



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS  
CENTRE FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

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## MOLECULAR BIOLOGY FIELD OF STUDY

**Vilnius University**

### EXTERNAL EVALUATION REPORT

**Expert panel:**

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# I. INTRODUCTION

## 1.1. OUTLINE OF THE EVALUATION PROCESS

The study field evaluations in Lithuanian higher education institutions (HEIs) are based on the following:

- Procedure for the External Evaluation and Accreditation of Studies, Evaluation Areas and Indicators, approved by the Minister of Education, Science, and Sport;
- Methodology of External Evaluation of Study Fields approved by the Director of the Centre for Quality Assessment in Higher Education (SKVC);
- Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG).

The evaluation is intended to support HEIs in continuous enhancement of their study process and to inform the public about the quality of programmes within the study field.

The object of the evaluation is all programmes within a specific field of study. A separate assessment is given for each study cycle.

The evaluation process consists of the following main steps: 1) self-evaluation and production of a self-evaluation report (SER) prepared by a HEI; 2) a site visit of the review panel to the HEI; 3) the external evaluation report (EER) prepared by the review panel 4) accreditation decision taken by SKVC and its publication; 4) follow-up activities.

The main outcome of the evaluation process is the EER prepared by the review panel. The HEI is forwarded the draft EER to report on any factual mistakes. The draft report is then subject to approval by the external Study Evaluation Committee operating under SKVC. Once approved the EER serves as the basis for an accreditation decision. If a HEI is not happy with the outcome of the evaluation, HEI can file an appeal.

On the basis of the approved EER, SKVC takes one of the following accreditation decisions:

- **Accreditation granted for 7 years** if all evaluation areas are evaluated as exceptional (5 points), very good (4 points), or good (3 points).
- **Accreditation granted for 3 years** if at least one evaluation area is evaluated as satisfactory (2 points).
- **Not accredited** if at least one evaluation area is evaluated as unsatisfactory (1 point).

## 1.2. REVIEW PANEL

The review panel was appointed in accordance with the Reviewer Selection Procedure as approved by the Director of SKVC.

The composition of the review panel was as follows:

1. Panel chair: Prof. Ph.D. Grzegorz Węgrzyn Professor of Department of Molecular Biology at University of Gdansk (Poland);
2. Academic member: Prof. Dr. Néstor V. Torres Darias, Professor of Biochemistry and Molecular Biology at the University of La Laguna (Tenerife, Canary Islands, Spain);
3. Academic member: Prof. Dr. Herbert van Amerongen Head of the Laboratory of Biophysics, full professor at Wageningen University & Research (WUR) (Netherlands);
4. Social partner: Mr Julius Gagilas, Head of the laboratory Saide Genomics – Center for molecular diagnostics genomics and research (Lithuania);
5. Student representative: Mr Vėjas Strelčiūnas, vstrelciunas3@gmail.com, (student's representative), third-year student in the bioengineering study programme at Vilnius Gediminas technical university (VILNIUSTECH).

## 1.3. SITE VISIT

The site visit was organized on 16 of May 2024 onsite.

Meetings with the following members of the staff and stakeholders took place during the site visit:

- Senior management and administrative staff of the faculty(ies)
- Team responsible for preparation of the SER
- Teaching staff
- Students
- Alumni and social stakeholders including employers.

There was no need for translation and the meetings were conducted in English.

## 1.4. BACKGROUND OF THE REVIEW

### Overview of the HEI

Vilnius University (VU) is a public higher education institution founded in 1579, making it the oldest and largest in Lithuania. The organisational structure of the university is defined in its statute and includes the Senate, the Council and the Rector as governing bodies.

VU has 15 main academic units (11 faculties, 1 institute, 1 centre, 1 academy and 1 business school) and 12 non-academic units. The university offers undergraduate, postgraduate and doctoral programs in various fields such as humanities, social sciences, natural sciences, medical and health sciences, and technological sciences.

Currently, VU has 23,517 students and employs 5,654 people. The Life Sciences Center, established in 2016, is one of its specialised units in molecular biology, biotechnology and neurobiology, among other fields, and offers 7 bachelor's and 9 master's programs, in addition to doctoral programs in biology, biochemistry and other related areas.

### Overview of the study field

Vilnius University positions its Molecular Biology study field within a comprehensive and strategic framework aimed at enhancing the life sciences sector in Lithuania. As part of the Life Sciences Centre (LSC), established in 2016, this study field contributes significantly to the University's strategic objectives, including increasing the share of high-value industry and retaining young specialists while attracting international talent. The LSC collaborates extensively through local and international partnerships, facilitating interdisciplinary research and innovation. The LSC offers a wide range of programs across various life sciences fields and engages in numerous research projects, emphasising biomolecular structure, cell biology, molecular biotechnology, and neurobiology, thereby ensuring the alignment of academic and applied research with industry needs and societal demands.

### Previous external evaluations

In the previous external evaluations of the study programmes in Molecular Biology at Vilnius University, which took place in 2014, the programmes were positively assessed and accredited for six years. Key recommendations from the evaluations included enhancing practical experiences for students through diverse laboratory rotations, improving the clarity of subject descriptions, and considering the inclusion of management skills in the curriculum. In response, the University took actions such as publishing detailed course descriptions, introducing management courses taught by industry professionals, and promoting interdisciplinary study options. Strengths highlighted in the evaluations included the integration of research into the study process, active student participation in scientific activities, and high rates of graduate employment and further studies.

### Documents and information used in the review

The following documents and information have been provided by the HEI before and during the site visit:

Self-evaluation report and its annexes;  
Final theses.

Additional sources of information used by the review panel:

There was no addition information have been used by the review panel.

## II. STUDY PROGRAMMES IN THE FIELD

	<b>First cycle/LTQF 6</b>	<b>Second cycle/LTQF 7</b>
Title of the study programme	<b>Molecular Biology</b>	<b>Molecular Biology</b>
State code	6121DX007	6211DX008
Type of study (college/university)	University studies	University studies
Mode of study (full time/part time) and nominal duration (in years)	Full-time studies	Full-time studies
Workload in ECTS	240 E	90
Award (degree and/or professional qualification)	Bachelor of Life Sciences. Study field: Molecular Biology	Master of Life Sciences. Study field: Molecular Biology
Language of instruction	Lithuanian	Lithuanian, English
Admission requirements	Persons with secondary education	Persons with a Bachelor's degree in Genetics, Microbiology, Molecular biology (two-track and main studies), Biophysics and Biochemistry may enrol in the study programmes of the life sciences field
First registration date	19 May 1997	8 July 2011-07-08
Comments (including remarks on joint or interdisciplinary nature of the programme, mode of provision)	–	–

### III. ASSESSMENT IN POINTS BY CYCLE AND EVALUATION AREAS

The first cycle of Molecular biology study field at Vilnius University is given a **positive** evaluation.

No.	Evaluation Area	Evaluation points <sup>1*</sup>
1.	Aims, learning outcomes, and curriculum	4
2.	Links between scientific (artistic) research and higher education	4
3.	Student admission and support	3
4.	Teaching and learning, student assessment and graduate employment	4
5.	Teaching staff	4
6.	Learning facilities and resources	5
7.	Quality management and public information	3
<b>Total:</b>		27

The second cycle of Molecular biology study field at Vilnius University is given a **positive** evaluation.

No.	Evaluation Area	Evaluation points <sup>2*</sup>
1.	Aims, learning outcomes, and curriculum	4
2.	Links between scientific (artistic) research and higher education	5
3.	Student admission and support	3
4.	Teaching and learning, student assessment and graduate employment	4
5.	Teaching staff	4
6.	Learning facilities and resources	5
7.	Quality management and public information	4
<b>Total:</b>		29

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1\*

**1 (unsatisfactory)** - the area does not meet the minimum requirements, there are substantial shortcomings that hinder the implementation of the programmes in the field.

**2 (satisfactory)** - the area meets the minimum requirements, but there are substantial shortcomings that need to be eliminated.

**3 (good)** - the area is being developed systematically, without any substantial shortcomings.

**4 (very good)** - the area is evaluated very well in the national context and internationally, without any shortcomings.

**5 (exceptional)** - the area is evaluated exceptionally well in the national context and internationally.

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## III. STUDY FIELD ANALYSIS

### AREA 1: STUDY AIMS, LEARNING OUTCOMES AND CURRICULUM

#### 1.1. Programmes are aligned with the country's economic and societal needs and the strategy of the HEI

During the visit, the experts review the learning resources for the delivery of the field studies, get acquainted with the students' written papers, theses, examination materials and other documents.

#### FACTUAL SITUATION

##### 1.1.1. Programme aims and learning outcomes are aligned with the needs of the society and/or the labour market

The Study Programs (SP) in Molecular Biology at Vilnius University (VU) is well aligned with the needs of Lithuania's society and labour market. The program is unique in the country, and facilitates the preparation of graduates to address a variety of challenges in the biotechnology, pharmaceutical, biomedical and other life sciences-related industries that allow it to cope with the growing demand for professionals in the life sciences sector in Lithuania.

The program also closely aligns with the mission and strategic objectives of the VU, which seeks to strengthen Lithuania's cognitive and creative potential, promote academic and social values, and educate active and responsible citizens. The objectives of the program focus on improving the quality of education, strengthening research, investing in the professional development of staff and increasing the impact on society and the state. Furthermore, cooperation with social partners and active industry participation in program development ensure that graduates are prepared to meet the demands of the labour market. Continuous feedback from employers and integration of their needs into the program design ensure that graduates are highly employable and able to contribute to the economic and social growth of Lithuania.

##### 1.1.2. Programme aims and learning outcomes are aligned with the HEI's mission, goals, and strategy

The programme shows strong alignment between the program's proposal and the VU mission, values and strategy. The program has been designed to strengthen the cognitive and creative potential of students, both nationally and internationally, and focuses on educating active and responsible citizens.

The university's strategic plan for the period 2021-2025 sets clear priorities to improve the quality of education, strengthen research, invest in staff and increase impact on society and the state. The Molecular Biology programs align with these priorities by focusing on continuous improvement in the quality of studies and research, as well as active participation in public activities and impact on society. The program strives to be a European university and develop research and studies at an international level. It focuses on creating an international study environment and training students according to international standards. The program not only focuses on academic development, but also on the personal and professional development of students and faculty.

#### ANALYSIS AND CONCLUSION (regarding 1.1.)

The study programs in Molecular Biology at VU are designed to meet the needs of Lithuanian society and the labour market. These programs stand out for their comprehensive approach, relevance and collaboration with social partners, which guarantees the training of highly trained professionals in the field of life sciences. The specialisation offered is unique in Lithuania and prepares graduates to face various challenges in the biotechnology, pharmaceutical, biomedical and other life sciences industries.

1.2. Programmes comply with legal requirements, while curriculum design, curriculum, teaching/learning and assessment methods enable students to achieve study aims and learning outcomes

## FACTUAL SITUATION

### 1.2.1. Programmes comply with legal requirements

The programs meet the legal requirements in force in Lithuania and in the university itself. The program's curriculum design is based on the Lithuanian Qualifications Framework, General Requirements for the Implementation of Studies, Study Cycle Descriptor and Life Sciences Study Group Descriptor, all of which are approved by ministerial order. Both SP comply with the requirements of current legislation.

### 1.2.2. Programme aims, learning outcomes, teaching/learning and assessment methods are aligned

The programs demonstrate a consistent approach to developing student competencies. Course descriptions (modules) are based on the competencies and learning outcomes specified in the curriculum description, ensuring consistency with the overall program objectives. All course descriptions clearly state the learning outcomes that the course aims to achieve. Teachers choose study and assessment methods that facilitate their alignment with the specific learning outcomes of each course and the program as a whole. This, in turn, allows for effective assessment of students' competency achievement. The Curriculum Program Committee (SPC) reviews course descriptions and study plans annually to ensure that all competencies provided in the program are adequately covered and that appropriate study and assessment methods are used.

Despite these positive aspects, it could be beneficial to carry out a more in-depth evaluation of the effectiveness of the study and assessment methods used to ensure that they really allow students to develop competencies optimally. For example, continuous and formative assessment could be encouraged and the deployment of student-centred methodologies promoted. Additionally, the inclusion of periodic student feedback could be considered to continually improve the program and ensure its relevance and effectiveness in developing competencies.

In the same vein, some type of student centered learning activities should be promoted in order to enhance the efficiency and quality of the formation. Some of them could be Project-based activities: i. Design projects that integrate concepts and skills from multiple areas of the biosciences and that require the practical application of knowledge; ii. Simulations and virtual laboratories: Use simulation software and platforms and virtual laboratories to provide students with hands-on experiences; iii. Problem-solving activities: Pose problematic situations or clinical cases related to biosciences and evaluate students' ability to identify and analyse problems, propose informed solutions and make informed decisions. iv. Digital portfolios, that allow students to document and reflect on their learning, through the incorporation of written works, projects, presentations and laboratory reports, among others; v. The organisation of debates and discussions on relevant topics that develops the ability of students to argue and defend their points of view, as well as to participate constructively in the exchange of ideas and conflict resolution. These activities allow the learning and the evaluation of not only theoretical knowledge, but also the critical thinking and problem-solving skills, which are essential in the field of biosciences.

### 1.2.3. Curriculum ensures consistent development of student competences

The formal structure and content of the programs adjust to the requirements of both first cycle and second cycle studies. For first cycle studies, it is ensured that students receive a wide range of scientifically based basic knowledge, develop practical skills in laboratories and acquire basic research methodological skills. On the other hand, for second cycle studies, it is guaranteed that students obtain specific specialised knowledge and acquire more advanced practical skills and methodological competencies.

Molecular Biology programs satisfy both academic and professional requirements by training professionals with broad competencies and prepared for independent research and professional activities. In addition, the contribution of the academic staff, who are active scientists at a national and international level, is highlighted, which ensures the quality and relevance of the education provided.

Despite these strengths, a possible limitation in this aspect could be the lack of emphasis on the development of specific skills and practical competencies throughout the program. While research methodological competencies are mentioned, it may be beneficial to provide specific examples of how these skills are cultivated throughout the curriculum. In addition, the participation of professionals from different institutions and from the international arena could be improved to further broaden the perspectives and experience offered to students.

#### 1.2.4. Opportunities for students to personalise curriculum according to their personal learning goals and intended learning outcomes are ensured

Overall, the programs provide a solid framework that allows students to tailor their educational experience to meet their individual needs and achieve their academic and career goals. Students have the option to select specific courses that align with their interests and learning objectives. They also have the opportunity to participate in academic exchanges. They are offered the possibility of studying foreign languages as part of their study plan. The program includes dedicated credits in general courses, providing students with the opportunity to gain knowledge and skills in areas beyond their primary discipline. The university has a procedure to recognize competencies acquired by students through non-formal education or self-education, which gives students the opportunity to build on their previous experiences and further personalise their study plan.

#### 1.2.5. Final theses (applied projects) comply with the requirements for the field and cycle

The programs meet the requirements of the field and the cycle planned for the final theses. The programs have a series of clearly defined regulations and procedures for the preparation, defence and storage of final theses. These include documents approved by the university and faculty, as well as methodological guidelines for the preparation of the thesis. Students have the opportunity to complete their final theses in research groups within the university or in collaboration with external institutions, allowing them to gain practical experience in the field of Molecular Biology. Supervisors are assigned to students to guide them throughout the thesis preparation process.

These are evaluated by a defence committee made up of experts in the field, including PhD scientists and representatives of social partners or external institutions. Representatives of social agents are actively involved in the thesis evaluation process, which guarantees the relevance and applicability of the research results to the external sector.

### **ANALYSIS AND CONCLUSION (regarding 1.2.)**

Vilnius University's Molecular Biology programs are well designed to meet legal requirements, develop student competencies in a coherent manner, and allow for curriculum customization. The participation of professionals and academics at the national and international level ensures the quality and relevance of the education provided.

Course descriptions are aligned with learning outcomes and overall program objectives. Teaching and assessment methods are selected to facilitate the achievement of these outcomes, and the Curriculum Committee reviews curriculum descriptions and plans annually to ensure adequate coverage of competencies. The structure and content of the programs ensure the development of skills in both first cycle and second cycle studies. First cycle students obtain basic scientific knowledge and practical skills, while second cycle students acquire specialised knowledge and advanced methodological skills. However, further evaluation of the effectiveness of study and evaluation methods, and the promotion of student-centred methodologies, is suggested.

The programs allow students to customise their educational experience based on their learning objectives and career goals. Students can select specific courses, participate in academic exchanges, and study foreign languages. In addition, the university recognizes skills acquired through non-formal education, allowing greater personalization of the study plan. The final works meet the requirements of the field and the study cycle. There are clear regulations for the preparation, defence and storage of thesis. Students can carry out their theses in research groups within the university or in collaboration with external institutions, gaining practical experience. Supervisors guide students and theses are evaluated by a committee of experts, including PhD scientists and representatives of social partners, ensuring the relevance and applicability of the research results.

As a whole, the SPs in Molecular Biology reach more than satisfactory levels that guarantee the achievement of the proposed formative objectives.

## AREA 1: CONCLUSIONS

<b>AREA 1</b>	<b>Negative - 1</b> Does not meet the requirements	<b>Satisfactory - 2</b> Meets the requirements, but there are substantial shortcomings to be eliminated	<b>Good - 3</b> Meets the requirements, but there are shortcomings to be eliminated	<b>Very good - 4</b> Very well nationally and internationally without any shortcomings	<b>Exceptional - 5</b> Exceptionally well nationally and internationally without any shortcomings
<b>First cycle</b>				<b>X</b>	
<b>Second cycle</b>				<b>X</b>	

### COMMENDATIONS

None

### RECOMMENDATIONS

To address shortcomings

None

For further improvement

1. To enhance a more in-depth evaluation of the effectiveness of the study and assessment methods used to ensure that they really allow students to develop competencies, through continuous and formative assessment and the deployment of student-centred methodologies and the inclusion of periodic student feedback.
2. To incorporate learning student centered activities, among them. Project-based activities, simulations and virtual laboratories, problem-solving activities, digital portfolios, debates and discussions on relevant topics.
3. It would be advisable to stimulate and promote a culture of continuous training and development to improve the pedagogical skills of teaching staff, contributing to the quality of teaching and learning. This can only be achieved if the institution's management deploys active policies that promote an academic culture in which the commitment to the quality of teaching, permanent innovation and a teaching and learning model in which students occupy a central and protagonist position. It could also be beneficial to encourage even more the formative assessment and the deployment of student-centred methodologies promoted. Additionally, the inclusion of periodic student feedback could be considered to continually improve the program and ensure its relevance and effectiveness in developing competencies.
4. In order to aspire to excellence in their field, their efforts could be expanded to promote student mobility and international collaboration. This could include expanding student exchange programs, creating more joint research opportunities with foreign institutions, and promoting international conferences and events. Likewise, professional internship opportunities in associated companies and organisations could be strengthened. This could be achieved by creating formal agreements with a greater number of companies and institutions, ensuring that internships are mandatory and offering financial support for students during their internships. Furthermore, given the rapid advancement in the field of Molecular Biology, the program should ensure that its curriculum is constantly updated to reflect the latest scientific and technological advances. This could be achieved by establishing a regular curriculum review process involving academics, industry professionals and other relevant stakeholders. Although the importance of communication and teamwork skills is highlighted, the program could more actively incorporate soft skill development into its curriculum. This could include courses dedicated to effective communication, leadership and project management, as well as opportunities to work in interdisciplinary teams on research projects. Finally, the program could offer more specific support for the transition to the labour market. This could include career counselling sessions, job search workshops, developing interview skills, and networking opportunities with potential employers.
5. To enhance the opportunity to tailor the educational student's experience and ensure greater customization, the inclusion of more elective course options and greater flexibility in the approval process of the individualised study plan could be considered.

## AREA 2: LINKS BETWEEN SCIENTIFIC (OR ARTISTIC) RESEARCH AND HIGHER EDUCATION

- 2.1. Higher education integrates the latest developments in scientific (or artistic) research and technology and enables students to develop skills for scientific (or artistic) research

### FACTUAL SITUATION

#### 2.1.1. Research within the field of study is at a sufficient level

During the last evaluation of academic institutions in Lithuania, the research quality, economic and social impact and viability of the research and experimental development activities in the Molecular Biology field at the VU were awarded the best scores (5), according to all criteria. Every year, the academic teachers employed at VU publish over 100 articles belonging to the field of Molecular Biology in journals indexed in Web of Science. Importantly, research in Molecular Biology is supported by over 20 international and over 100 national grants, funded by different agencies. In the field of Molecular Biology, the following subjects are most widely represented in research: healthy humans, disease prevention, diagnosis and treatment, genomics, biomolecules and biotechnology, changes in ecosystems, and protection and natural resources. Examples of cooperation of molecular biologists from VU with Lithuanian and foreign partners are numerous. They include conduction of collaborative projects together with researchers from Belgium, France, Italy, UK, Czech Republic, Spain, Germany, and others.

#### 2.1.2. Curriculum is linked to the latest developments in science, art, and technology

Curricula of most courses are updated as new discoveries in the field of Molecular Biology are made and published. The lecturers integrate results of their own research into the studies in several ways. One option is providing information on the latest scientific and technological achievements during lectures, seminars and workshops. Most courses are conducted by lecturers who perform research related to the content of the course. The latest compulsory literature is used in the course syllabus which is supplemented with the updated information on research and technology innovations, and the latest research by the teachers. The lecturer of a course is responsible for updating the course description and for the compliance of the study content with the latest information. The lecturer updates the list of compulsory and additional literature, which includes the latest scientific publications. New courses are being established to reflect latest breakthroughs in the field. An example is the course devoted solely to CRISPRs and CRISPR/Cas technology which presents the latest achievements in this area. Importantly, the diploma theses are prepared in quite modern laboratories. Moreover, students participate in the events organised by VU, like public lectures, seminars and conferences.

#### 2.1.3. Opportunities for students to engage in research are consistent with the cycle

Students of Molecular Biology can contribute to the research carried out at VU even from the first year of their first-cycle study. Irrespective of such opportunities, from the sixth semester, research work in a scientific laboratory is mandatory for each student. In the second-cycle curriculum, it is indicated that students are obligated to conduct research work in a scientific laboratory, starting from the first semester. Therefore, all students in the field are involved in research activities. Many students have the opportunity to participate directly in various scientific projects implemented in laboratories where they are preparing their diploma theses. In such cases, students are encouraged to prepare and give presentations at scientific conferences, both national and international (if the results are interesting enough). If the results are especially valuable,

students are co-authors of research articles. During the last four years, 8 scientific articles were co-authored by students of the first-cycle, and 31 scientific articles were co-authored by students of the second-cycle of Molecular Biology.

### ANALYSIS AND CONCLUSION (regarding 2.1.)

The Molecular Biology field is highly evaluated in the national evaluation system. Academic teachers publish significant articles in recognized journals. Latest developments in the field of Molecular Biology are reflected in both curricula of the first- and second-cycle of Molecular Biology studies, and details of the courses. In fact, new information is added to existing courses, and from time to time new courses are introduced if some research breakthroughs occur. Students are routinely involved in research activities. All of them perform their diploma thesis using experimental approaches. In the case of obtaining especially important results, students become co-authors of research articles. In this light, there is no doubt that the curriculum integrates the latest developments in scientific research and technology and enables students to develop skills for scientific research.

## AREA 2: CONCLUSIONS

AREA 1	Negative - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle				X	
Second cycle					X

### COMMENDATIONS

1. Newly gained knowledge is added to existing courses, and new courses are introduced if some research breakthroughs occur.
2. Students can contribute to the research carried out at the University even from the first year of their first-cycle study.
3. Research articles are relatively often co-authored by students of the first- and second-cycle of Molecular Biology.

### RECOMMENDATIONS

To address shortcomings

None

For further improvement

None

## AREA 3: STUDENT ADMISSION AND SUPPORT

### 3.1. Student selection and admission is in line with the learning outcomes

#### FACTUAL SITUATION

##### 3.1.1. Student selection and admission criteria and procedures are adequate and transparent

At VU, the student selection and admission criteria for the Molecular Biology programme are adequate, transparent, and aligned with the programme's learning outcomes. Admission is conducted through the national system for applying to higher education institutions - LAMA BPO. The number of students choosing this study programme remains stable. Although it is evident that the study program is largely popular, some discussions took place about the possibility to accept more students to the study program. Contrary to the study program popularity, if more students were to be admitted, the study program would have to lower the admission grade, which would decrease the prestige of the program and the possible problem of teaching staff shortage in this case is a threat. Therefore, the number of students being admitted now correlates well with learning outcomes, students get enough personal attention, and the study quality in general can stay high this way.

##### 3.1.2. Recognition of foreign qualifications, periods of study, and prior learning (established provisions and procedures)

VU has established clear procedures for recognizing foreign qualifications, aligned with national and international standards. This ensures that students from diverse educational backgrounds are assessed fairly for the Molecular Biology programme. However, challenges remain regarding the timely processing of these recognitions, occasionally impacting the application process.

#### ANALYSIS AND CONCLUSION (regarding 3.1.)

Vilnius University's Molecular Biology Master's programme demonstrates a transparent and accessible admission process that aligns well with the programme's learning outcomes. The use of the national LAMA BPO system ensures clarity and fairness in student selection. Additionally, the university has established advanced procedures for recognizing foreign qualifications, aligned with national and international standards, to accommodate a diverse student community. However, there is room for improvement in the timely processing of foreign qualifications and in enhancing communication from the Study Program Committee (SPK), since this has been noted during the visit with students. It was mentioned that students are often not informed about what changes are being made in their study program etc. Addressing these issues will further streamline the admission process and enhance the overall student experience, ensuring that all students, both local and international, are adequately prepared and supported for advanced studies in Molecular Biology.

### 3.2. There is an effective student support system enabling students to maximise their learning progress

#### FACTUAL SITUATION

##### 3.2.1. Opportunities for student academic mobility are ensured

VU ensures that students in the Molecular Biology Master's programme have significant opportunities for academic mobility. The university participates in international exchange programs like Erasmus+, which are



well-integrated into the curriculum. A national tendency has been noted, that the number of Erasmus+ program applicants is decreasing, which calls for an innovative approach towards attracting more students to enrol in international exchange and other mobility programs. This leads to a conclusion that participation in various mobility programs rates among Molecular Biology students could be improved, indicating a need for further encouragement and support.

### 3.2.2. Academic, financial, social, psychological, and personal support provided to students is relevant, adequate, and effective

The Molecular Biology Master’s programme at VU provides comprehensive support across academic, financial, social, psychological, and personal aspects. However, several issues were noted. First, there is a need for clearer communication from the Study Program Committee (SPK). Secondly, some teachers do not adequately listen to student reports. Regarding the survey feedback, it seems that students do not receive feedback on surveys. Also, it should be noted that the only external funding available is from the Lithuanian National Research Council (LMT), which is somewhat scarce. Another issue is related with the Bioinformatics and Statistics courses. These subjects have been noted as particularly problematic for students. It has been noted that there is insufficient access to psychological support due to a shortage of psychologists and filled timetables and that there are limited options for internships in the research field. Finally, master's students cannot apply for LMT funding due to the 1.5-year programme length, as first-year students are ineligible, and second-year students are nearing graduation.

### 3.2.3. Higher education information and student counselling are sufficient

VU provides detailed information and counselling services, ensuring students are well-informed about their academic and career opportunities. However, students have expressed concerns about the abstract nature of the study programme descriptions on the website, which often only include course names without sufficient detail. This leads to students being misinformed about the program content, which often results in students dropping out.

## ANALYSIS AND CONCLUSION (regarding 3.2.)

The Molecular Biology Master's programme at Vilnius University offers substantial opportunities for academic mobility through well-integrated international exchange programs such as Erasmus+, although further encouragement and support are needed to increase participation rates. The programme provides comprehensive academic, financial, social, psychological, and personal support, significantly contributing to student success and well-being. However, improvements are needed in several areas, including better communication from the Study Program Committee (SPK), increased responsiveness and feedback from teachers, additional funding sources, enhanced bioinformatics and statistics education, expanded psychological support, and more internship opportunities. Furthermore, the university should enhance the transparency and detail of the study programme descriptions on its website to help students make more informed decisions about their studies. Addressing these issues will ensure a more effective and supportive learning environment, attracting and retaining a diverse and qualified academic community.

## AREA 3: CONCLUSIONS

AREA 1	Negative - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are	Good - 3 Meets the requirements, but there are	Very good - 4 Very well nationally and internationally	Exceptional - 5 Exceptionally well nationally and internationally
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		substantial shortcomings to be eliminated	shortcomings to be eliminated	without any shortcomings	without any shortcomings
<b>First cycle</b>			<b>X</b>		
<b>Second cycle</b>			<b>X</b>		

## COMMENDATIONS

1. Both 1<sup>st</sup> and 2<sup>nd</sup> cycle students appear to be satisfied with the study quality and the environment of the university overall.
2. Students expressed their gratitude about the variety of social activities that are offered by Vilnius university, which is highly commendable.

## RECOMMENDATIONS

### To address shortcomings

1. Communication: The Study Program Committee (SPK) should establish clear communication channels with students. Regular newsletters, announcements, and a dedicated website can help disseminate important information. SPK meetings should be scheduled periodically to discuss program updates, changes, and address student concerns.
2. Teacher Responsiveness: SPK should encourage teachers to actively listen to student feedback. Regular teacher-student meetings or open forums can facilitate better communication. Implement a system for students to report issues anonymously, ensuring honest feedback.
3. Survey Feedback: After conducting surveys, SPK should analyse the results promptly. Provide actionable feedback to students based on survey outcomes, addressing concerns and implementing necessary changes.
4. Funding: Explore additional external funding sources beyond the Lithuanian National Research Council (LMT). Collaborate with industry partners, alumni, and other organisations. Advocate for increased funding opportunities for students pursuing research projects.
5. Bioinformatics and Statistics: Offer additional support for students struggling with these subjects. Consider workshops, tutoring, or peer-assisted learning. Review the curriculum to ensure it aligns with students' needs and provides adequate resources.

### For further improvement

None

## AREA 4: TEACHING AND LEARNING, STUDENT ASSESSMENT, AND GRADUATE EMPLOYMENT

### 4.1. Students are prepared for independent professional activity

#### FACTUAL SITUATION

##### 4.1.1. Teaching and learning address the needs of students and enable them to achieve intended learning outcomes

There are various levels of student progress monitoring; from the course unit level to the entire study program level. The importance of providing regular and effective feedback to students at all stages of the

learning process is recognized. This is achieved through various forms of feedback, such as individual and group discussions, written comments, remote consultations, and review of tasks and projects. A variety of technological tools, such as automated assessment systems and virtual learning platforms, are used to provide feedback and track student progress objectively and efficiently.

A possible limitation is the lack of specific mention of the diversity of learning styles and individual needs of students and how the different ways in which students learn are addressed.

#### 4.1.2. Access to higher education for socially vulnerable groups and students with individual needs is ensured.

VU has implemented a variety of measures to ensure that socially vulnerable groups and students with individual needs have equitable access to higher education. These actions reflect the institution's commitment to diversity, inclusion and equal opportunities in education.

The university has developed a five-year strategy to promote diversity and equality, which includes specific objectives related to disability, gender equality, cultural diversity, social exclusion and discrimination. Physical environments are adapted, compensatory equipment is provided, and advice is offered to students and teachers on accessibility issues. A range of support services are offered for students with disabilities, including counselling, access to compensatory equipment and adaptations to the study environment and assessment methods.

Regular seminars and conferences on various types of disabilities are organised to raise awareness in the university community and promote greater understanding and support for students with special needs. Direct financial assistance is offered to students from socially disadvantaged groups or with special needs, including the possibility of reducing tuition fees by 90% per semester. In addition, special scholarships are awarded to talented students from disadvantaged families and specific scholarships are established for students from neighbouring countries facing socio-economic or political difficulties. Academic flexibility is provided to students facing personal or health difficulties, allowing them to suspend their studies for up to one year or take an academic leave for personal reasons, illness, pregnancy or childcare, with the presentation of supporting documentation.

#### **ANALYSIS AND CONCLUSION (regarding 4.1.)**

Regarding teaching and learning, methodologies are designed to adapt to the needs of students and allow them to achieve the intended learning outcomes. Emphasis is placed on the importance of providing regular and effective feedback to students at all stages of the learning process. In addition, the active participation of students in the evaluation and improvement of the study program is mentioned through student representatives in the Study Program Committee (SPC) meetings. As a whole, the SPs in Molecular Biology reach more than satisfactory levels that guarantee the achievement of the proposed training and formative objectives.

However, the lack of specific approaches to the diversity of learning styles and the individual needs of students is noted as a possible limitation. Although monitoring student progress and providing regular feedback is addressed, detailed information is not provided on how the different ways in which students learn or the specific needs of those with learning difficulties or different learning styles are addressed.

Regarding access to higher education for socially vulnerable groups and students with individual needs, it is highlighted that VU has implemented various measures to ensure equitable access in the SP in Molecular Biology. A wide range of support services are offered for students with disabilities, including counselling and adaptations to the environment and assessment methods. Individualised study plans have been established to adapt the learning process to the specific needs of each student with disabilities. However, the lack of detailed information on how the specific needs of different types of disabilities and socially vulnerable groups are addressed is identified as a possible weakness. Although general actions are mentioned, there may be a lack of clarity on concrete measures to ensure accessibility and individualised support.

#### 4.2. There is an effective and transparent system for student assessment, progress monitoring, and assuring academic integrity

### FACTUAL SITUATION

#### 4.2.1. Monitoring of learning progress and feedback to students to promote self-assessment and learning progress planning is systematic

A variety of teaching and learning methods are used, including lectures, seminars, practical laboratory work and self-study. Although summative evaluation is proposed as the most general, exams apparently continue to be the predominant form of evaluation. And also, although regular feedback is mentioned, its importance in the learning process could be further emphasised through the implementation of specific strategies to provide timely and constructive formative feedback that helps students continually improve. Additional approaches could be explored to encourage active student participation in the educational process, such as the use of collaborative learning activities or student-led research projects.

#### 4.2.2. Graduate employability and career are monitored

VU uses a Career Tracking Information System (CTIS) called karjera. It to monitor graduate success. This system gathers data on graduates' careers for five years after graduation, updating it twice a year. Data comes from government databases like the student register and social security records. This data shows things like employment status and type of employment contract. Also surveys are sent to graduates one year, three years, and five years after graduation. These surveys ask graduates about their experiences finding jobs, establishing themselves in their careers, and overall career satisfaction.

VU data reveals a trend of graduates combining work and further studies. The percentage of employed Molecular Biology bachelor's graduates who pursued a master's degree rose significantly from 5% to 44% within three years. Overall, a substantial portion of employed graduates (44% to 80%) worked in fields closely related to their studies, indicating strong alignment between the program and graduate career paths.

Overall the employment rate is good, ranging from 75% to 83% for the 2nd cycle study programme. Experts visiting noticed that former students really appreciate the education they received in the program, especially practical skills after 1st cycle. A lot of them have the chance to pursue further studies in a Ph.D. program in Lithuania and abroad in highly ranked Universities. Employers rank study programme graduates among top best employees, they are in high demand in biotechnology companies and research institutions in Lithuania.

#### 4.2.3. Policies to ensure academic integrity, tolerance, and non-discrimination are implemented

There are specific regulations, such as the Code of Academic Ethics of Vilnius University, which defines general ethical standards for the academic community, including students and staff. This code addresses issues such as plagiarism, fraud and academic corruption. Measures are used to ensure academic integrity during examinations, such as proctoring by student representatives and the use of electronic plagiarism detection systems.

There are procedures established to address cases of violations of academic integrity, as well as intolerance and discrimination. These procedures include specific committees charged with investigating and resolving these cases in a fair and confidential manner. The existence of a dedicated hotline allows any member of the academic community to report violations of academic ethics or cases of intolerance and discrimination. The absence of academic disputes or complaints related to academic ethics in the last three years is notable, suggesting that the established mechanisms are working effectively to prevent and address violations of academic integrity.

To improve the program, it is suggested to implement academic integrity education and awareness programs for students and staff, which would help prevent violations before they occur; implement initiatives that actively promote diversity and inclusion on campus, which would create a more welcoming and respectful environment for all members of the university community.

#### **4.2.4. Procedures for submitting and processing appeals and complaints are effective**

There are specific regulations and commissions in charge of addressing complaints and claims related to academic ethics, tolerance and non-discrimination are mentioned. The university has a dedicated hotline to report violations of academic ethics or cases of intolerance and discrimination. These complaints are treated confidentially and receive assistance from a dedicated team of psychologists and lawyers.

There is a procedure for appealing decisions related to academics. Students who do not agree with the examination procedure or evaluation may file a complaint with the Appeals Commission of the Central Academic Unit (CAU) within 5 days of the publication of the examination scores. It is noted that there have been no academic disputes or complaints related to academic ethics in the last three years. While this may indicate overall effectiveness in preventing and resolving problems, it may also be helpful to conduct ongoing monitoring to ensure that procedures remain effective in the future.

#### **ANALYSIS AND CONCLUSION (regarding 4.2.)**

In terms of monitoring learning progress and providing feedback to students, the use of a variety of teaching and learning methods stands out, as well as the importance attributed to feedback throughout the learning process. However, the need to further emphasise the importance of formative and timely feedback, as well as to explore additional approaches to encourage active student participation, is identified as an area for improvement. Continuous integration of educational technology is also suggested as a way to improve program accessibility and interactivity, as well as promote student-centred strategies that encourage autonomy and constructive learning.

In relation to policies to ensure academic integrity, tolerance and non-discrimination, the existence of specific regulations is highlighted, such as the Code of Academic Ethics of Vilnius University, as well as measures to guarantee academic integrity during examinations. There are procedures to address cases of violations of academic integrity, intolerance and discrimination and a dedicated hotline for reporting such incidents is

highlighted. The implementation of education and awareness programs on academic integrity, diversity and inclusion is suggested, as well as initiatives that actively promote diversity and inclusion on campus.

Regarding the procedures for filing and processing appeals and complaints, it is noted that specific regulations and commissions provide a framework for the presentation and processing of cases related to academic ethics, tolerance and non-discrimination. There is a hotline to report violations of academic ethics or cases of intolerance and discrimination is highlighted and a procedure for appealing decisions related to academic evaluation.

As a whole, the SPs in Molecular Biology reach more than satisfactory levels that guarantee the achievement of the proposed training and formative objectives.

## AREA 4: CONCLUSIONS

AREA 1	<b>Negative - 1</b> Does not meet the requirements	<b>Satisfactory - 2</b> Meets the requirements, but there are substantial shortcomings to be eliminated	<b>Good - 3</b> Meets the requirements, but there are shortcomings to be eliminated	<b>Very good - 4</b> Very well nationally and internationally without any shortcomings	<b>Exceptional - 5</b> Exceptionally well nationally and internationally without any shortcomings
<b>First cycle</b>				X	
<b>Second cycle</b>				X	

### COMMENDATIONS

None

### RECOMMENDATIONS

To address shortcomings

None

For further improvement

1. Although the teaching methods used are varied, it could be beneficial to incorporate other innovative pedagogical techniques, such as project-based learning, collaborative learning and gamification.
2. To implement specific strategies to provide timely and constructive formative feedback that helps students continually improve. Also it would be advisable to encourage active student participation in the educational process through the use of collaborative learning activities or student-led research projects. To improve and enhance remote teaching through the use of online learning platforms, virtual collaboration tools and digital educational resources. Likewise, it is recommended to promote teaching-learning strategies focused on students, seeking to promote personal autonomy and constructive learning.
3. Establish individualised support services for students who require additional assistance due to learning difficulties or specific needs. This could include personalised tutoring, adaptations to the learning environment, and access to additional resources such as assistive technology. Provide training opportunities for faculty and staff on diversity of learning styles and strategies to support

students with individual needs. This could help create an inclusive environment where all students feel valued and supported in their learning process.

4. In order to enhance academic integrity, education and awareness for students and staff, which would help prevent violations before they occur, it would be useful to implement initiatives that actively promote diversity and inclusion on campus.
5. In order to clarify the concrete measures to ensure accessibility and individualised support some actions could be addressed in order to provide detailed information on how the needs of different types of disabilities and socially vulnerable groups are addressed.
6. The great advance of artificial intelligence (AI) is a challenge for the current teaching-learning system. AI can and should be used by students in an ethical and critical way in order to promote creativity, understanding and skills, but it can also be used in assessment methods. Some of the tests that can be included for the responsible use of AI are:
  - 6.1. Project-based evaluation: Design projects that integrate concepts and skills from multiple areas of the biosciences and that require the practical application of knowledge;
  - 6.2. Simulations and virtual laboratories: Use simulation software and platforms and virtual laboratories to provide students with hands-on experiences;
  - 6.3. Assessment of problem-solving ability: Pose problematic situations or clinical cases related to biosciences and evaluate students' ability to identify and analyse problems, propose informed solutions and make informed decisions. This form of evaluation allows us to evaluate not only theoretical knowledge, but also critical thinking and problem-solving skills, which are essential in the field of biosciences;
  - 6.4. Digital portfolios: Digital portfolios allow students to document and reflect on their learning. Through the incorporation of written works, projects, presentations and laboratory reports, among others, they place students in a favourable position so that they can reflect and demonstrate their progress and the development of their skills over time;
  - 6.5. Evaluation through debates and discussions: The organisation of debates and discussions in teaching sessions on relevant topics in the biosciences allows evaluating the ability of students to argue and defend their points of view, as well as to participate constructively in the exchange of ideas and conflict resolution.

## **AREA 5: TEACHING STAFF**

### **5.1. Teaching staff is adequate to achieve learning outcomes**

#### **FACTUAL SITUATION**

- 5.1.1. The number, qualification, and competence (scientific, didactic, professional) of teaching staff is sufficient to achieve learning outcomes



Currently, 79 VU teachers are involved in education at Molecular Biology first- and second-cycle stages. Among them, there are 16 professors or research professors, 20 associate professors or senior researchers, 17 assistant professors or researchers, 14 teaching assistants or research assistants, and 12 lecturers. Lecturers working at a minimum part time and with a minimum of 3 years of teaching experience constitute about 95% of the total number of lecturers. The teachers publish about 100 good-level research articles per 4 years, some of them are top-level papers, describing breakthroughs in specific areas of Molecular Biology. This is sufficient to assess the excellent scientific level of the teachers. During the period analysed, the change in academic staff was negligible which reflects the system of employment at VU. PhD students are included in the Molecular Biology study program, and they conduct practical training, laboratory works, as well as supervise final theses and internships for students in the first-cycle.

However, although it has been recorded that the university offers training courses in teaching skills, the impression that persists is that this is not focused on the methodological aspects that facilitate educational innovation by promoting a focused teaching and learning student centered model, more active and participatory than the traditional one based on the activity of the teaching staff and master classes. It is considered that it would contribute significantly to improving the quality of teaching if the change in conception from a teacher-centered to a student-centered model is gradually promoted.

In the same vein, there is an area for improvement related to the promotion of quality of teaching. It is observed a lack of a systematic, comprehensive and periodic evaluation protocol of the quality of teaching activity. The evidence provided shows that it is currently based on the results of satisfaction surveys that are passed on to students, which, while undoubtedly relevant evidence, is nevertheless far from being able to provide a complete and rigorous measure of this dimension so important of the quality of the study programs. It is therefore necessary to consider the implementation of a system of these characteristics that can contribute not only to the improvement of the quality of teaching but also to the professional promotion of teachers as teachers.

## **ANALYSIS AND CONCLUSION (regarding 5.1.)**

The number of teachers is quite large and they are active in conducting research and publishing their results which are often of very high- or even top-level quality. The fluctuation of the teachers is very limited, reflecting the system of employment. Nevertheless, this is quite risky as it might result in blocking possibilities to employ young promising researchers due to lack of open positions. Involvement of PhD students into didactic activities is quite a positive element of the system.

5.2. Teaching staff is ensured opportunities to develop competences, and they are periodically evaluated

### **FACTUAL SITUATION**

#### **5.2.1. Opportunities for academic mobility of teaching staff are ensured**

The teachers can improve their research professional competences by participating in exchange programs and various seminars and training. They are organised by VU and other organisations, international networks and associations. Academic exchanges are possible through different programs, like ERASMUS+, NORDPLIUS, ISEP. The visits include qualification training courses, monitoring visits, international cooperation visits, teaching visits and staff qualification training visits. Moreover, bilateral agreements also provide opportunities to increase the mobility of teachers. Inviting foreign researchers to present talks is a good



practice to increase the diversity and level of lectures. During the last four years, some 60 guest lecturers from 18 countries visited VU. Among them, there were 8 Nobel Prize winners and 1 Warren Alpert Foundation Prize winner gave lectures. Most of the guest lecturers came from the USA, the United Kingdom, and Germany. The improvement of competences of the teachers is assessed during the certification procedure. It is conducted every 5 years. In addition, annual interviews are performed.

### 5.2.2. Opportunities for the development of the teaching staff are ensured

The teachers can participate in various programs to increase their pedagogical competencies. Examples are the program of developing basic pedagogical competencies and the program for developing pedagogical competencies. The former includes several courses, like “Active learning methods – workshop”, “ICT integration in the teaching process”, “Challenges and advantages of student group work from the perspective of lecturers”, “Working with culturally mixed student groups”. The latter consists of some more advanced courses, like “Communication skills”, “Supervision for final (written) papers”, “Blended learning in university studies”, “Clinical-case analysis”, “Use of visual material in lectures”, “Student motivation: methodology of decoding”.

However, there is both a lack of formation opportunities on the methodological aspects that facilitate educational innovation and the promotion of the teaching and learning student centered model as well as a systematic, comprehensive and periodic evaluation protocol of the quality of teaching activity. In this regard, the evidence provided shows that it is currently based on the results of satisfaction surveys that are passed on to students, which, while undoubtedly relevant evidence, is nevertheless far from being able to provide a complete and rigorous measure of this dimension so important of the quality of the study programs. It is therefore necessary to consider the implementation of a system of these characteristics that can contribute not only to the improvement of the quality of teaching but also to the professional promotion of teachers as teachers.

On the other hand, opportunities in developing research competences are quite scarce. The teachers can improve their research competences mainly by participating in scientific conferences. They make presentations and expand their experience by listening to other presentations and participating in discussions. Some trainings in the fields of preparing research grants and/or conducting and managing research projects would be desirable, especially for younger teachers.

### **ANALYSIS AND CONCLUSION (regarding 5.2.)**

There are many opportunities for the mobility of academic teachers of VU, and quite many of them use the possibility of visiting other academic institutions. Especially valuable are visits of foreign researchers who give lectures and are open for discussions. Visits of Nobel Prize winners are great opportunities to talk to top-level world scientists. There are possibilities to develop pedagogical competencies, while such possibilities are quite scarce regarding both, the pedagogical and research competences. This might be improved. The teachers are evaluated regularly, while there is not a systematic, comprehensive and periodic evaluation protocol of the quality of teaching activity, and thus, the effects of such evaluations are not clear, especially whether excellent or poor evaluation results may have significant consequences for the teachers (positive or negative).

## AREA 5: CONCLUSIONS

AREA 1	<b>Negative - 1</b> Does not meet the requirements	<b>Satisfactory - 2</b> Meets the requirements, but there are substantial shortcomings to be eliminated	<b>Good - 3</b> Meets the requirements, but there are shortcomings to be eliminated	<b>Very good - 4</b> Very well nationally and internationally without any shortcomings	<b>Exceptional - 5</b> Exceptionally well nationally and internationally without any shortcomings
<b>First cycle</b>				<b>X</b>	
<b>Second cycle</b>				<b>X</b>	

### COMMENDATIONS

1. Excellent scientific level of the teachers.
2. Inviting top-level scientists (including Nobel Prize winners) from different countries to present lectures and seminars.

### RECOMMENDATIONS

To address shortcomings

None

For further improvement

1. It is considered that it would contribute significantly to improving the quality of teaching if the change in conception from a teacher-centered to a student-centered model is gradually promoted.
2. It advised the implementation of a systematic, comprehensive and periodic evaluation protocol of the quality of teaching activity as a structural measure that would contribute to the improvement of the quality of teaching. Along the same line, it is considered that only to the extent that academic promotion contemplates the quality of the teaching provided, this will be assumed by the teaching staff. Therefore, it is suggested that it be given a balanced weight with that of the quality of scientific production.
3. To broaden the possibility of improving research competences by teachers, especially at the early stages of the career.

## AREA 6: LEARNING FACILITIES AND RESOURCES

### 6.1. Facilities, informational and financial resources are sufficient and enable achieving learning outcomes

#### FACTUAL SITUATION

##### 6.1.1. Facilities, informational and financial resources are adequate and sufficient for an effective learning process

There are 24 lecture rooms available, with seating capacity between 28 and 360 places. For practical classes, there are 12 laboratories with capacity for a maximum of 24 students. For bioinformatic purposes, 3 computer classrooms are provided. For students performing diploma works, some 30 research laboratories are available, where students join research projects.

Lecture rooms are equipped with tables, chairs, boards, screens, multimedia equipment, computers, and some have TV monitors and teleconferencing equipment. All rooms have access to computers and multimedia equipment. All rooms have cable internet and wireless internet to connect to computers or multimedia equipment. Educational laboratories are equipped with the appropriate equipment. Biochemistry, Molecular Biology and biotechnology laboratories are equipped with biochemical and molecular research equipment, like protein and DNA division, purification and analysis equipment, PCR, RT-PCR and electrophoresis sets, gel imaging equipment, laminar flow and extraction cabinets, and centrifuges. These laboratories are also equipped with auxiliary rooms, like cold room, thermostatic room, centrifuge room, electrophoresis room, and chemical reagent storage room. There are also cytogenetic, cytology, botany, zoology and microbiology laboratories, where each student workplace is equipped with a microscope, and the lecturer's workplace is equipped with microscopes and video cameras. Moreover, microbiology, cytogenetics and cytology laboratories are equipped with extraction cabinets, laminar flow boxes, sterile rooms, vessel preparation room, washing facilities, autoclave, *Drosophila* room.

Library contains large collections of books and journals, and provides sufficient access to electronic publications.

##### 6.1.2. There is continuous planning for and upgrading of resources.

Requirements for resources are discussed by the departments and research groups. Applications are then submitted to the administration. Depending on the funds available at that time, the required resources can be purchased. However, it appears that these funds are very limited, thus, planning and upgrading resources is very difficult.

In addition to the centralised supply of resources, individual funds are provided for students preparing final theses for the purchase of materials and reagents. Last year, 400 euros were allocated to students of the first-cycle, and 500 euros were allocated to students in the second-cycle of Molecular Biology. The existence of such funds is a positive sign, however, the amounts offered are very low, evidently not sufficient to cover actual costs. A great help is sponsoring programs by collaborating biotechnological companies, like Thermo Fisher Co.

## ANALYSIS AND CONCLUSION (regarding 6.1.)

Lecture rooms, computer rooms, laboratories for practical classes, and research laboratories are well equipped. The library has a large collection of books and journals and provides access to electronic publications. Such infrastructure provides very good conditions for teaching and conducting research. Planning and upgrading resources is more problematic, mainly due to restricted funds. Increasing the amount of money available for these purposes might be one of the most important, while also most challenging, activities in near future. Collaboration with biotechnological companies is one of the good things facilitating modernisation of the equipment.

## AREA 6: CONCLUSIONS

AREA 1	Negative - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle					X
Second cycle					X

## COMMENDATIONS

1. Excellent equipment in laboratories, including those prepared for practical classes for students.
2. Extensive collaboration with biotechnological companies which facilitates modernisation of the equipment.

## RECOMMENDATIONS

To address shortcomings

None

For further improvement

None

## AREA 7: QUALITY ASSURANCE AND PUBLIC INFORMATION

- 7.1. The development of the field of study is based on an internal quality assurance system involving all stakeholders and continuous monitoring, transparency and public information

### FACTUAL SITUATION

#### 7.1.1. Internal quality assurance system for the programmes is effective

VU set up a system to ensure the quality of their educational programs. This system follows European higher education standards and focuses on continuous improvement. Quality management is focused on various aspects starting from designing, monitoring, and evaluating their programs to tracking how students learn and collecting feedback from students, teachers, employers, and partners.

A study programme committee (SPC) is responsible for each program to ensure its quality and make ongoing improvements. This committee includes teachers, student representatives, and people from relevant workplaces (social partners). The SPC analyses various data such as how many students are admitted, their test scores, and their satisfaction with the program and courses, review student workload, etc. to ensure the Molecular Biology program's quality and keeps it up-to-date. Overall, the SPC acts as a quality control team for the Molecular Biology program, making sure it stays effective and relevant for students entering the workforce. The committee works together with a LSC college of studies that includes representatives from each program's committee and student representatives. This council helps ensure all programs within the school are balanced and avoid overlap. They also share best practices with each other.

The SPC considers changes to field study programmes and if the changes are substantial, they are considered and approved by the LSC Council, the process is supervised by the VU Study Quality and Development Department. Overall the quality system is working efficiently, a high-quality level for the study programme in research and teaching is achieved. This leads the LSC to be a centre of excellence in Lithuania.

However, it advised the implementation of a systematic, comprehensive and periodic evaluation protocol of the quality of teaching activity as a structural measure that would contribute to the improvement of the quality of teaching. Along the same line, it is considered that only to the extent that academic promotion contemplates the quality of the teaching provided, this will be assumed by the teaching staff.

#### 7.1.2. Involvement of stakeholders (students and others) in internal quality assurance is effective

The involvement of social partners (companies and institutions) helps Vilnius University improve the quality of its programs. Social partners help design the program structure, identify job market needs for graduates, and suggest improvements to courses and final thesis projects. For example, they helped decide to keep a focus on practical experience in theses. Social partners offer thesis topics, provide facilities for research, and participate in thesis defence committees. This keeps them informed about student research and allows them to suggest future research directions. Social partners provide opportunities for student internships and supervise student theses, giving students valuable real-world experience. Social partners give lectures and seminars to students, keeping them updated on industry trends and practices.

VU recognizes the value of alumni in maintaining the quality of the Molecular Biology program. Alumni are invited to participate in meetings, conferences, and discussions with students and other stakeholders. Some alumni even become social partners, contributing to the program in ways mentioned previously (e.g., suggesting internship opportunities, reviewing theses). Alumni input is particularly valued when it comes to

student work placements and finding mentors. The university has a formal Alumni Society and is currently developing a strategy to further strengthen relationships with alumni, including a platform update and expanded services.

The study programme is very tightly cooperating with social partner ThermoFisher scientific. Two members from this institution are members of SPC, numerous representatives giving lectures, are members of defence committees. The expert panel sees as an area of improvement to involve other social partners in quality management more intensively to reflect the needs of growing modern biotechnology in Lithuania.

Questioning on the study programme improvement possibilities involving more social partners is advised. Alumni and social partners during meetings with experts reflected the need to have improved computational biology, bioinformatics, and data science skills for the graduates.

#### 7.1.3. Information on the programmes, their external evaluation, improvement processes, and outcomes is collected, used and made publicly available

VU uses a system called VUSIS to manage and track study programme related data. This system stores information on admissions, student records, course enrolment, grades, and thesis topics. Faculty can also use VUSIS to enter grades, upload course materials, and view student lists.

VU gathers feedback on the quality of studies through various surveys. Students are surveyed throughout their academic journey, from their first year to after graduation. These surveys ask students about their experience with specific courses, instructors, the overall program, and career preparation. Teachers receive the results of student course evaluations so they can improve their teaching methods and course content. Program committees also use this data to identify areas for improvement in the program itself. University administrators receive feedback to assess the performance of faculty and departments.

Overall, VU uses a multi-layered approach to monitor and improve the quality of the study programme. This includes a data management system, student surveys, and feedback sharing with faculty and administrators.

Experts visiting noticed that actions made to improve the study programme especially after students surveys should be better communicated back to students. Students often are not aware if provided feedback was noticed and useful. It would be useful to improve communication on changes introduced that are based on student surveys, pay more attention to constantly complained areas.

#### 7.1.4. Student feedback is collected and analysed

VU conducts electronic surveys twice a semester to gather student feedback on specific courses and overall program satisfaction. This data is accessible to students, teachers, program committees, and university administrators. The results are positive, with most students reporting satisfaction with course content, teaching quality, and overall studies. They also appreciate opportunities to express their opinions and work on challenging assignments. Students who recommend the program often cite positive aspects like friendly teachers, good facilities, and practical training. However, some students suggest improvements like more focus on certain topics or a lighter workload.

The program committee reviews student survey data and feedback from student representatives during meetings. This feedback directly influences the program. For example, a lecturer added more material on molecular physics and optics based on student input. Another course was reduced in complexity and moved

to an earlier semester based on student feedback. In response to student requests, the program also increased the number and variety of elective courses offered. Overall, Vilnius University uses student feedback to continuously improve the quality of the Molecular Biology program.

During external evaluations, experts noted that while some courses like "Molecular Biology" receive very positive evaluations, others consistently receive negative feedback in student surveys. Despite these negative evaluations, students don't feel that significant changes are being made and their feedback is being considered. It's crucial to ensure that quality management tools are applied consistently across all courses and teachers. Teachers whose courses receive poor student evaluations should be motivated to improve specific aspects of their teaching.

### ANALYSIS AND CONCLUSION (regarding 7.1.)

VU has a well-established system to ensure the high quality of its Molecular Biology program. Graduates are highly sought-after in the job market, both in Lithuania and abroad. The SPC actively involves social partners and alumni in the program's continuous improvement.

The program boasts several strengths, including an efficient quality management system, a team of professional teachers, and strong communication within the academic community. However, there is room for improvement regarding courses that consistently receive negative evaluations in student surveys. To address this, the university should enhance communication with students about program improvements, particularly those based on their feedback. Additionally, involving students more actively in quality management processes would be beneficial.

Overall, VU demonstrates a commitment to quality by employing a variety of methods to ensure the Molecular Biology program's excellence and continuously seeking ways to improve.

## AREA 7: CONCLUSIONS

AREA 1	Negative - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle			X		
Second cycle				X	

### COMMENDATIONS

None

### RECOMMENDATIONS

To address shortcomings for the First cycle:

1. Pay more attention to the quality of courses within the first-cycle study program that consistently receive negative evaluations from students.
2. Improve communication with first-cycle study program students regarding how the program is being changed based on student survey results.

For further improvement for both cycles:

1. To better reflect the needs of the industry, it would be beneficial to have a more diverse membership within the SPC, including representatives from a wider range of social partners beyond just Thermofisher Scientific.
2. Active involvement of a broader spectrum of alumni and social partners would provide valuable insights into current trends and the evolving needs of the job market. Information collected from stakeholders would be very useful for programme quality improvement.



## IV. SUMMARY

### Summary of Main Findings

#### Positive Aspects (Strengths)

1. **Alignment with Economic and Societal Needs.** The Molecular Biology programs at Vilnius University (VU) are designed to meet the needs of Lithuanian society and the labour market. These programs emphasise a comprehensive approach and strong collaboration with social partners, ensuring the training of highly skilled professionals in the life sciences sector. The specialisation offered is unique in Lithuania, preparing graduates to address challenges in biotechnology, pharmaceuticals, and other life sciences industries.
2. **Compliance with Legal Requirements and Curriculum Design.** VU's Molecular Biology programs comply with legal requirements and are designed to develop student competencies effectively. The curriculum is customizable, enabling students to tailor their educational experience based on their learning objectives and career goals. Teaching and assessment methods are aligned with learning outcomes and regularly reviewed to ensure relevance and quality.
3. **Student Involvement in research.** Students are actively involved in research from the early stages of their studies. They often contribute to research articles and participate in research groups, gaining practical experience and co-authoring publications. This involvement enhances their research skills and prepares them for scientific careers.
4. **Support Systems and Opportunities for Mobility.** The university offers comprehensive academic, financial, social, psychological, and personal support, significantly contributing to student success. There are substantial opportunities for academic mobility through international exchange programs such as Erasmus+.
5. **Qualified and Active Faculty.** Faculty members are active researchers involved in significant scientific projects. The presence of world-class guest lecturers, including Nobel laureates, creates an international study and research environment, exposing students to the latest advancements in Molecular Biology.
6. **Continuous Curriculum Updates.** The curriculum is regularly updated to reflect the latest scientific and technological developments. New courses are introduced following research breakthroughs, ensuring that students receive current and relevant education.
7. **Systematic Monitoring and Feedback.** The monitoring of student progress is systematic and allows for targeted planning. Lecturers and students are encouraged to provide feedback to identify emerging issues and enhance the quality of the study process.

#### Areas for Improvement

1. **Enhancing Evaluation Methods.** There is a need for a more in-depth evaluation of the effectiveness of study and assessment methods. Implementing continuous and formative assessments, student-centered methodologies, and periodic student feedback is suggested to ensure that students develop the necessary competencies effectively.

2. Increasing International Mobility. Although opportunities for academic mobility exist, there is a need for increased encouragement and support to boost participation rates. Expanding student exchange programs and creating more joint research opportunities with foreign institutions are recommended.

3. Improving Communication and Transparency. Enhancing communication from the Study Program Committee (SPC) and improving the transparency of study program descriptions on the university's website would help students make more informed decisions about their studies.

4. Addressing Diverse Learning Needs. Specific strategies to cater to diverse learning styles and individual needs should be implemented. This includes providing detailed information on how the needs of students with disabilities and socially vulnerable groups are addressed.

5. Promoting Pedagogical Development. Encouraging a culture of continuous training and development for teaching staff is crucial. Implementing active policies to promote teaching quality, permanent innovation, and a student-centered learning model is recommended.

6. Expanding Internship Opportunities. Strengthening professional internship opportunities by creating formal agreements with a greater number of companies and institutions is suggested. Ensuring internships are mandatory and providing financial support for students during their internships would enhance practical training.

#### **Acknowledgement.**

We extend our sincere gratitude to the faculty and administrative staff of Vilnius University for their diligent efforts in preparing a comprehensive self-evaluation report, organising site visits, and actively engaging in discussions with the review panel. Your dedication to maintaining and improving the quality of the Molecular Biology programs is commendable and greatly appreciated.

## V. EXAMPLES OF EXCELLENCE

Examples of excellence should include examples exhibiting exceptional characteristics that are, implicitly, not achievable by all.

*If, according to the review panel, there are no such exceptional characteristics demonstrated by the HEI in this particular study field, this section should be skipped / left empty.*