be earned through internship (16 credits). The SER refers to foundational/supporting legal documents. Evidence to support the factual statement is largely provided by Table 1 of SER, which provides a brief account of the relevant legal requirements.

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

(1) Factual situation

The SER states that the aim of the study programme is to produce highly qualified, broad-based specialists in biology and genetics, who excel in creative and critical thinking, and possess all the necessary skills and knowledge for various tasks in the field of biology and genetics. The learning outcomes of the programme are reviewed periodically by the study programme committee. The procedures for course certification and the application of study and assessment methods are governed by the procedural Description for course certification at VMU. According to Table 1 of the SER, around 42% of learning is contact hours and around 58% of learning is individualised learning. Table 2 of the SER shows the relationship between the intended learning outcomes of the study programme and the courses of study. The learning outcomes are designed based on the scope of the courses and the allocation of ECTS depends on the nature and complexity of the learning outcomes. For example, 6 credits are

allocated to courses in the compulsory programme area of study; 5 credits are generally allocated to courses with seminars and/or to field courses (e.g., *Field Work in Plant Biology and Field Work in Animal Biology Practice*), 4 credits are allocated to courses that do not have laboratory work or seminars, 3 credits are allocated to some courses that develop basic skills (e.g., *General Biology, Professional Language of Natural Science, Term Paper 1, Term Paper 2*), while the bachelor's thesis brings 15 ECTS. The calculation of student workload and ECTS allocation is systematically reviewed.

Each year, the Study Programme Committee reviews the workload for each course after consultation with faculty and students. The SER identifies 18 study programme outcomes grouped into 5 categories: 1) Knowledge and its Application, 2) Research Skills, 3) Special Abilities, 4) Social Abilities, 5) Personal Abilities. SER states that the aims, learning outcomes, teaching/learning methods and assessment methods of each course are given in Table 3, but the information for each course is missing. Table 3 provides only one example of a course - *Molecular Biology*, which does not exist in the Annex 1 of SER (instead of *Molecular Biology*, there is a course *Molecular Biology and Gene Engineering* [BTC3002]). Also, inconsistencies in the SER suggest that the data on indicator 1.4. in SER and its annexes are not reliable, but outdated, inconsistent and incomplete.

(2) Expert judgement/indicator analysis

Because the data for Indicator 1.4. in the SER and its appendices do not appear to be reliable, updated, consistent, and complete, the panel members conclude that SER does not provide a detailed overview that would allow for a comprehensive analysis of courses, course learning outcomes (and their connection to study programme learning outcomes), and study and evaluation means. Discussions with VMU faculty during the site visit did not add much to panel's understanding of the missing pieces of the SER. Annex 1 of the SER (the outline of the study plan) indicates that there are some inconsistencies in the study plan/sequence of some courses during the study (e.g., the *Anatomy, Morphology, and Systematics of Embriophytes* course does not precede the *Field Work in Plant Biology* course, but these two courses occur simultaneously in the same semester; the compulsory *General Genetics* course appears in the 4th semester and the elective *Human Genetics* course appears in the 5th semester, so both precede the compulsory *Cell Biology* course, which appears in the 7th semester). However, from conversations with students, the curriculum of the programme is relatively logical in that they have no difficulty following and successfully mastering the courses (e.g., *Field Work in Plant Biology* takes place in May after mastering the basics of *Anatomy, Morphology and Systematics of Embriophytes*; parts of *Cell Biology* are covered by the content of other basic courses).

According to the SER, students are exposed more to individual work (around 58% of learning) than to contact hours with their teachers (around 42% of learning). VMU faculty representatives claim that students want more individual work (as they prefer to work in groups). Students claim that some courses with fewer ECTS sometimes require more engagement than courses with more credits, suggesting that ECTS credits are not consistently allocated.

Panel members concluded that Genetics is not adequately represented in the compulsory part of the study programme (as the title of the programme – *Biology and Genetics* – would suggest). There is only one compulsory course that could cover the basics of genetics (i.e., *General Genetics* [BIO3005], which can only provide a basic, low-level knowledge of tasks related to genetics), and two others that could be related to the basics of genetics (*Evolution and Phylogeny* [BIO3024], *Cell Biology* [BBK4001]). Other courses that deal with some contemporary genetic topics (e.g., *Human Genetics* [BIO3027], *Population and Ecology Genetics* [BIO3028], *Molecular Biology and Gene Engineering* [BTC3002], *Molecular Genetics* [BIO4016], *Epigenetics* [BIO4030]) are electives, which is unusual for a programme entitled *Biology and Genetics*.

Like VMU's mission statement, the programme's learning outcomes' statement indicates that VMU's focus is on promoting environmental literacy ("*Learning outcomes of the programme are directed to the acquisition of general and special professional competencies of a prospective qualified environment professional and address the main environment and sustainability issues, interaction between natural and socio-economic environments.*"), while learning outcomes related to emerging biological sciences (especially genetics) are not included in the statement. The panel concluded that the *Biology and Genetics* programme would benefit from better alignment of learning outcomes with the University's mission, vision, and strategy. In addition, the learning outcomes and curriculum should be improved and updated to align with emerging biological topics (i.e., knowledge and skills that encompass current topics within molecular and cell biology, and genetics) after soliciting feedback from students, alumni(ae)/graduates, and social partners.

3.1.5. Evaluation of the totality of the field and cycle study programme subjects/modules, which ensures consistent development of competences of students

(1) Factual situation

The field study programme covers 240 ECTS credits, including theoretical courses, field and laboratory practices, term papers and final thesis. The study programme is distributed over 4 study years (8 semesters), with about 6 courses (about 30 ECTS credits) each semester. The *Biology and Genetics* study programme consist of two study course groups: 1) general university study courses (introductory courses to various branches of science including foreign language; 52 credits) and 2) study field (specialty) courses (188 credits). The first years of study are devoted for acquiring basic knowledge of natural/biological sciences. From the third study year, students are introduced to more specific biology topics and lead to integrating their theoretical knowledge and associated practical skills through individual and team research, data analysis and interpretation. The compulsory modules cover major topics, some general competencies (e.g., foreign language, and basics of other natural, technological and agricultural sciences, arts, social and humanitarian sciences). Some degree of further specialization is offered via elective modules.

(2) Expert judgement/indicator analysis

The panel believes that the *Biology and Genetics* study programme at VMU ensures the acquisition of a broad theoretical knowledge in classical biology and the development of related practical skills and general competencies in students. However, the SER and its appendices do not appear to be consistent and complete, so the SER does not provide a clear and comprehensive overview of the courses within the *Biology and Genetics* programme. Given the title of the study programme, the panel members believe that a greater focus on the genetics portion of the degree and on current issues in molecular and cell biology, and genetics (in addition to classical biology) is an area in which the *Biology and Genetics* programme should be improved. If the title of the programme indicates that the programme aims to train graduates in both biology and genetics, then all traditional (basic) and modern (emerging) topics in classical and modern biology should be included in the curriculum/study plan.

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

(1) Factual situation

VMU allows students to individualize their study plan to address specific/individual learning needs. The individualized study plan determines the course schedule, mode and timing of assessment, etc. Individualization of the study plan is governed by the Description of the Procedure for Providing the Individual Study Schedule, Order on Organization of Individual studies and VMU Study Regulations. In accordance with the principles of liberal arts, each student may influence a certain part of his/her own study plan in order to acquire additional knowledge and skills necessary for further academic and professional activities. Students may individualize a portion of their study plan by selecting compulsory and elective courses within a range of 24 to 36 credits per semester. In addition, students may choose one of the minor study programmes offered by the university. Students have the opportunity to choose from more than 30 different foreign languages.

(2) Expert judgement/indicator analysis

The panel judges that the *Biology and Genetics* study programme at VMU offers students clear opportunities to shape the structure of their studies according to their personal goals. The list of electives within the programme provide students with good opportunities to achieve their personal learning goals and to acquire some general competencies (e.g., foreign language, computer skills). According to the student participants in the site visit, the overall course content of the study programme meets the students' personal learning goals. Both student and faculty representatives at the site visit indicated that the teaching/course content is tailored ("micromanaged") to students' prior knowledge. Finally, students confirmed that they could combine part-time jobs and study, but they would likely skip lectures if they

wanted to work and study, which is evidence that this study programme is not the best option for students with lower financial status.

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

(1) Factual situation

According to the Annex 1 of SER, the Bachelor's thesis in the *Biology and Genetics* study programme at VMU is worth 15 ECTS and should be completed within a total of 400 hours of independent study. Students should follow the principles for the preparation and defence of the thesis, which are specified in the study regulations and the general regulations for the preparation and defence of theses at VMU. Specific requirements (methodological guidelines) for thesis preparation, formatting, and presentation are established by VMU faculty. Thesis topics for the *Biology and Genetics* programme are generally consistent with the goals of the programme. VMU theses are stored in the database CRIS (VMU Science Management System).

(2) Expert judgement/indicator analysis

The panel judges that the final thesis in the *Biology and Genetics* study programme at VMU meets the requirements of the study subject and the cycle. Annex 4 of SER contains a detailed list of thesis titles. A considerable number of the theses defended are related to social partner/employer interests, which was confirmed by some social partners (employers) and alumni during the site visit. Students and alumni confirmed that they have various options to choose the topic of their thesis (and also the institution where they will do most of the work), and that they encounter great support from potential mentors and social partners. Thesis topics can be proposed by: 1) teachers and researchers, i.e. prospective thesis mentors (during the course Special biology practice, depending on the availability of their project and research activities), 2) social partners (depending on the topics relevant to them), 3) students (depending on their personal interests). Most theses are concerned with the interactions between the physical, chemical and biological components of the environment and humans, with an emphasis on environmental science and the effects of climate change and anthropogenic influence on living organisms. Fewer theses are linked to genetic topics (although alumni noted that there is an increasing interest in theses in genetics).

The final theses available in the supplemental materials of SER evidence that the theses are based on the scientific method, but are mostly based on traditional biological research; the results in the final theses rely mostly on descriptive rather than advanced statistics; and the discussions of the final theses are rather poor – they should compare the results of the final theses more thoroughly with other similar studies. Thus, the panel members concluded that: 1) thesis topics are well aligned with the social partners, 2) the workload, credit load, and opportunities associated with the undergraduate thesis in the *Biology and Genetics* study programme at VMU are optimal for demonstrating the knowledge acquired during the programme and the students' ability to analyse and apply practical skills, but 3) a major drawback of the theses is that they lack a broader, in-depth discussion and application of

inferential statistics. In addition, the panel members concluded that VMU should: 1) create conditions and faculty support for students working on BSc topics outside of traditional biology (e.g., in genetics) using advanced statistics, 2) introduce interesting, modern course content in modules that include genetics / advanced statistics topics that would encourage students to apply various genetics / advanced statistics tools in their master's theses.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. The programme provides a broad theoretical knowledge and solid laboratory/practical skills in classical biology, which is often well received by students who are undecided about their future careers and want to acquire a broad biological knowledge.
2. Good opportunities for students to personalise their studies taking into account personal learning goals and career plans.
3. Some final theses are closely related to the labour market and are carried out in collaboration with social partners.

(2) Weaknesses:

1. The curriculum is overloaded with broad theoretical factual knowledge.
2. Genetics topics are poorly / inadequately represented in the curriculum and are not covered at a satisfactory level.
3. The title of the programme (Biology and Genetics) does not fully reflect its content.
4. The learning outcomes and curriculum are not adequately aligned with the mission, vision and strategy of the University and not adapted to the new biological topics that would meet the rapidly changing needs of society and the labour market.
5. Inadequate faculty support for students to design quality final theses, especially in genetics and using advanced statistics.
6. Final theses lack more detailed discussion and application of inferential statistics.

3.2. LINKS BETWEEN SCIENCE (ART) AND STUDIES

Links between science (art) and study activities shall be assessed in accordance with the following indicators:

3.2.1. 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

(1) Factual situation

The research activities related to the field of study has been evaluated by the Research Council of Lithuania in 2018, 2019 and 2020, showing an increase in the score each year due

to an increase in the scientific output over time. In the Comparative Expert Assessment of R&D activities performed by the Research and Higher Education Monitoring and Analysis Centre (MOSTA) in 2018, the and the overall score given was 4 out of 5. The evaluation gave the best score for the infrastructure due to the university having excellent modern equipment available. The international visibility of the science could be higher, and more research could be published in higher-quality journals. Research projects are conducted in collaboration with both international and social partners and some of the projects have external funding from Erasmus+ and COST actions.

(2) Expert judgement/indicator analysis

In the SER evidence is given that the research output in the field has increased in the last few years. Yet, the research in the field has limited international visibility. A large part of the research is published in Lithuanian. There are only a couple of projects that have international funding, and this could be extended to make the research more internationally visible.

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

(1) Factual situation

The research activities at VMU are developed within Research Priorities, and in the study field of biology the teachers belong to six VMU Research Priorities of Life sciences. These clusters are *Application of Innovation Technologies to the Research on Health Risks Raised by Climate Change and Environmental Pollution (KLIGEN)*, *Drug and gene transfer research cluster*, *Biophysics for Bionanotechnology and Biomedicine (BIOMEDTECH)*, *Molecular bioenergetics*, *Development of instrumental analysis methods and their application to molecular analysis of biological objects, synthetic products and the environment* and *Impact of anthropogenic environmental change and climate on living organisms*. According to the SER, the knowledge, methods, and results of the research performed in the context of these research priorities are integrated into the content of the study subjects, such as in the lecture material, practical works, seminars, preparing tasks and case studies. The reading lists of the subjects are in addition supplemented with new literature. The BSc programme *Biology and Genetics* has been renewed and the title of the programme has been changed taking into account the recommendations of the last external evaluation and the experience of the teachers in the field.

(2) Expert judgement/indicator analysis

The SER gives examples of subjects where the content has been changed based on research performed by the teachers in the study field and evidence is given for that this is the case for study courses that are linked to the different Research Priorities. The SER gives examples for changes that have been made in study courses such as Population and Ecology Genetics,

Microbiology Biophysics, Cell Biology, Neurobiology, Molecular Biology. The changes include changes of practical works, changing of the lecture materials etc. No detailed information about what change has been done in each subject course is given. Continued development of research in the strategic areas with increased international collaboration will strengthen the link further.

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

(1) Factual situation

The teachers of the program introduce their research to the students and are inviting the students to conduct research. Information is given on the university website and through the student's organisation. Students have the possibility to join research projects, and from 2017 to 2020, 16 % of the students participated in research projects while preparing the bachelor thesis.

The students can participate in scientific conferences held by the university. Some students have co-authored scientific papers in collaboration with the staff and may participate in projects together with social partners.

(2) Expert judgement/indicator analysis

Students have the possibility to be involved in research activities mainly through the work on their thesis. From the SER and the site-visit, it is evident that this is done in connection with the bachelor thesis. There are separate laboratories for students and research, and the students are thereby not familiar with the research laboratories before they will start the work with the bachelor thesis. The students choose the topics for their thesis after being told about different topics for the thesis work by the lecturers. There is evidence that some of the students have co-authored scientific papers together with the staff.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. There are some international collaborations on research projects.
2. Student can participate in research projects and engage in projects with social partners.

(2) Weaknesses:

1. Only a few percent of the students are engaged in research.
2. International visibility of research is low.

3.3. STUDENT ADMISSION AND SUPPORT

Student admission and support shall be evaluated according to the following indicators:

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

(1) Factual situation

The admission is carried out by the Lithuanian Association of Higher Education Institutions for Organizing General Admission (LAMA BPO) and follows standardized procedures for the calculation of competitive scores. The score includes grades in biology, mathematics or chemistry, Lithuanian language and additional subjects. The SER contradicts itself with regard to the inclusion of the grades in mathematics and chemistry – it is unclear whether only one can be included or both are included. Similarly the weight of the mathematics grade is conflictingly listed as “0.2” and “40%” in different places. A minimum score needs to be reached for admission. These rules are publically available on the universities and the associations website.

However, the description on the universities website differs from the description provided in the SER and the information on LAMA BPO’s website is not completely available in English. The average scores of admitted applicants remained stable over the last years. Notably, around twice as many students were admitted in 2020 compared to previous years (34 vs. 15, 18, 15). This increase originates from a sharp increase in state-funded places (23 vs. 7, 5, 2).

(2) Expert judgement/indicator analysis

The panel finds the admission criteria appropriate for a first cycle degree program. However, the inconsistencies within the SER and between the SER and the universities website need to be resolved. It needs to be transparent to potential applicants which criteria are applied. If the information on the university’s website is correct, it needs to be clear on which criteria the grading of the motivation letter is based.

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

(1) Factual situation

Foreign qualifications are recognized centrally at VMU’s International Cooperation Department according to national resolutions and regulations and following information provided by SKVC. Rules for admission of foreign citizens are updated and approved annually. VMU updates SKVC about the decisions made. Partial studies can be recognized in accordance with the VMU Description of the Procedure for Recognition of Learning Outcomes. Exchange studies are governed by learning agreements between the participating universities. For

newly enrolled students qualifications can be recognized through submission of documentation to the International Cooperation Department which transmits the complete documentation to the faculty to confirm its equivalency. Informal and non-formal learning can be recognized in accordance VMU Study regulations and other relevant documents. Between 2017 and 2020 there were no cases of students who sought recognition of partial studies or informal/non-formal learning.

(2) Expert judgement/indicator analysis

Procedures are in place and adequate. They follow the Lisbon convention. The absence of cases may reflect the low number of students in the programme.

3.3.3. Evaluation of conditions for ensuring academic mobility of students.

(1) Factual situation

Students can study or take internships abroad via the Erasmus + program or via mobility grants (and scholarships from partner universities for studies). Furthermore, students may take up internship opportunities in Lithuanian schools, communities or centres abroad. Only 3 students from the programme used these opportunities in the last 3 years while 26 incoming students visited VMU through Erasmus+ and bilateral agreements. Students receive information about mobility opportunities from the International Cooperation Department, the Faculty international coordinator, through events such as the Erasmus day, through postings of available competitions on the website, the intranet and social media, as well as student groups.

(2) Expert judgement/indicator analysis

VMU provides students with mobility opportunities. However so far few students use these opportunities. In the future VMU should motivate students to participate in Erasmus+ exchanges since the number of students using these opportunities is low. Furthermore virtual exchanges could compliment existing opportunities (e.g. virtual lecture series with partner universities).

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

(1) Factual situation

The SER features a comprehensive section on student support and information. As VMU states the latter supports the former.

Financial support is partially organized through the Description of Procedures for Tax Exemption and Compensation and the Description for Compensation for Tuition Fees. Students can apply for postponing payments or paying in instalments. Students who participate in conferences, seminars or other events to represent the university can be reimbursed fully or partially. In addition students can apply for scholarships based on social needs or academic achievements.

Students can receive free-of-charge psychological counselling at VMU Psychology Clinics. Careers advice is organized through the VMU Career Centre. Students with special needs are supported, for instance they are relieved of tuition fees.

(2) Expert judgement/indicator analysis

VMU describes its many support structures briefly. During the site visit the evaluation panel came to the conclusion that students are overall happy with the support given.

3.3.5 Evaluation of the sufficiency of study information and student counselling

(1) Factual situation

VMU aims for easily accessible and timely information about the programme, the university and extra-curricular activities. Information is provided via the e-learning platform Moodle, the university website, social media and newsletters. Additionally there is a tailored students portal and students are provided with personalized emails. The university provides a centralized Student Centre.

Students chose representatives and are generally in close contact with teachers and programme administration. The program management meets students frequently and teachers offer regular consultation hours. At the beginning of their studies students can attend an introduction week that acquaints them with the campus, language options, mobility opportunities, and other relevant topics. At the beginning of each semester there is a meeting with the head of the study programme.

(2) Expert judgement/indicator analysis

During the site visit the panel came to the conclusion that students are overall happy with the information and counselling provided. However, the panel notes that the doubling of the cohort size (Table 7) may negatively impact the current direct contact between individual students and the staff. VMU should monitor these developments.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. Students are happy with the support and information provided by VMU.

(2) Weaknesses:

2. Information about admission criteria is in parts inconsistent between sources. Information about the grading of motivational letters is missing.
3. Students should be encouraged to use their mobility opportunities.

3.4. TEACHING AND LEARNING, STUDENT PERFORMANCE AND GRADUATE EMPLOYMENT

Studying, student performance and graduate employment shall be evaluated according to the following indicators:

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

(1) Factual situation

The study programme *Biology and genetics* ensures a wide variety of study methods to assure the quality of teaching and learning. Teamwork is encouraged and students can choose individual assignments and project work according to their interests and BSc thesis. Students learning achievements are assessed in midterms, various types of intermediate work, examination or projects. The individual tasks are not evaluated only by the teachers, but also by other students so the results are discussed openly. Study and assessment methods are presented in more detail in the course descriptions. VMU Distance and Blended Learning Quality Assurance Methodology defines the implementation of study subjects and study methods including distance learning environment and/or video conferencing tools and other multimedia technologies. BSc students in *Biology and genetics* can continue their studies at MSc program *Molecular biology and biotechnology* and eventually continue their doctoral studies at VMU or other institutions.

(2) Expert judgement/indicator analysis

Based on the discussions with different stakeholders, it was evident that the BSc programme *Biology and Genetics* is very flexible and offers possibilities for personalized studies based on available individual and minor programs. The continuity of studies in different fields is guaranteed by a diversified structure of the study program that allows students to acquire, first and foremost, a broad theoretical knowledge of various biology fields and then a set of practical skills related to biological research. Learning and teaching methods include lectures,

laboratory works, seminars, individual and group assignments, i.e., teamwork, group assignments and open discussions of students. Intended learning outcomes are verified by diversified assessment approaches presented in course descriptions. It is also very important that each of study courses of *Biology and genetics* study programme has Completion progress section in Moodle, where the students and teachers can see the progress within the semester.

The curriculum of the programme is broad and well structured for preparing the students for studies at the second cycle programs in life sciences. However the panel members concluded that it would be beneficial for the programme to include more electives and adjust the curriculum to the newly emerging biological topics.

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

(1) Factual situation

Socially vulnerable groups and students with special needs can choose the individualized study plan. VMU has been awarded a certificate by the Lithuanian Association of People with Disabilities, which states that the university's infrastructure is adapted and the services provided are accessible to people with disabilities. Students with disabilities receive financial support and the material basis for their studies, including dormitories, is constantly adapted to their needs. Students with disabilities are provided with learning aids and equipment for effective study.

(2) Expert judgement/indicator analysis

According to data from SER, the results of the survey of graduating students (EXIT) conducted by VMU Career Center in the academic year 2019/2020 it is evident that the majority of all the responding graduates were satisfied with the conditions for disabled people at the University. The panel concludes that VMU is a socially responsible university and implements its disability-related policies well.

3.4.3. 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

(1) Factual situation

Student performance is monitored regularly and focuses on analysing student enrolment in majors, analysing student participation in midterm and final exams, analysing student midterm and final evaluations, and improving student learning and implementing policies to guide student progress.

Students have the ability to connect to the student information system and student portal, where they can track their midterm and final exams. Students are provided with information about their course of study. They can register for courses, check their academic results and view individual study plans. Student study materials and other relevant study information are available in VMU's virtual learning environment. In Moodle, each Biology and genetics major has a student progress section, where students and faculty can view progress within the semester.

Students receive constant feedback on their academic performance throughout the course. Faculty hold weekly office hours on study issues. Students and faculty also communicate via e-mail and Moodle.

(2) Expert judgement/indicator analysis

Students' academic progress is continuously and systematically monitored from various aspects, which provides good conditions for planning further study. The assessment methods are described in detail in the study regulations and VMU applies the accumulative system for the assessment of learning achievements. The lecturer familiarizes students with the criteria for assessing learning outcomes and the course of study in the first lectures. The panel judges that the assessment of study progress and feedback to students are appropriate. VMU has a very complex survey system for graduates which functions at individual, faculty and university levels. VMU surveys for graduates are based on 52 questions related to studies, final thesis, social environment, career status, preparation for professional activities and alumni club activities. The survey is complicated with too many questions and very time consuming. Low responsibility of graduates, long-lasting processing of surveys and executive incompetence due to joint decisions of several committees do not bring quick and effective solutions related to changes of the study programme, improvement of study process and better connection with employers.

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

(1) Factual situation

The University has an active VMU Alumni Club whose members organize club meetings, lectures, discussions, and field trips and excursions to various companies that employ University alumni. They actively participate as advisors and experts in course committees and study quality assessment groups. Each year, the VMU Career Centre conducts an online survey of graduates one year after their graduation to determine their current employment situation. All graduates are asked to submit the survey in which they rate VMU's contribution to their preparation for the job market. Summary survey results are published on the University and Career Centre websites.

Information on the opinions of graduates and employers regarding the career stage of graduates and skills acquired after graduation is obtained from the VMU graduate surveys at 12 months after graduation.

(2) Expert judgement/indicator analysis

Based on the surveys provided in the SER, due to the small number of graduates from 2017 to 2019 and the small number of respondents (30), it is not possible to make judgments about employment effectiveness and graduate satisfaction with VMU's contribution to their preparation for the labour market. Discussions with various stakeholders indicate that the preparation of graduates for the labour market is not very good and the programme, with very broad topics, is not well aligned with the needs of the labour market (also addressed in 3.1.). The panel judges that the interaction between VMU and potential employers of BSc graduates in *Biology and genetics* should be improved to enhance the employability of graduates.

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

(1) Factual situation

The principles of integrity are defined in the documentation of the VMU Statute, the VMU Code of Ethics, the Plagiarism prevention procedures, and the VMU Study Regulations. In the event of dishonest conduct during the assessment of an assignment, a final grade of "0" (zero) will be written in the learning outcomes book and the student will not be able to participate in further assessment events in the programme, the programme will be discontinued and will end with an academic debt. Non-discrimination measures are governed by VMU's Code of Ethics. VMU's plagiarism prevention procedure identifies the types of plagiarism, methods for detecting plagiarism, and procedures for consideration, as well as recommendations for faculty and students on how to prevent plagiarism in written work. In 2019, the University purchased the Oxsico system for text matching, which allows a maximum of 20% overlap with other work. This system is available to all faculty, students, and researchers at VMU.

(2) Expert judgement/indicator analysis

The panel concludes that the measures taken to implement the policy to ensure academic integrity, tolerance and non-discrimination are adequate. During the period under review, no violation of the policies of academic integrity, tolerance and non-discrimination were noted in the *Biology and Genetics* programme.

3.4.6. 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

(1) Factual situation

Students have the right to appeal the assessment of learning outcomes or assessment procedures if they disagree with them or identify a violation of assessment procedures. During the program reporting period, there were no exclusions from examinations due to unfair incidents and no appeals due to violations of assessment and reporting procedures for academic results.

(2) Expert judgement/indicator analysis

According to the SER and discussions during the site visit, students are well acquainted with the procedures for filing appeals and complaints related to the study process.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. The use of various study methods and complex assessment procedures allows students to receive feedback and self-assessment.
2. Excellent support for vulnerable groups and students with special needs.
3. Procedures for handling complaints and appeals at VMU are adequate. Although there have been no exclusions from examinations or appeals in the assessment of student outcomes, students are well aware of the opportunities to make appeals and complaints.

(2) Weaknesses:

1. SER does not indicate where graduates are employed and how employers can influence improvement of the degree programme. Survey data from VMU graduates 12 months after graduation on the number of employers who participated in the surveys in 2017, 2018, 2019 is not very reliable due to the small number of respondents.
2. VMU has effective feedback to assess student progress at the individual level, but a very complicated faculty/university survey system that leads to delays in the study improvement.

3.5. TEACHING STAFF

Study field teaching staff shall be evaluated in accordance with the following indicators:

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

(1) Factual situation

The staffing complement is 35 teachers, of which 32 have doctoral degrees, nine are full Professors and 12 are Associate Professors, although the self-evaluation report noted that only sixteen of these are affiliated to the programme, fourteen of whom are full-time employees. All have at least three years' teaching experience. Some teachers have other research-related roles in public and private sector organisations.

The University supplied a list of the three most significant research outputs per person in the last 5 years. A superficial examination of the list revealed that all staff are active in research, though one could claim only two outputs in the last five years; but on closer inspection many of the outputs were revealed to be conference abstracts. For twelve staff, only conference abstracts were cited. Most outputs are in English, but several are in Lithuanian and one in Russian. Many of the peer-reviewed outputs are in high-ranking international peer-reviewed journals, but some are in more local organs.

Doctoral students (and post-docs) are immediately engaged in teaching duties such as the delivery of lectures and seminars and supervising and assessing bachelor's theses. Training is available for this role.

(2) Expert judgement/indicator analysis

The staff are scientifically well qualified and are in sufficient number, with collectively broad specialisations to adequately support the programme, given present student numbers. External research commitments strengthen the programme. The staff complement meets legal requirements. While some research outputs are undoubtedly of international repute, in general research outputs are of variable quality and there is work to be done to ensure that any research conducted should have the potential to appear in high-ranking journals. Nonetheless, all outputs cited are multi-author showing that strong research networks have been forged. Doctoral students and post-docs receive limited exposure to teaching duties, which enhances their career prospects and ensures a supply of higher education teachers. Staff turnover is modest and has been anticipated and managed well.

3.5.2. Evaluation of conditions for ensuring teaching staffs' academic mobility (not applicable to studies carried out by HEIs operating under the conditions of exile)

(1) Factual situation

The University has invested heavily in creating partnerships: staff can access Erasmus+ and other exchange schemes at a total of 642 institutions globally. Those staff who have membership of a research cluster may use cluster funding for mobility activities. Competition for Erasmus+ teaching visits occurs biannually, and monthly for training visits. During the evaluation period 24 visits have been completed and although ~40 per cent of staff were involved, 19 of the visits were undertaken by only four members of staff.

Erasmus+ is the main source of funding for incoming mobility. Most incoming staff give guest lectures, usually on a research topic. The panel asked the University to supply the numbers, duration and origin of any incoming physical staff exchanges. The University interpreted this not as relates to the programme, but unhelpfully to the whole of the Faculty of Natural Sciences and listed just over 50 persons.

(2) Expert judgement/indicator analysis

Although the details, such as selection criteria, were not specified, there are many opportunities readily and frequently available for outgoing staff mobility. Exploitation of these opportunities has been high, but is concentrated on few staff and more could be done to ensure that more staff are able to take advantage of this important means of exposure and networking. Incoming mobility may ensure that students get to experience a broad range of teachers with different perspectives, methods and cultures, but the panel was unable to determine this with certainty and so must conclude a deficiency here.

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

(1) Factual situation

The University organises, via its Description of Procedure for Professional Development 2018, professional development for its teaching staff under eight competences: higher education didactics, digital, research, management, foreign languages, intercultural, subject-related and personal. Higher education didactics encompass such topics as active learning and student involvement into learning, learning achievement assessment and feedback for students, and teaching and learning in distance studies. Training is sometimes led by experts from outside the University, sometimes overseas experts. Feedback is sought from participants after each training event and teachers have the opportunity to influence the training offer. Teachers self-report on activity annually.

As a result of the CoViD-19 pandemic the University's Institute of Innovative Studies pivoted its training towards remote delivery and assessment methods, such as online teaching and learning, cooperation and assessment tools in distance studies, and the responsible use of technology. Over 70 per cent of programme staff engaged with this initiative. Students

reported the quality of teaching as variable, and that some teachers did not prepare well for their duties.

The SER noted that during the evaluation cycle most lecturer development was in the competencies of higher education didactics, digital, research and foreign languages. To verify this and to understand the full range of development activity the Panel asked the University to specify what University-run training had been completed and which of the eight competencies each training was classified in. However, the University did not supply the information related to competencies and so the panel cannot make the assessment it intended.

(2) Expert judgement/indicator analysis

Opportunities for professional development abound at the University and the programme staff have diligently ensured they take advantage of the training offered to keep up-to-date with advances in their subject field and in pedagogy. Since most staff are active in research considerable professional development will accrue by virtue of maintaining a strong research presence. The timely shift in training towards teaching methods necessitated by the pandemic, and the swift exploitation of that training is a strength, in that it ensured a quality experience for students despite significant disruption. A further strength related to breadth and strategy in relation to professional development activity may have been warranted, but remains unconfirmed since the University did not supply the relevant evidence. Although training is available for doctoral students who teach, the panel was able to confirm that some had not undertaken any formal training before teaching, relying instead on informal mentoring or even recall of their own experiences as students. The panel considered this to be a missed opportunity for enhancement.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. Academic qualifications of teaching staff.
2. Lecturers' exploitation of professional development opportunities, including those in response to the CoViD-19 pandemic.

(2) Weaknesses:

1. Some research outputs are of low quality.
2. Number of persons participating in outgoing and incoming staff mobility.
3. Lack of formal training for all who teach on the programme.

3.6. LEARNING FACILITIES AND RESOURCES

Study field learning facilities and resources should be evaluated according to the following criteria:

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

(1) Factual situation

The learning facilities of the study field are in different buildings with 222 classrooms that can be used. The classrooms vary in size. The rooms have the necessary equipment and have multimedia projecting equipment. The general study group courses are mainly delivered in the central buildings of the university while the special courses are delivered in the Faculty of Natural Sciences building where the teaching and administrative staff for the special courses are working. The faculty has recently moved to more spacious premises in connection with the merger of two universities and the infrastructure and laboratories were upgraded during the relocation.

There are six specialised laboratories for the special courses. The laboratories contain stationary laboratory equipment in addition to specific portable equipment. The equipment may be used for practical work, preparation of research papers and the BSc thesis. The students may in addition use laboratory equipment from other departments, and a system for booking laboratory access is in place. There are special computer rooms in the university and the computers are equipped with the general programs needed for the study process. The university had a virtual learning environment and collaboration system and have a system for distant learning in place. The library has several premises that may be used by students and staff, with a total of 770 working places. The library has self-taking/returning devices (RFID) that allow users to borrow and return publications themselves. The library also offers workspaces for users with special needs and the library has some special equipment. The library has 21 450 traditional documents appropriate for biology students. The dominant type of information resources is electronic resources and for biology there is access to 1015 journals and 15677 e-books and the university has access to several relevant databases. VMU CRIS is used to disseminate research production

(2) Expert judgement/indicator analysis

The panel had the opportunity to review a video tour of the laboratory facilities. The premises, the laboratories and library resources for the studies are very good. The laboratories have recently been upgraded. There is access to electronic journals and databases and the university has equipment for distant and blended learning. Full access to even more e-journals could be an advantage.

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

(1) Factual situation

The laboratories were upgraded in connection with the merger and at the present there is no need for upgrading of equipment. The Study committee of the programme prepares plans for the improvement of the infrastructure of the programme. The needed resources and equipment are acquired for the available funds of the department, new projects or targeted funding of the programmes. VMU upgrades the computers and technical equipment yearly, according to the resource development plans submitted by the faculties and academics according to the program need. Planning of the renewal of information resources relevant for the studies are coordinated by the library.

(2) Expert judgement/indicator analysis

The university has systems for planning and upgrading of resources needed to carry out the studies. The laboratories have recently been upgraded, and no extensive upgrade of the equipment is planned in the near future.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. Upgraded laboratories for teaching and research.
2. System for planning of resources including information resources in place.

(2) Weaknesses: none

3.7. STUDY QUALITY MANAGEMENT AND PUBLIC INFORMATION

Study quality management and publicity shall be evaluated according to the following indicators:

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

(1) Factual situation

At VMU, academic programmes are administered and decided by the faculty council, the study fields' committee (According to the SER p. 85 it is the study committee of the *programme*), the dean of the faculty and the head of the department. The council is responsible for quality assurance of all study fields. Once a year it discusses problems and makes decisions on potential improvements. It approves programme renewals (annually), internal assessments, and quality improvement plans. The committee is composed of ten faculty members, one of

whom chairs the committee, three students, and one social partner. It meets at least once per semester and is responsible for coordinating study fields, monitoring their implementation, and ensuring quality at the program level through development and implementation of quality improvement plans. It serves as a bridge to stakeholders. The department head and dean supervise the quality of program administration, including schedules, facilities, information dissemination, workload recording, registration, and documentation. Decisions are governed by a number of official documents, including the university's statutes, study regulations, and programme quality assurance procedures.

(2) Expert judgement/indicator analysis

VMU has well defined its responsibilities and decisions related to quality assurance and decision making. However, during interviews, the panel found a great deal of confusion about how these responsibilities are actually implemented. It was particularly unclear what the duties and responsibilities of the committee chair were as opposed to the department chair. This confusion was shared by students, staff, and management. For example, during the site visit, VMU staff could not identify the head of the study programme, which was surprising and alarming. There was also no precise indication of who at VMU is responsible for internationalisation and international visibility, although VMU staff (and Annex 3 of the SER) indicated (in conversations) that there are some successful collaborations with Ukrainian, Kazakh, Polish, Turkish, and other Eastern European/Central Asian countries, as well as the successful enrollment of foreign students from these countries in VMU's degree programmes.

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

(1) Factual situation

VMU engages stakeholders through a range of surveys and involvement in committees and meetings. Students are surveyed about their teaching in individual modules (organisation, methods, clarity, etc.). First-year students are additionally surveyed about their reasons for choosing the program, their expectations, and their general opinions about beginning their studies. Graduates and alumni are asked about their studies, their final theses, and their preparation for and integration into the labour market. Faculty are surveyed about their teaching, professional development, student involvement, and working conditions. Additional surveys on specific topics of interest are possible, such as surveys of employers or surveying students about the change of program name in 2019.

In addition, students are involved through representatives on the committee and council, and all students may participate in direct discussions with faculty. The social partners comment on suitability of the programme to the needs of the labor market and are also consulted for their opinion. They participate in the university's career day and special discussions. Alumni

may participate in the university's alumni day. Stakeholder proposals are discussed in committee meetings.

(2) Expert judgement/indicator analysis

Stakeholders can provide input through a variety of channels – surveys, representatives, proposals, discussions, and special events. While social partner and alumni engagement appears to be good, student participation appears to be limited. During the site visit discussions, many of the issues raised by the students were not known to the staff and leaders, and the majority of the students were not aware of the issues raised by the committee. Overall, the panel was not convinced that student comments were sufficiently incorporated into the programme improvement.

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

(1) Factual situation

Teaching quality is assessed at the end of each course through questionnaires that allow teachers to improve their content and methods. The questionnaires also include free text for more detailed feedback. Survey results are also available to the study committee chair and key trends are analysed at the committee meeting. More extensive analyses are conducted for external evaluations. The SER provides two examples of past improvements. The first relates to graduate feedback on learning facilities and the second to student feedback on e-learning materials. Unfortunately, neither of these examples provides details on the exact measures.

Decisions are communicated to faculty, social partners, and the dean and the department head by the committee chair. Student representatives communicate them to other students in the program. The results of the surveys are summarized and presented to social stakeholders within 3 months. The results of the centralized surveys are available in the internal survey system. Summarized results are also available on the website, emailed to students and faculty, and disseminated through social media and other channels.

(2) Expert judgement/indicator analysis

The SER contains little information about what data is collected and how it is used. It focuses on surveys and does not elaborate on statistical indicators. Improvement processes seem to depend on the initiative of individual faculty members. It remains unclear how detailed the published summary information is. During the interviews, the panel members concluded that the information about the survey results and consequences did not reach the majority of students (and if the opposite was the case, it was not clearly emphasized in the SER or during the interview).

3.7.4. Evaluation of the opinion of the field students (collected in the ways and by the means chosen by the SKVC or the HEI) about the quality of the studies at the HEI

(1) Factual situation

The SER provides little information about student opinions. According to the SER, overall faculty evaluations are good (9.11/10). The graduate survey is close to the university average (3.4/4 compared to 3.56/4). Graduates were most critical of the lack of access to laboratories in 2020, in part a result of the global pandemic. However, VMU believes that more practice during studies and better conditions in the premises would be an important improvement.

(2) Expert judgement/indicator analysis

The SER does not provide sufficient information on student opinions. The management does not seem to be aware of the critical issues expressed by the students in the interviews, such as the unbalanced workload and the great heterogeneity of teaching quality. Overall, quality assurance relies on the teachers initiative and does not take into account all aspects of studies, e.g. the appropriateness of the estimated workload is not asked in surveys.

Strengths and weaknesses of this evaluation area:

(1) Strengths:

1. Well-defined regulations on responsibilities and decisions related to quality assurance and decision-making.
2. Effective involvement of social partners and alumni in internal quality assurance.

(2) Weaknesses:

1. Unclear division of responsibilities in conducting quality control among members of management, faculty, and students.
2. Inadequate student involvement in internal quality assurance/study programme improvement.
3. The SER does not provide sufficient information on evaluation and improvement of teaching quality and students' opinions.

IV. RECOMMENDATIONS

Evaluation Area	Recommendations for the Evaluation Area (study cycle)
Intended and achieved learning outcomes and curriculum	<p>The programme is outdated and needs to be refreshed with the latest research / biological topics. Teaching methods should be updated to allow for the development of skills needed in the fields of modern biology and genetics.</p> <p>Reconsider the title of the programme, as the current title (<i>Biology and Genetics</i>) does not fully reflect the content. If the current strategy and long tradition of teaching classical biology is to be maintained, then the title of the programme should be changed (i.e., Genetics should be excluded from the current title of the programme).</p> <p>The learning outcomes and curriculum need to be improved based on feedback from students, alumni/graduates, and social partners and adapted to the new biological issues to better meet the rapidly changing needs of society and the labour market.</p> <p>Better align learning outcomes with the university's mission, vision, and strategy (programme leadership and strategy should be more clearly defined).</p> <p>Develop programmes for thesis supervision and assessment (i.e., allow faculty to assist students in completing their theses in genetics; provide more time for thesis supervision to lead to more detailed discussion and use of inferential statistics in theses; introduce contemporary teaching in modules that include genetic topics to encourage students to use various genetic tools in their theses).</p>
Links between science (art) and studies	<p>VMU should work towards including more students in research. As the international visibility of research is low, the university should increase the scientific output in international journals.</p>
Student admission and support	<p>VMU needs to ensure that admission criteria are consistent between different sources. Criteria for the grading of motivational letters should be transparent.</p> <p>VMU should monitor the effects of the doubling in cohort size on the quality of student support and counselling.</p>
Teaching and learning, student performance and graduate employment	<p>Improve interaction between university and potential employers of the graduates in <i>Biology and genetics</i> programme.</p> <p>VMU has effective feedback to assess student progress at the individual level, but it is necessary to improve a very complicated</p>

	faculty/university survey system that leads to delays in studies updating.
Teaching staff	<p>Ensure that any research conducted has the potential to appear in high-ranking journals.</p> <p>Increase both incoming and outgoing staff mobility by increasing the numbers of individual staff participating.</p> <p>Ensure that all who teach and/or assess on the programme have undertaken a training programme in how to teach and/or assess in higher education.</p>
Learning facilities and resources	Continue to focus on upgrading of laboratory equipment
Study quality management and public information	<p>Improve the definition and division of responsibilities for conducting quality control among members of management, faculty, and students.</p> <p>Increase student involvement in internal quality assurance/study programme improvement.</p>

V. SUMMARY

Main positive and negative quality aspects of each evaluation area of the study field *Biology* at Vytautas Magnus University:

The report on the overall evaluation of the BSc programme in *Biology and Genetics* at VMU is positive. The panel has received information necessary for evaluation of the programme, even if there were inconsistencies in the information provided in the SER and the annexes for one of the evaluation areas. Based on the SER and virtual meetings with various stakeholders, as well as additional documentation kindly provided by VMU, the panel highlights the main positive and negative quality aspects of the programmes' evaluation:

Positive quality aspects of the evaluation:

The programme provides graduates with competencies that are relevant for the society and the labour market and gives them a broad theoretical knowledge and solid laboratory practical skills in classical biology.

There are good possibilities for students to shape their studies according to their personal goals and career plans. The students have the possibility to be engaged in research and write their thesis either in collaboration with staff or social partners. VMU provides student support in many areas, including opportunities for student mobility and has in place procedures for recognition of foreign qualifications. There is excellent support for socially vulnerable students and students with special needs. The use of various study methods and complex assessment procedures allows students to receive feedback and self-assessment.

The research output in VMU is increasing. The academic staff is scientifically well qualified, and staff used the opportunity for professional development including training to support the shift in teaching during the pandemic.

The teaching and research laboratories of VMU are equipped with high quality equipment. The university has a system for planning resources.

There are well-defined regulations on responsibilities and decisions related to quality assurance, including effective involvement of social partners and alumni in internal quality assurance.

Negative quality aspects of evaluation:

The curriculum is overloaded with broad theoretical factual knowledge, and the genetics topics are inadequately represented in the curriculum and are thereby not covered at a satisfactory level. The title of the programme thereby does not fully reflect the content.

The learning outcomes and curriculum are not adequately aligned with the mission, vision and strategy of the University and not adapted to the new biological topics that would meet the rapidly changing needs of society and the labour market.

Inadequate faculty support for students to design quality final theses, especially in genetics and using advanced statistics. Final theses lack more detailed discussion and application of inferential statistics. The university does not have an overview of where the students are getting jobs after graduation. Only a few percent of the students are engaged in research.

International visibility of research is low, and some research outputs are of low quality. Number of persons participating in outgoing and incoming staff mobility is low and there is a lack of formal training for all who teach on the programme. The students should also be encouraged to use their mobility opportunities.

Although VMU has well-defined quality assurance procedures, there is unclear division of responsibilities in conducting quality control among members of management, faculty and students. There is inadequate students involvement in internal quality assurance.

Signature of expert panel chairperson:

Prof. dr. Mark S. Davies