



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Vilniaus universiteto

STUDIJŲ PROGRAMOS *BIOCHEMIJA* (621C73001)

VERTINIMO IŠVADOS

**EVALUATION REPORT
OF *BIOCHEMISTRY* (621C73001)
STUDY PROGRAMME
at Vilnius University**

1. **Prof. dr. Kari Keinänen (team leader)** *academic,*
2. **Prof. dr. Helmut Grubmüller,** *academic,*
3. **Doc. Bruno Cardinaud,** *academic,*
4. **Prof. dr. Laima Ivanovienė,** *academic,*
5. **Benas Gabrielis Urbonavičius,** *students' representative.*

Išvados parengtos anglų kalba
Report language - English

Vilnius
2014

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Biochemija</i>
Valstybinis kodas	621C73001
Studijų sritis	Biomedicinos mokslai
Studijų kryptis	Molekulinė biologija, biofizika ir biochemija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	antroji
Studijų forma (trukmė metais)	Nuolatinė (2)
Studijų programos apimtis kreditais	120
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Biochemijos magistras
Studijų programos įregistravimo data	1997-05-19

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Biochemistry</i>
State code	621C73001
Study area	Biomedical Sciences
Study field	Molecular biology, biophysics and biochemistry
Type of the study programme	University studies
Study cycle	second
Study mode (length in years)	Full time (2)
Volume of the study programme in credits	120
Degree and (or) professional qualifications awarded	Master of Biochemistry
Date of registration of the study programme	19-05-1997

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I. INTRODUCTION

1.1. *Background of the evaluation process*

The evaluation of on-going study programmes is based on the **Methodology for evaluation of Higher Education study programmes**, approved by Order No 1-01-162 of 20 December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC).

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

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

On the basis of external evaluation report of the study programme SKVC takes a decision to accredit study programme either for 6 years or for 3 years. If the programme evaluation is negative such a programme is not accredited.

The programme is **accredited for 6 years** if all evaluation areas are evaluated as “very good” (4 points) or “good” (3 points).

The programme is **accredited for 3 years** if none of the areas was evaluated as “unsatisfactory” (1 point) and at least one evaluation area was evaluated as “satisfactory” (2 points).

The programme **is not accredited** if at least one of evaluation areas was evaluated as "unsatisfactory" (1 point).

1.2. *General*

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

No.	Name of the document

1.3. Background of the HEI/Faculty/Study field/ Additional information

Vilnius University (hereinafter – VU) is the biggest university of Lithuania with 23 core academic units, including 12 Faculties and two Institutes with Faculty Status. Biochemistry study programmes are administered by the Faculty of Chemistry, and delivered in close cooperation between the Faculty of Chemistry and the Faculty of Natural Sciences. Biochemistry study programme was initiated in 1961, and since 1997, it has been split into separate first cycle (BA) and second cycle (MA) programmes. The second cycle Biochemistry study programme was last time evaluated in 2008. The external evaluation was organized by Lithuanian Centre for Quality Assessment in Higher Education, and was positive, without any conditions.

1.4 The Review Team

The review team was completed according *Description of experts' recruitment*, approved by order No 1-55 of 19 March 2007 of the Director of the Centre for Quality Assessment in Higher Education, as amended on 11 November 2011. The team conducted the Review Visit to The Vilnius University on Tuesday 16th September 2014.

- 1. Prof. Kari Keinänen (team leader)**, Department of Biosciences, University of Helsinki, Helsinki, Finland.
- 2. Prof. Helmut Grubmüller**, Department of Theoretical and Computational Biophysics, Max Planck Institute for Biophysical Chemistry, Göttingen, Germany.
- 3. Doc. Bruno Cardinaud**, INSERM U1035, University of Bordeaux Segalen, Bordeaux, France.
- 4. Prof. Laima Ivanovienė**, Department of Biochemistry, Lithuanian University of Health Sciences, Kaunas, Lithuania.
- 5. Mr. Benas Gabrielis Urbonavičius**, Ph.D. student of Kaunas University of Technology

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

MA programme in biochemistry is a two-year (4 semesters) study programme encompassing a total of 120 credits. The aims and expected learning outcomes of the programme (SER, pp.7-8) are appropriate for a Master's level biochemical education and comparable to corresponding programmes internationally. The aims are divided in four areas, which are broadly similar to those in the corresponding BA programme but represent a deeper and more advanced level of academic maturity, consistent with professionalism in biochemical sciences: for example, the

ability for creative and interdisciplinary application of knowledge is emphasized instead of development of relevant laboratory skills. The expected learning outcomes of each of these areas are written out in broad terms in the form of competencies obtained. Appropriate consideration is given to “soft”, transferable academic skills in addition to biochemical professionalism. The aims and learning outcomes are clearly described in the SER and posted in the internet.

The programme responds to the increasing demand of highly qualified biochemists by Lithuanian biotechnology and healthcare sectors. Based on discussions with graduates and employers during the site visit, the employment prospects for biochemists are presently good, and due to the predicted growth of the biotechnology area (SER, p.8, 20), they are likely to remain favorable in the near future. The expert panel was impressed by the level of enthusiasm and commitment expressed by the staff and students, and by the high degree of satisfaction of the graduates and their employers to the education and the skills obtained. These are indicators of a successful programme and provide real-life evidence that the relevant learning outcomes of the programmes are reached. It is clear from the review team’s site visit that the programme is enjoying an esteemed status, which helps to attract talented and motivated students to the studies.

In summary, the objectives and learning outcomes are appropriate for Master’s level qualification in the study field, consistent with the needs of the labor market, and achievable during the course of the programme. The name of the study programme, its learning outcomes, content and the qualification offered are compatible with each other.

2.2. Curriculum design

The curriculum and the volume of the programme and its components are in compliance with the legal requirements for Master’s level (second cycle) study programmes. The study subjects and courses are distributed evenly between the four semesters (30 credits per semester). The theoretical studies are paralleled by extensive research training, which encompasses half of the 120 credit MA degree. This is a distinctive feature and asset of the programme. The research training consists of the Research Projects I-III (1st, 2nd, and 3rd semesters; tot. 30 credits) and the Master’s Thesis (4th semester, 30 credits).

The curriculum is quite flexible; in addition to the research project and the final thesis, only two courses, Mechanisms of Organic Reactions and Molecular Biology belong currently to compulsory studies, and next year the latter course will be moved to the BA programme. The elective courses cover many of important and rapidly advancing areas of biochemistry and molecular biosciences. Nucleic acid chemistry and biochemistry, and molecular biological methodology, the particular strengths of the Department and Institutions participating in the

programme, are represented by several courses. Experimental Techniques in Biotechnology, organized in the laboratories of Thermo Fisher Scientific is an example of a new and interesting way of introducing the students to key methodology that is needed in the research projects and Master's Thesis studies. Emerging multidisciplinary fields like synthetic biology, systems biology and nanobiotechnology have their own, up-to-date courses. Some areas of biochemical sciences, like metabolism, plant biochemistry and glycobiology appear to be less well covered, but some selectivity is inevitable because of the size and dynamic nature of the field. Bioethics and research ethics are presently not covered in any coherent fashion. Ethical dimensions of biotechnology and sound knowledge of good scientific practise in the conduction of research and in scientific publishing are important components of scientific training and can be incorporated in more structured way into the curriculum.

The list of Master's Theses defended in 2012- 2013 represents a wide variety of topics, but is generally strongly biased to molecular biology. The supervisors come from several different units both within and outside VU. A large number of theses have been done in biotech companies (especially in Thermo Fisher Scientific) and some in foreign Universities. Most theses are written in Lithuanian, but include an English summary. The theses that the review team had an opportunity to study were generally of high quality and well consistent with international standards.

In summary, the curriculum is well-planned, has an overall modern look, and is particularly strong in nucleic acid biochemistry / molecular biology and in the early integration of students to research.

2.3. Teaching staff

The academic staff of the programme consists of 16 teachers, all holding a doctoral degree and including 12 professors or associate professors with positions in different departments or institutions of VU (SER, Appendix 2). The teachers have long experience in teaching (average 15 years; range 2-33 years) and in scientific research (average 28 years; range 15-44 years). The areas taught are consistent with the respective expertise of the staff. With an intake of 25 students annually to a two-year programme, the staff seems quite sufficient (student/teacher ratio of about 3). The teaching personnel is involved in research as judged by published scientific papers during the period 2008-2013. The publishing activity and forums vary, but many teachers have several papers in the leading journals, speaking for the high-quality science, an inspiration also for teaching. Overall, the staff is highly qualified and able to provide state-of-the art teaching in the fields represented in the programme.

The age structure of the teaching staff forms an "inverted pyramid" (30-39 years: 2, 40-49 years: 3; 50-59 years: 5, and 60-69 years: 6). This is not an optimal situation and was noted also in the latest evaluation of 2008 ("the increasing age of the staff poses a threat"). Some turnover of the staff has taken place as new courses have been introduced and some old ones terminated, but clearly further rejuvenation and new recruitments will be important in order to guarantee the success of the programme also in the future. The academic and research staff is recruited to VU with five-year contracts using public competition and criteria which emphasize research activity. Discussion with the staff revealed that the relatively low salaries of the professors and other teachers cause problems for the recruitment and often make it necessary for the teachers to obtain additional teaching hours in other Universities or Institutions. It is clear that the programme administration has very limited means to remedy the situation, which should be discussed at the national level. Overall, VU supports comprehensive development of the teaching staff and organizes an Introductory training programme for the new staff.

In conclusion, the quality and number of teaching staff are adequate for successful operation and development of the degree programme and meet the legal requirements.

2.4. Facilities and learning resources

The master-degree programme in Biochemistry is a research-oriented programme which uses the facilities and learning resources of several core units of VU, including the Faculty of Natural Sciences (Department of Biochemistry and Molecular Biology), Institute of Oncology, Institute of Biotechnology and Institute of Biochemistry. In addition, the programme is oriented to biotechnology industry, and many research projects and training (incl. Master's Thesis studies) are done in the research and development centre of Thermo Fisher Scientific, and other companies (e.g., Sicom Biotech, Biotechpharma). Recently, most auditoria and laboratories in the Faculty of Natural Sciences have been renovated, and meet the requirements of modern teaching. Capacities of auditoria are more than sufficient for relatively small number of students; an average of 20 students admitted each year to the programme within the period 2007-2013.

As a result of quite and extensive recent modernization with EU-funding, the Faculties and Institutes involved in the Programme are able to provide an excellent infrastructure for the research training and laboratory studies. The Faculty of Natural Sciences has invested 2.9 million EUR in research and teaching equipment, of which 1 million EUR in the Department of Biochemistry and Molecular Biology (SER p.17). The Institute of Biochemistry and the Institute of Biotechnology have similarly renewed their research infrastructure, now including top-quality facilities for crystallography and X-ray analysis, mass spectrometry, next-generation sequencing

platforms, real-time PCR, high throughput robotic systems, atomic-force microscope, laser scanning microscope, etc. (SER p.17). According to current plans, the laboratories from the research institutes and the Faculty of Natural Sciences will move to a new Life Science Centre to be opened by the end of 2015. Therefore, it is expected that the infrastructure supporting the training of biochemists will be even further improved. On the other hand, it will be important to allocate University funds for the maintenance of the acquired instrumentation and for the laboratory consumables required for student training. Regarding the latter issue, the review panel learned that currently research project grants are also used to cover materials costs related to student training.

Adequate facilities for e-learning are available in the programme. The computer classes of the Faculty of Natural Sciences and the Faculty of Mathematics and Informatics are accessible to the student for 12 hrs on weekdays and 8 hrs on Saturdays. Innovative e-courses on Mechanisms of Nucleic Acids and Protein Interactions, Mechanisms of Enzymatic Reactions, Biomembranes, Photobiochemistry have been designed and established by the programme teachers. Examinations can be organized electronically at the Centre for Electronic Studies of the University.

VU Central Library has subdivisions in each faculty and research institute with collections relevant for their study programmes and research profiles. The textbooks required for the courses are available. The Library has subscriptions to full-texts of scientific journals which are accessible from University computer network and via VPN service. Although the subscription to some journals has been intermittent because of limited funding, overall the library resources are adequate and the students appeared to be satisfied with the books in the library and electronic access to scientific literature.

In conclusion, the learning and teaching facilities and resources (incl. laboratory training, computing, e-learning) are clearly sufficient, and in many cases top class, for successive implementation of the Master's Degree programme in Biochemistry.

2.5. Study process and students' performance assessment

Admission to the programme is competitive, requires a Bachelor's degree in biochemistry, chemistry, molecular biology or bioengineering, and is based mostly on the first cycle study scores on different fields of chemistry and on the final thesis. Most students come from VU or Vilnius Gediminas Technical University, but some hold Bachelor's Degree from Kaunas. The diversity of the student pool is a potential advantage and reflects the popularity of the programme, although some students felt that the current admission protocol is unfair to graduates

from the local BA programme because of its more stringent grading policy. The lowest scores of admitted students have been >65 % of the maximum score in years 2009-2013. The admission procedure is adequately described and serves its purpose well.

Graduation rates are relatively high: on average 80 % of students admitted to the programme in the period 2007-2011 graduated after two years of studies (variation 64-94 %; SER p. 19). About half of the graduates from the programme continue their studies as PhD students, and the rest start professional careers in industry, research institutions or in the health sector. The employment rate is near 100 %. These figures testify for the very good performance of the programme and of the commitment of the students.

Students are engaged in the research work from the first semester. Early integration of studies to research is one of the strengths of the programme, but the practical implementation may need some development. The research practise comprises the Research Projects I-III (one each during the first three semesters) and the Master's Thesis, in the fourth semester. Usually, all of these are carried out in the same laboratory, which may even be the same laboratory where the Bachelor's Thesis has been done. While such an arrangement allows the students to specialize in some relevant research area, it may also provide a quite narrow perspective to the range of research problems and techniques used in biochemical research. Rotation of students in several different laboratories and environments during their studies would expand the students' methodological skills and scope of thinking. In principle, such rotation is presently possible, but mostly for reasons of convenience (of both students and host laboratories), it is used only very seldom. The review team learned that some research laboratories think that rotation system might reduce their incentive to participate in supervision of students. On the other hand, student rotation could mediate transfer of ideas and techniques between research laboratories and catalyze collaboration. The experience from several research projects and laboratories would also help the student to better choose the Master's Thesis project. In order to work properly, the rotation should be accompanied by proper guidance and information to the students of the possibilities available and formal procedures to ensure the efficient placement to the research laboratories.

Scholarships are awarded annually to students based on achievements in studies. Also, social scholarships are available for students with poor economic conditions. Various student-driven activities (organizations, clubs and events) within the University provide important social support. The relatively low drop-out rate (c. 20%; see above) suggests that the students are generally satisfied with their conditions in the study programme. The students are able to

participate in international mobility programmes and, although this possibilities could be used more actively, on average two students per year participate in Erasmus programmes.

The assessment methods follow VU rules, vary between courses, and, as judged by students' opinions expressed during the site visit, are appropriate for their purpose. The Master's Thesis is the most important single component of the study process and involves experimental work and analysis of results in the context of research literature. The theses are written in Lithuanian with few exceptions which appeared to represent projects performed in foreign laboratories. The near exclusive use of the native language may reflect the general policy of the University, but a more liberal attitude to the use of English is worth consideration, and is also the wish of the students. Fluency in professional English is required in the job market of biochemists, and wider use of English in the final theses would help in dissemination of the results and, more generally, in the internationalization of Lithuanian higher education.

In conclusion, the study processes and student assessment are appropriate for the purpose, but still provide possibilities for further development.

2.6. Programme management

The Master's study programme in Biochemistry is officially administered by the Faculty of Chemistry but involves close cooperation with the Faculty of Natural Sciences, to which the Department of Biochemistry and Molecular Biology belongs. Consequently, the programme is managed at several organizations and levels: Faculty of Chemistry council, Faculty of Chemistry Dean's office, all the Departments involved, and the Study Programme Committee (hereinafter – SPC), which is responsible for the design of the curriculum. The SPC includes the major stakeholders: professors/researchers representing both faculties (Faculty of Chemistry, Faculty of Natural Sciences), President of the Lithuanian Academy of Sciences, the director of the Biotechnology Institute, a representative of ThermoFisher Scientific, and a student representative. The SPC meetings are organized twice per semester.

Contrary to the departments and faculties, the SPC is the only unit which specifically deals with the Biochemistry MA programme, and therefore it serves a critical function in the management of the programme and in its development. Discussions the review team had with the staff during the site visit suggested that the potential of SPC as an active organ may not yet be fully realized or used. Presently, the initiative appears often to be in the hands of departments, and the decision-making in the Faculties, with SPC playing a minor role. The review team would encourage modifying and strengthening of the role of SPC to be the natural „leader“ of the programme. The SPC is the structure where social partners can interact with the professors and

the students, present the trends in the job market and may suggest modifications to the curriculum. SPC could play a more prominent role in organizing placement of students for the research projects, in the improvement of current student survey protocols (see below), and catalyzing an active involvement of all staff and students to the continuous development of the programme.

Feedback from students is collected by using the on-line surveys organized by Vilnius University at the end of the semesters. The response rate of these surveys is generally low, however, and their usefulness in the continuous development of high-quality teaching can be questioned. Discussions with the students revealed that the importance of the surveys is not fully realized, which may partly explain the low response rates. On the other hand, both teachers and students said that informal discussions at the end of the courses or of the semester are a more efficient method to drive for improvements in the program. The review panel agrees with this, but also feels that participation in such discussions may not always be comprehensive and therefore the systematic surveys currently in use should be developed to be more efficient and motivating for the students.

Despite these minor criticisms, the SPC and programme management in general should be commended for their activity in the renewal of the curriculum based on the recommendations of external and internal evaluations. The changes made in the curriculum include introduction of the new courses Bionanotechnology (2008), Systems Biology (2009), Synthetic Biology (2013), and Cancer Molecular Biology and Immunology (2009).

Overall, the management duties in the programme are properly defined but the role of SPC as the sole programme-specific planning organ should be strengthened. The curriculum is actively modified based on external as well as internal evaluations. However, the impact of student feedback on the development of the programme could be improved.

III. RECOMMENDATIONS

1. The process of student placement to Research projects and Master's Thesis studies should be improved: introduction of rotation of students between laboratories would facilitate the exposure of students to a wider range of experimental approaches and research environments than is currently happening; also, clear and transparent procedures should be established for dealing with students who are facing problems in finding a suitable supervisor.
2. The efficiency of student surveys should be improved as a tool for continuous development of the courses and the curriculum.

3. The use of English as language for writing Master's Theses should be made possible and encouraged.
4. Bioethics and research ethics should be incorporated into the curriculum in a structured and coherent manner.
5. The programme should explore possibilities to strengthen the role of the Study Programme Committee and to make it more visible in the active development of the curriculum. SPC could take initiative in improving the student surveys and communication between the programme and the students (e.g., to ensure timely delivery up-to-date information on courses).

IV. SUMMARY

Analysis of the SER and the fruitful discussions the review team had during the site visit with representatives of Faculty administration, teaching staff, and with the current students and former graduates, yield a picture of a well-planned and well-run programme, which is able to attract talented and motivated students. This very positive overall view was further strengthened by the level of satisfaction expressed by the major employers with the education and competencies provided by the programme.

The objectives and learning outcomes are appropriate for Master's level qualification in the study field consistent with the needs of the labour market, and achievable during the course of the programme. Very good employment of graduates is a strong indicator of properly assigned and reached goals.

The curriculum is well-thought and reflects modern trends in biomolecular sciences. Early integration into real research is a distinct and positive characteristic of the programme. In the future, bioethics and research ethics should be incorporated in the curriculum.

The teaching staff of the programme is highly qualified, actively engaged in scientific research, and able to deliver study courses in the fields of their own expertise. The age structure is currently not ideal and in order to maintain the vitality of the programme in the future, proper attention should be paid to active recruitment.

The facilities for teaching and learning are of high quality and sufficient for successful implementation of the programme. The recent investments into modern research infrastructure provide excellent conditions for experimental studies and research training.

The study processes are organized in a way that facilitates the achievement of the theoretical and practical skills and competencies needed in biochemical research and the labour market.

The procedures of student placement to research projects should be made more efficient and a system of student rotation established. The students should be allowed to write their Master's Theses also in English.

The management duties in the programme are properly defined but the role of SPC as the sole programme-specific planning organ could well be strengthened. The curriculum is actively modified based on external as well as internal evaluations. However, the methods for collecting student feedback are currently not working properly and should be improved.

V. GENERAL ASSESSMENT

The study programme *Biochemistry* (state code – 621C73001) at Vilnius University is given a **positive** evaluation.

Study programme assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation of an area in points*
1.	Programme aims and learning outcomes	4
2.	Curriculum design	4
3.	Teaching staff	4
4.	Facilities and learning resources	4
5.	Study process and students' performance assessment	3
6.	Programme management	3
	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.

Grupės vadovas: Prof. dr. Kari Keinänen
Team leader:

Grupės nariai: Prof. dr. Helmut Grubmüller
Team members:

Doc. Bruno Cardinaud

Prof. dr. Laima Ivanovienė

Benas Gabrielis Urbonavičius

**VILNIAUS UNIVERSITETO ANTROSIOS PAKOPOS STUDIJŲ PROGRAMOS
BIOCHEMIJA (VALSTYBINIS KODAS – 621C73001) 2014-12-01 EKSPERTINIO
VERTINIMO IŠVADŲ NR. SV4-578 IŠRAŠAS**

<...>

VI. APIBENDRINAMASIS ĮVERTINIMAS

Vilniaus universiteto studijų programa *Biochemija* (valstybinis kodas – 621C73001) 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	4
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	3
	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)

<...>

V. SANTRAUKA

SS analizė ir veiksmingos diskusijos, kurias vizito metu vertinimo grupė surengė kartu su fakulteto administracija, pedagoginiais darbuotojais, dabartiniais ir buvusiais absolventais, byloja apie gerai suplanuotą ir puikiai valdomą programą, kuria gebama pritraukti talentingus ir motyvuotus studentus. Tokį visuotinį teigiamą požiūrį sustiprino pagrindinių darbdavių pasitenkinimas šios programos įgyvendinimu ir kompetencijomis, kurias įgyja studentai. Tikslai

ir studijų rezultatai yra tinkami magistro lygio kvalifikacijai įgyti šioje studijų kryptyje; jie atitinka darbo rinkos poreikius ir yra pasiekiami programos įgyvendinimo metu. Labai aukštas absolventų įsidarbinimo lygis – tai puikus tinkamai nustatytų ir pasiektų tikslų rodiklis.

Studijų programos sandara yra gerai apsvairstyta ir atspindi šiuolaikines biomolekulinių mokslų tendencijas. Ankstyva integracija į tikrus mokslinius tyrimus – skiriamasis ir teigiamas programos bruožas. Ateityje į studijų turinį turėtų būti įtrauktos bioetika ir mokslinių tyrimų etika.

Programos darbuotojai yra aukštos kvalifikacijos, aktyviai mokslinius tyrimus atliekantys asmenys, gebantys mokyti studijų dalykų savo kompetencijos srityse. Amžiaus struktūra šiuo metu nėra ideali, todėl, siekiant išlaikyti programos gyvybingumą ateityje, pakankamai dėmesio turėtų būti skiriama aktyviam įdarbinimui.

Mokymo ir mokymosi infrastruktūra yra aukštos kokybės, ir jos pakanka norint sėkmingai įgyvendinti programą. Pastarojo meto investicijos į šiuolaikinę mokslinių tyrimų infrastruktūrą sudaro puikias sąlygas eksperimentiniams tyrimams ir mokymams mokslinių tyrimų srityje.

Studijų procesai organizuojami taip, kad palengvintų teorinių ir praktinių įgūdžių bei kompetencijų, reikalingų biocheminių tyrimų srityje ir darbo rinkoje, įgijimą. Studentų praktikos atlikimo procedūra vykdant mokslinių tyrimų projektus turėtų būti veiksmingesnė; be to, reikėtų įdiegti studentų rotacijos sistemą. Studentams taip pat turėtų būti sudarytos sąlygos magistro baigiamuosius darbus rengti anglų kalba.

Valdymo pareigos programoje yra tinkamai apibrėžtos, bet Studijų programos komiteto, kaip vienintelio konkrečių programų planavimo organo, vaidmuo galėtų būti stiprinamas. Studijų programos sandara yra aktyviai keičiama remiantis išoriniais ir vidiniais vertinimais. Tačiau šiuo metu studentų grįžtamojo ryšio rinkimo metodai veikia netinkamai ir turėtų būti tobulinami.

<...>

III. REKOMENDACIJOS

1. Studentų praktikos atlikimo procesas turėtų būti gerinamas vykdant mokslinių tyrimų projektus ir rengiant magistro baigiamuosius darbus: studentų rotacijos principo skirtingose laboratorijose įvedimas suteiktų galimybę studentams pasirinkti platesnius eksperimentinius metodus ir mokslinių tyrimų aplinką nei yra dabar; be to, turėtų būti nustatytos aiškios ir skaidrios procedūros dirbant su studentais, kuriems sunku susirasti tinkamą praktikos vadovą;

2. Turėtų būti didinamas studentų apklausų veiksmingumas kaip nuolatinė studijų programos dalykų ir turinio tobulinimo priemonė;
3. Turėtų būti sudarytos sąlygos ir skatinama magistro baigiamuosius darbus rašyti anglų kalba;
4. Bioetika ir mokslinių tyrimų etika turėtų būti struktūriškai ir nuosekliai įtraukiamos į studijų programos sandarą;
5. Turėtų būti išanalizuota, kaip galima stiprinti Studijų programos komiteto vaidmenį ir pasiekti, kad jis būtų labiau įtrauktas į šios programos rengimo procesą. Studijų programos komitetas galėtų imtis iniciatyvos ir gerinti studentų apklausas bei šios programos ir studentų komunikaciją (pavyzdžiui, laiku teikti atnaujintą informaciją apie studijų dalykus).

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