



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Vilniaus universiteto
MOLEKULINĖS BIOLOGIJOS PROGRAMOS
(612C71001)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF MOLECULAR BIOLOGY (612C71001)
STUDY PROGRAMME
at Vilnius University

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Išvados parengtos anglų kalba
Report language - English

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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Molekulinė biologija</i>
Valstybinis kodas	612C71001
Studijų sritis	Biomedicinos mokslai
Studijų kryptis	Molekulinė biologija, biofizika ir biochemija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	pirmoji
Studijų forma (trukmė metais)	Nuolatinė (4)
Studijų programos apimtis kreditais	240
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Molekulinės biologijos bakalauras
Studijų programos įregistravimo data	2009-08-17 įsakymo nr. 1-73

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Molecular biology</i>
State code	612C71001
Study area	Biomedical Sciences
Study field	Molecular biology, biophysics and biochemistry
Kind of the study programme	University studies
Study cycle	first
Study mode (length in years)	Full-time (4)
Volume of the study programme in credits	240
Degree and (or) professional qualifications awarded	Bachelor of Molecular Biology
Date of registration of the study programme	17-08-2009, order no. 1-73

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I. INTRODUCTION

Vilnius University is one of the oldest and famous universities in Eastern and Central Europe. It plays very important role in Lithuanian cultural life and scientific research in many areas. Vilnius University was founded in 1579 and is the main Lithuanian education and research institution.

The University of Vilnius has 12 faculties, 7 institutes, 4 study and research centres, the oldest Library in Lithuania, 3 university hospitals, an Astronomical Observatory, a Botanical Garden, a Centre of Information Technology Development, and St. John's Church.

At Vilnius University in the year 2014 there are over 14 000 undergraduate and almost 3 500 graduate students. The university employs over 3800 people. Academic staff consists of 1367 employees: 251 professors, 479 docents (<http://www.vu.lt/en/about-us/facts-and-figures>).

The bachelor degree Molecular Biology Programme is run in the Faculty of Natural Sciences (hereinafter - FNS) of Vilnius University. FNS was established in 1944, while the history of Natural Sciences at Vilnius University dates back to 18th century. In the year of 2014 in FNS there are around 1200 students, with the majority of them – around 800 students in bachelor programmes.

The bachelor degree study programme Molecular Biology is run at FNS since 1997. The programme is conducted in close collaboration with two research Institutes at the university: Institute of Biotechnology and Institute of Biochemistry.

The last time the programme was evaluated was in 2007. Based on the evaluation recommendations, needs of social partners, feedback from students and significant changes of the Programme curriculum were introduced since last evaluation. Teaching of basic subjects was increased; previously the Programme was focused more on classical biology, currently on molecular biology. A Bioinformatics course has also been introduced following recommendations of the evaluation. Since 2012, the Programme is under coordination of Department of Biochemistry and Molecular Biology of FNS.

The international expert team for evaluation of bachelor degree Programme in Molecular Biology consisted of:

- Prof. Dr. Laurent Counillon (group leader) – University of Nice, France;
- Prof. Dr. Christoph Griesbeck, Head of Department and Study Programs Biotechnology – MCI – Management Center Innsbruck, Austria;
- Prof. Dr. Meza Trine Johansen - Assistant Deputy Director General, Department of Quality Assurance NOKUT, Norway;
- Julius Gagilas, Director of company “Diagnolita”, Lithuania;
- Benas Gabrielis Urbonavičius, Student representative, Kaunas University of Technology, Lithuania.

This evaluation report prepared by the expert team is based on the analysis of Self-Evaluation Report including Annexes 1 to 9 and site visit on 18th of March 2014 and meeting the management, self-evaluation report writing team, teachers, students, alumni and social partners at the Bachelor Study Programme in Molecular biology.

II. PROGRAMME ANALYSIS

1. Programme aims and learning outcomes

The Bachelor degree programme in Molecular Biology aims to provide students with basic knowledge and skills in life sciences with the emphasis on molecular biology. Having such a skilled basis the students may expect their successful carrier in any bioscience-related areas. The programme aims are reflected by the needs of Lithuanian biotechnology industry, especially Thermo Fisher Scientific which is the largest molecular biology company in the Eastern Europe which develops and provides molecular biology reagents.

The aims of the programme and programme as such are well defined and clear, accessible publicly on the website of Department of biochemistry and molecular biology in FNS (<http://www.bmbk.gf.vu.lt/en/studies/molecular-biology/>). Information about the programme on the central Vilnius University web page provides information, which is outdated (<http://www.vu.lt/kviecia/rinkis-studijas/ka-studijuoti/item/86>), describes the programme before the modification in 2012.

The expert panel found that the Molecular Biology Study programme along with other programmes is very well advertised and presented to secondary school students in different ways: during Open Door events at Vilnius University, at the exhibition „Studies” (Lithuanian Exhibition Centre LITEXPO) in February, during Day of young naturalists at the FNS, during visits of lecturers of FNS to Lithuanian schools, “Mobile bio class” project, invitations for pupils to attend lectures at FNS and other activities. All these marketing activities leads to high popularity of life science related studies at Vilnius University and admission of highly motivated students.

The programme learning outcomes are in general agreement with National requirements (Minister of Education and Science of Republic of Lithuania, Decree No. V-2212 issued on 2011-11-21) and international recommendations (e.g., Sánchez A. V., Ruiz M. P. 2008. Competence based learning. A proposal for the assessment of generic competences. Deusto: University of Deusto).

Molecular biology programme aims and outcomes are consistent, the contents corresponds to the offered qualifications (Self Evaluation Report (hereinafter – SER), Table 1). The links between study content, aims and outcomes are very well described (SER, Table 2). There is no doubt for experts that the outcomes fit very well with the growing demands and trends of local biotech labour market. Graduates of Molecular Biology study programmes are highly ranked by social partners, however mostly graduates of Master programme not Bachelor Programmes start professional carriers in industry. Following the Bachelor Programme students can continue Master studies in Molecular Biology, Biochemistry, Genetics. Some of graduates continue studies abroad.

Lithuanian biotechnology industry became one of the fastest developing industries in the country and is considered as one of the strengths of Lithuanian economy. During the recent years Lithuania became a leading player in international biotechnology business, when international companies such as Thermo Fisher Scientific, Teva acquired local biotech companies and number of biotech companies continues to grow.

2. Curriculum design

The curriculum design meets the legal requirements of Lithuanian legal requirements laid down by the Minister of Education and Science (Decrees Nr. V-501). The Molecular Biology bachelor programme has in total 240 ECTS credits. Programme is composed of several well-balanced core units:

1. Core Unit of Chemistry, Physics and Mathematics, total 51 credit

2. Core Unit of Biology, total 51 credit
3. Core Unit of Molecular Biology, total 76 credits
4. Core Unit of practical courses, total 44 credits
5. Core unit of General University Education (GUE) courses, 18 credits (requirement no less 15)

Well-structured, harmonized curriculum facilitates to achieve learning outcomes. Explained in very details in SER (p. 15 - 26) gives clear understanding for expert panel contribution of the courses to learning outcomes.

Recent changes made by the Study committee of Molecular Biology programme under approbation of FNS Board are provided in the Annex 1 of SER. Biology Unit subjects were significantly reduced and Molecular biology unit subjects expanded significantly, modern courses were introduced, for example course of Molecular Evolution. Biological practice in 3rd semester was modified to be shorter and focused on the needs of molecular biologist to better know the diversity of Lithuanian nature. It was found out during the visit that this practice is very well appreciated by students and promoted by teachers. **Overall the expert panel found the programme changes very positive in terms of life science industry trends and demands.** On the other hand, before the programme change in 2012, there were adjustments needed to match to the legal requirements (for example subject number per semester). Current programme looks modern (above mentioned Molecular evolution course), satisfying the needs of students, Lithuanian and European economy.

Subjects of study field contain 171 credits (requirement is no less than 135). The Programme consists of eight semesters. The Programme is full time for four years, each study year consists of 60 credits. The subjects are distributed evenly, with no more than 6 subjects per semester (requirement no more than 7) (SER, Annex 1).

As it was found out in discussions with teachers and students during site visit, it is easy for students to select elective courses using Internet. In addition, the courses can be changed after trial of few lectures if it does not meet expectations. However, some subjects might be better described and communicated so that students can better understand their scope.

Each course is assessed by exam, with exception of Bachelor Thesis which is assessed by oral public defence in the presence of Thesis Examination Committee and practices I and II. Colloquiums, midterm exams, written tests, written quizzes, oral presentations on selected topics, etc. are used for assessment during the courses. Teaching methods may differ depending on courses, often includes lectures, practical work, self-directed learning, solutions of tasks, problem based learning, etc. (SER, Annex 2).

Bachelor Thesis contains 20 credits (requirement no less than 12). Usually Bachelor Thesis is started during Practice I and II and combining all these practical activities quite high scientific level research is represented in the Thesis. On the one hand it is positive that the students can be involved deeply into research, on the other hand practical experience obtained is focused in the quite narrow field.

The programme has healthy distribution between theoretical training and practical training if calculate workload hours (SER, Annex 1). Around 50% of student's workload is related to laboratory work, exercises, and tutorials versus the same amount of lecture workload. Expert panel considers that the scope of the programme is very good to ensure the learning outcomes within the given time-frame.

Assessing the scientific achievements of the staff (SER, annex 4), the learning methodology and study subject contents (course descriptions, SER, annex 2), the literature recommended for the courses (SER, annex 2), teaching methods (for example "*analysis of the topic-related scientific papers*" in subjects like Bioinformatics and Biotechnology), combined with that the students perform their bachelor thesis in a research group, the programme reflects the latest achievements in science and is more than appropriate for the level of study.

3. Staff

Academic staff consists of 55 teachers, 40 of them teach specialized field subjects, 15 teach study area basics and general education subjects. Among teaching staff there are 10 professors, 19 docents and 26 lecturers or assistants (18 of them hold PhD). 17% of all courses are taught by professors, 37% – by docents, and 46% – by lecturers and assistants. Teaching staff of core disciplines has significant experience in teaching and research (SER, p.27; Annex 5). This statistics shows the **superb level of staff level outperforming the requirements** (no less than 10% of study field subjects' volume must be taught by scientists or recognized artists).

Some Programme courses (Chemical and Physical Methods in Biology, Protein Biophysical Chemistry, Neurobiology, Human and Animal Physiology) are taught by teachers, recent Lithuanian Science Prize awardees (during years 2009-2012). Majority of teachers runs research projects and publish in peer- reviewed international journals some of them involved in teaching book preparation (as an example J. Kadziauskas, "Principles of biochemistry"). Outstanding list of staff activities presented in SER, annex 4.

It was found out during site visit discussions that most of teachers are involved in different research projects, often students are involved into these real projects during practical training. This strongly supports achieving the learning outcomes. Staff mentioned they have possibility to go to conferences abroad, get pedagogical training and are motivated for professional development. Every teacher attended from 1 to 11 conferences during last five years period, with couple of exceptions. Majority of staff attended to professional courses to improve qualifications (SER, Annex 4).

The staff average age is 47 years. Ten young teachers - six recent PhD awardees and four PhD students recently joined to the programme due to programme changes. All the teachers improve the quality of courses by attending conferences (mostly scientific), courses. University supports improvement of pedagogical skills. Majority of the teachers are active in conducting high level research and publishing results as well as participating in various projects (SER, Annex 4).

Nearly all teachers have positions in Vilnius University, only one in the Programme comes from industry (SER, Annex 5). Having more teachers from industry would allow students probably get more applied approach of teaching. However, some students have possibilities to conduct practical work and Bachelor thesis in companies where they get training from industry experts.

89 percent of the teaching staff have no less than 3 year of practical experience (SER, annex 5). This means the **qualification of the teaching staff meets legal requirements and is excellent to ensure achievement of intended learning outcomes.**

4. Facilities and learning resources

Facilities of the FNS were renovated during recent years using support of EU structural funds. Around 200 thousand euros invested to renovate laboratories and auditoriums.

There are around 40 students (Table 8, p 35, SER) studying each year in the programme. There are 12 auditoriums in the FNS with capacity of 40 and more students. During the meeting with students at the site-visit the expert panel found that sometimes, especially in first study years when joint lectures are given between different programmes there is not enough seats to fit all the students. For example 120 theoretical students have to fit into 100 seats containing auditorium.

Teaching laboratories in Department of Biochemistry and Molecular Biology for Biochemistry – 12 work places, for Molecular Biology - 8 work places, Cell Biochemistry – 5 work places are rather small for laboratory work. Laboratory work is organized in groups of 10

students. Students do not complain about laboratory space, however for convenience more space would be helpful.

Some of the most modern equipment was bought using support of EU as it is mentioned in the SER and most of it seen during the visit in FNS and Institute of Biotechnology: Facility for crystallography and X-ray analysis, various real-time PCR equipment, high throughput robotic reaction set up systems, laser scanning microscope etc. All this equipment can be used for student scientific research projects and for teaching purposes. At the FNS there was invested around 2,9 Million Euros for the equipment.

Students at the FNS can use library with all the needed teaching material available. Most of material can be accessed electronically: databases, electronic journals and books subscribed by Vilnius University. New modern library is opened in Sauletekis campus, often used by students of the programme. Modern computer classes of around 130 seats in the Sauletekis campus are available mainly for electronic examination of students.

There is no cafeteria in the FNS (Čiurlionis str.) a fact that was pointed out by the students. For the learning environment, the expert panel find that a cafeteria could be a nice addition even if it is not an absolute demand.

The shortage of laboratory and teaching space is temporarily as the construction of the new building of Life Sciences Center has already started. It is planned to invest 95 Million Lt (27,5 Million EUR) in this. By the end of 2015 research laboratories and teaching facilities will be transferred from the Institute of Biotechnology, the Institute of Biochemistry and departments of FNS. It is the expert panels opinion that even if there is some shortage of space, the current facilities are good to ensure that the students achieve the learning outcomes of the programme.

5. Study process and student assessment

The main admission criteria to the Molecular Biology programme – grades of School Leaving Examinations. Knowledge of biology, chemistry and mathematics is evaluated with focus to biology. Winners of the 1st to 3rd places of the international Olympiads or laureates of international competitions get additional points for the admission. This helps to attract talented students.

Overall, during the 2008-2013 years, an average 35 students were admitted to *Molecular Biology* undergraduate programme each year (SER, table 8). Almost all the students graduate the programme. Due to low study results during the four years of studies ~ 2-3% of the students that entered the first year, drop out. This shows that really skilled and motivated students are selected for the studies.

Students are encouraged to begin their research activities as early as possible. There are EU funds to involve students in research and other activities. All these activities are based in Lithuania. Despite good knowledge of foreign languages there is quite low international student mobility (from 0 to 3 students out of ~35 every year, according to SER, p 36). Erasmus programme could be organized and promoted to students more intensively.

Students can receive different types of scholarships according to publicly available rules set up by the Senate of Vilnius University. Company Thermo Fisher Scientific provide additional scholarship on competition basis for students that conduct Bachelor or Master Thesis research projects in the company.

Problem based learning in some courses is applied (SER, annex 2). During site visit teachers described that after getting theoretical background students are forced to apply knowledge to solve raised them problems. Such teaching method promotes creative thinking of students.

Assessment is performed transparently and objectively, according to publicly available and clear for students rules. Students' opinion is being asked in discussions and using questionnaires regarding the study programme - specific subjects, subject presenting logics,

consistency, teaching quality and assessment. Students have feeling that their proposals are being implemented. Most of the questionnaires are not mandatory therefore feedback is collected only partially.

Practical training for the bachelor thesis is organized in the way that students can choose the laboratories and often have competitions to enter the laboratories. Using such competitions laboratories can get better students and integrate them into research projects as researchers. Usually students stay in the same laboratory and project during laboratory practice I, II, bachelor thesis and it is quite common to continue same thesis in Master level. Expert panel tends to think that this system which satisfies the needs of these research groups, detracts from educating students in different research fields and collecting practical experience from different laboratories. Having a system that students could rotate between the laboratories for practice I, II and Bachelor thesis would significantly broaden horizons of students, would let them decide on favourite research themes for further studies. Some social partners also would like to get employees that have practical knowledge in variety of subjects.

Most of the Molecular Biology graduates have chosen to continue their studies in Master programmes in life science or related programmes at Vilnius University. Current students are planning to continue studies in Master programme and PhD studies and work as scientists as it is proposed in the learning outcomes.

The interest in this Programme increases every year and most of the applicants selecting programme as first choice are graduates from *Molecular Biology* bachelor programme.

6. Programme management

Bachelor degree study programme in *Molecular Biology* was initially developed and is being constantly updated by the Study Programme Committee, which is also responsible for programme quality and implementation. The Study Programme Committee includes representatives of social partners and the students (SER, Table 12). There are 11 members of the committee and such high number of members may not always be efficient in decision making.

During the site visit, the expert panel was explained that social partners take part in the quality management of Molecular Biology study programme as they participate in surveys, discussions and meetings. The Study Committee takes the conclusions of internal and external evaluations into account, as well as the needs of the partners and has good practice to implement changes into the programme as an example the change of curriculum since 2012.

Students are asked to conduct surveys, participate in discussions about study programme, about quality of the lectures. Special measures are taken to avoid information overlapping, especially for the subjects that are taught by several teachers.

For the Expert Panel, the current shape of the Molecular Biology Bachelor programme appears like the result of honest and hard work of Study committee members to combine the needs of different stakeholders. Alumni of the programme say that they are satisfied with the education, with the experience and that they recommend to others choose this study programme. On the other hand social partners mentioned that they prefer to employ graduates of Molecular biology programme as well as Biochemistry programme.

III. RECOMMENDATIONS

1.

Manage study process in a way that students could get diverse practical experience during different practices and Bachelor thesis. Obligatory student rotation system through different laboratories might be considered.

2.

If possible organize lectures in auditoriums with sufficient amount of seats. Ensure that in new Life Sciences Center building size of laboratories and auditoriums will correspond to the size of student groups.

3.

International Erasmus programme mobility for students and teachers should be more actively promoted and better organized

4.

Ensure that information about the study programme in the central Vilnius University web page is up to date and regularly updated.

5.

Pay more attention on description of some subjects so that students could know in advance the scope of the subjects.

IV. SUMMARY

Main positives of the programme:

Molecular biology study programme aims and study outcomes are very well described and very well related to Lithuanian and European trends of biotechnology industry. Graduates of the study programme can continue their careers in any life science area. Curriculum design was recently changed to reflect the needs of social partners and respond to latest external evaluation. Current programme ensures that students get very well balanced knowledge which consists of strong background subjects following combination of biology and molecular biology related subjects. For development of practical skills students use very well equipped laboratories, have access to newest study related books and online resources.

Most of the programme subjects are taught by experienced scientists and qualified lecturers that are often recognized scientists in Lithuania.

Renovated laboratories with sophisticated equipment are used for student scientific work in FNS and Institute of Biotechnology.

Programme management team is very professional and willing to change the programme towards the needs of social partners and students. Recent curriculum change looks very positive and perfectly fits to the trends of local economy. Molecular biology programme is very well promoted, especially by collaboration with high schools. Good awareness of the programme attracts the most talented students and plays important role for the success of this programme and later may influence further growth of biotechnology and its popularity in Lithuania.

Main opportunities to improve:

Due to space limitations in the FNS students in some joint lectures in first study years have not enough seats during lectures. Staff believes this will be significantly improved with the opening in 2015 of the new Life Sciences Center in Sauletekis Campus where the study programme will be moved. It should be ensured that for the Molecular biology programme auditorium and laboratory sizes will be adequate to student number.

Study process is very well organized, however a couple of elements have room for improvement:

1. Erasmus student exchange programme should be more promoted and better organized
2. Practical student experience obtained by Practice I and II and Bachelor thesis in most cases is limited to one laboratory. Broadening prospective of obligatory practical training in different laboratories would be highly recommended.

Vilnius University and FNS websites could be more efficiently used to promote study programme and should be regularly updated. Information about scope of all programme study subjects should be made available for students.

V. GENERAL ASSESSMENT

The study programme Molecular biology (state code – 612C71001) at Vilnius University is given **positive** evaluation.

Study programme assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation Area in Points*
1.	Programme aims and learning outcomes	4
2.	Curriculum design	4
3.	Staff	4
4.	Material resources	3
5.	Study process and assessment (student admission, study process student support, achievement assessment)	3
6.	Programme management (programme administration, internal quality assurance)	4
	Total:	22

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

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

3 (good) - the field develops systematically, has distinctive features;

4 (very good) - the field is exceptionally good.

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V. APIBENDRINAMASIS ĮVERTINIMAS

Vilniaus universiteto studijų programa *Molekulinė biologija* (valstybinis kodas – 612C71001) vertinama teigiamai.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	4
2.	Programos sandara	4
3.	Personalas	4
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	4
	Iš viso:	22

* 1 - Nepatenkinamai (yra esminių trūkumų, kuriuos būtina pašalinti)

2 - Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)

3 - Gerai (sistemiškai plėtojama sritis, turi savitų bruožų)

4 - Labai gerai (sritis yra išskirtinė)

IV. SANTRAUKA

Pagrindiniai programos teigiami aspektai:

Molekulinės biologijos studijų programos tikslai ir studijų rezultatai yra tinkamai aprašyti ir labai glaudžiai susiję su biotechnologijų pramonės tendencijomis Lietuvoje ir Europoje. Studijų programos absolventai gali tęsti karjerą bet kurioje gyvybės mokslų srityje. Studijų programos sandara pastaruoju metu pasikeitė, siekiant atspindėti socialinių partnerių poreikius ir reaguoti į paskutinio išorinio vertinimo rekomendacijas. Dabartinėje studijų programoje užtikrinama, kad studentai įgytų labai gerai subalansuotas žinias, kurias sudaro stiprūs bendresnio pobūdžio studijų dalykai, po kurių yra su biologija ir molekuline biologija susiję studijų dalykai. Praktiniams įgūdžiams lavinti studentai naudoja labai gerai aprūpintas laboratorijas, naujausias su studijomis susijusias knygas ir elektroninius išteklius.

Daugumą studijų programos dalykų dėsto patyrę mokslininkai ir kvalifikuoti lektoriai, kurie dažnai yra pripažinti mokslininkai Lietuvoje.

Gamtos mokslų fakultete (toliau – GMF) ir Biotechnologijos institute studentų moksliniam darbui naudojamos suremontuotos laboratorijos su modernia įranga.

Studijų programos valdymo grupė yra labai profesionali ir nori keisti studijų programą pagal socialinių partnerių ir studentų poreikius. Pastarasis studijų programos sandaros pasikeitimas yra labai teigiamas ir tobulai atitinka vietos ekonomikos tendencijas. Molekulinės biologijos studijų programa yra labai gerai reklamuojama, ypač bendradarbiaujant su vidurinėmis mokyklomis. Didelis studijų programos žinomumas padeda pritraukti giliausius studentus ir atlieka svarbų vaidmenį siekiant šios studijų programos pasisekimo, o vėliau gali daryti poveikį tolesniam biotechnologijų ir jų populiarumo Lietuvoje augimui.

Pagrindiniai tobulintini dalykai:

Dėl ribotos erdvės GMF kai kuriose bendrose paskaitose pirmakursiams studentams nepakanka sėdimų vietų. Dėstytojai mano, kad situacija gerokai pasikeis, kai 2015 m. Saulėtekyje pradės veikti naujasis Gyvybės mokslų centras, į kurį bus perkelta ši studijų programa. Reikėtų užtikrinti, kad Molekulinės biologijos studijų programai skirtų auditorijų ir laboratorijų dydis atitiktų studentų skaičių.

Studijų eiga yra labai gerai organizuota, tačiau yra pora dalykų, kuriuos reikėtų tobulinti:

1. Reikėtų labiau skatinti ir geriau organizuoti *Erasmus* studentų mainų programą.
2. Praktinė studentų patirtis, sukaupta per pirmąją ir antrąją praktikas bei bakalauro baigiamąjį darbą, daugeliu atvejų yra įgyjama vienoje laboratorijoje. Ekspertai rekomenduotų išplėsti privalomo praktinio mokymo skirtingose laboratorijose apimtį.

Vilniaus universiteto ir GMF interneto svetainės būtų galima efektyviau panaudoti, reklamuojant studijų programą ir jas reikėtų reguliariai atnaujinti. Studentams reikėtų pateikti informaciją apie visų studijų programų dalykų aprėptį.

III. REKOMENDACIJOS

1.

Vykdyti studijų eigą taip, kad studentai galėtų įgyti skirtingos praktinės patirties per įvairią praktiką ir bakalauro baigiamąjį darbą. Būtų galima apsvarstyti privalomąją studentų rotacijos po skirtingas laboratorijas sistemą.

2.

Jeigu įmanoma, organizuoti paskaitas auditorijose, kuriose yra pakankamai sėdimų vietų. Užtikrinti, kad naujajame Gyvybės mokslų centro pastate laboratorijų ir auditorijų dydis atitiktų studentų grupių dydžius.

3.

Reikėtų aktyviau skatinti ir geriau organizuoti tarptautinį studentų ir dėstytojų mobilumą pagal *Erasmus* mainų programą.

4.

Užtikrinti, kad informacija apie studijų programą centrinėje Vilniaus Universiteto interneto svetainėje būtų nauja ir reguliariai atnaujinama.

5.

Daugiau dėmesio skirti kai kurių studijų dalykų aprašams, kad studentai iš anksto žinotų studijų dalykų aprėptį.

<...>