



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Vilniaus Gedimino technikos universiteto
BIOINŽINERIJOS STUDIJŲ PROGRAMOS (621J76001)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF *BIOENGINEERING* (621J76001)
STUDY PROGRAMME
at Vilnius Gediminas Technical University

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Išvados parengtos anglų kalba
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Vilnius
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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Bioinžinerija</i>
Valstybinis kodas	621J76001
Studijų sritis	Technologijos mokslai
Studijų kryptis	Biotechnologijos
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	Bioinžinerijos magistras
Studijų programos įregistravimo data	2009-08-17, 1-73

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Bioengineering</i>
State code	621J76001
Study area	Technology Sciences
Study field	Biotechnologies
Kind 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 Bioengineering
Date of registration of the study programme	2009-08-17, 1-73

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The Centre for Quality Assessment in Higher Education

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I. INTRODUCTION

The procedures of the external assessment of the study programmes were initiated by the Centre for Quality Assessment in Higher Education of Lithuania nominating the external assessment peer group formed by the head, professor Maris Klavins (University of Latvia, Latvia), professor Kari Keinänen (University of Helsinki, Finland), professor Arthur J. Ragauskas (Georgia Institute of Technology, USA) and Dr. Egidijus Vladas Baškys, employer representative (Agency for Science, Innovation and Technology, Lithuania), and Raimonda Celiešiūtė, student representative (Vilnius University, Lithuania).

For the evaluation of the study programme the documents, regulating assessment were used (Methodical Guidelines for Experts; Regulations for Undergraduate, Specialised Professional and Integrated Study Programmes, Description of General Requirements for Master's Study Programmes; Description of Study Programme Accreditation Order).

The basis for the evaluation of the study programme (hereafter, the programme) is the Self-Assessment Report, written in 2013, its annexes and the site visit of the expert group to the Vilnius Gediminas Technical University (hereafter, the University; VGTU) on 5th March 2014. The visit incorporated all required meetings with different groups: the administrative staff of the Department of Chemistry and Bioengineering of the Faculty of Fundamental Sciences, staff responsible for preparing the self-assessment documents, teaching staff, students of all years of study, graduates, and employers. The expert group inspected various support services (classrooms, laboratories, library, computer facilities), examined students' final works, and various other materials. After the expert group discussions and additional preparations of conclusions and remarks, introductory general conclusions of the visit were presented. After the visit, the group met to discuss and agree the content of the report, which represents the expert team consensual views.

Mission of the VGTU is to provide studies in engineering field. The unit responsible for a running of the second level study program "Bioengineering" is the Department of Chemistry and Bioengineering of the Faculty of Fundamental Sciences and Research laboratory "Bioinformatics". The realization of the study programme is done in close cooperation with other units of the VGTU and Vilnius University and research institutes attracting highly qualified lecturers and scientists.

II. PROGRAMME ANALYSIS

1. Program aims and learning outcomes

The learning outcomes of VGTU's programme titled Technology Study Field Second Cycle Study Programme-Bioengineering" are well defined in the program review material. As stated these outcomes are "The major aim of the Bioengineering study programme is to make students acquainted with the achievements of biotechnology and with the application of engineering principles to biotechnology. To achieve the major aim of the programme and to cover all activity areas of master of Bioengineering that are integrally associated with each other and ensure the systemic integrity of the programme three key tasks have been formulated:

- To consolidate theoretical foundations and practical skills of common basics and study subjects.
- To develop planning skills of stand-alone scientific research
- To introduce the principles of scientific information processing and experimental data evaluation.”

The site visit to VGTU provided additional evidence that the participating students, faculty, administration and contributing social partners were all supportive of these aims and their actions were consistent with the program. Furthermore, the curriculum and resulting thesis’ provide strong evidence as to the focus and strength of the programme. The outcomes of the programme were supported by student reviews of the programme and by a strong need for this programme by the social partners. The learning focus, curriculum and research efforts were consistent with what needs to be accomplished by students in other biotechnology programmes internationally. Certainly, the current learning outcomes need to be continually monitored and benchmark against other biotechnology programmes both in Lithuania and internationally. The VGTU self-study also highlighted the diverse strengths and weaknesses of incoming students which needs to be addressed by improved recruiting efforts and provide additional tutorial support for incoming students.

2. Curriculum design

The duration of the programme (four semesters, 120 ECTS), and the volumes (in ECTS) allocated to study field subjects (62), and elective studies (12), and the number of subjects per semester (5 or less) are in agreement with the legal requirements.

The courses are evenly distributed between the four semesters (30 ECTS per semester). The course descriptions in the SAR (Appendix 1) do not indicate substantial overlap or unnecessary repetition. For most parts the courses seem to form a coherent educational package which builds on previous Bachelor level studies and deepens the knowledge and skills of the students in the subject area of bioengineering. The strength of the programme in combining of (protein) biochemistry with quantitative engineering topics, consistent with the title of the programme. The single (mandatory) course on Regenerative biology (6 ECTS) seems, however, somewhat odd with only little obvious links to the other courses in the programme. The safety issues are not adequately reflected in the study program as well as during practical training (instructions for students, individual safety measures, adequate infrastructure etc). One learning aspect that was not sufficiently developed and that the committee strongly believes needs further attention is the ethical responsibilities in biotechnology. The curriculum would benefit from inclusion of a course which would familiarize the students with ethical questions related to the use and development of biotechnology and with research ethics (e.g., good research and publication practises).

Multiple teaching/learning methods are employed. The courses can consist of lectures, laboratory practices, exercises and consultations. Almost all courses have 30 hours of lectures and four hours of consultations with the teacher. The majority of courses have either 15 hours of laboratory practices or 15 hours of problem-based exercises, or in some cases both forms are used. Development of relevant generic skills (e.g. presentation) is integrated in the courses (in

exercises). Most courses are compulsory leaving little space for elective courses to be chosen based on the students' personal interests: the students have a choice between "Bioinformatics" and "Systems of adaptive data modelling" in the first semester of the second year, and a free choice of one 6 ECTS course in the second semester of the first year. A wider selection of elective courses could increase student motivation. Discussions during the site visit indicated that students wish to have more elective courses but are generally quite satisfied with the quality and content of teaching.

Bioengineering graduates should have a strong theoretical knowledge and ability to apply analytical, quantitative thinking and practical skills to solve biotechnological problems. The most important component of Master's level studies to develop the problem-solving skills is the Master's Thesis. The volume of Master's thesis is quite extensive, 48 ECTS, consisting of three preparative phases (6 ECTS each) which provide an introduction to the topic, relevant literature, design of research plan etc., and a more experimental final part (30 ECTS). The topic is chosen and the preparative work begins already at the first semester, whereas the bulk of work (30 ECTS) is performed during the last (4th) semester. Although choosing the topic at an early stage gives sufficient time for good preparation, it may also be a problem because at the beginning of their studies, the students haven't yet had time to see different laboratories and may be uncertain about their preferred areas of specialization. However, the students may be given a possibility to change their originally assigned topic, although it is not clear how this works in practise. Based on their topics (Appendix 8.4.) and the summaries of the theses which were on display during the site visit, the Master's Theses are generally of adequate quality and deal with biotechnologically relevant questions.

Generally, the descriptions of the contents and study methods of the courses are consistent with the indicated aims and learning outcomes. Overall, the curriculum of Bioengineering MA programme appears sound and provides good biotechnology education.

3. Staff

The program is delivered by a staff of 12 teachers recruited from VGTU and from centers of expertise in the Vilnius are such as Institute of Chemistry of the Centre for Physical Sciences and Technology, Institute of Immunology of the Centre of Innovative Medicine, Institutes of Biochemistry and Biotechnology of Vilnius University. The faculty has selected a set of classes covering essential elements in biotechnology including:

- Systems of Adaptive Data Modelling; Cell biology; Industrial biotechnology
- Biochemical Engineering, Mathematical Modelling of Biological Systems,
- Regenerative biology, Proteomics, Methods of Isolation and Purification of Proteins
- Systems biology, Methods of Gene Engineering, Bioinformatics, Biochemical Engineering.

Based on the participating faculty CV's and discussions during the site visit it is clear that the faculty are well skilled to deliver the proposed classes.

The leveraging of non VGTU staff into this study program has been accomplished very professionally and this was evident from student responses and the review committee interactions with teaching staff. On average the staff has approximately 29 years of scientific experience, 11 years of pedagogical experience and 5 years of practical experience. Table 1

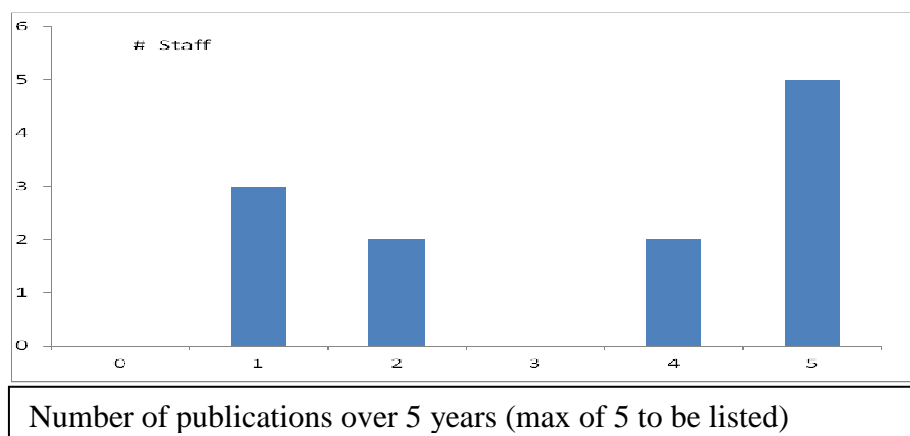
summarizes the academic profile involved in the teaching effort and Figure 1 presents the publication productivity.

Table 1: Academic Positions of Teaching Faculty

Department Head	1
Professor	2
Associate Professor	6
Lector/Senior research associate	2
Assistant	1

The bulk of the faculty comes from the home Institution, but there are also representatives from Vilnius University and Institute of Biochemistry. Several faculty members have experience outside their current position which provides a deeper and more enriching experience that they can draw upon for making their teaching relevant to the students. A summary of reported research publications over the past 5 years is provided below in Figure 1. Although some faculty members addressed the need to report 5 papers, others are clearly deficient and need to improve. Likewise, all faculty need to focus on improving the impact factor of their publications over the next years.

Figure 1: Number of Publications over 5 Years (max of 5 to be listed) for VGTU staff.



A review of the teaching CVs of the teaching staff and discussion with faculty during the site visit made it clear that there were sufficient qualified teaching staff involved in the programme. This opinion was strengthened with site discussions with the participating study programme students and social partners.

The development of exchange agreements with foreign and Lithuanian entities on conducting scientific research or experimental developments is a promising trend for faculty and staff and should be encouraged to grow in the future. For example, the department has successfully utilized the Erasmus staff programme to develop incoming and outgoing faculty visits, with visits to by J. Sereikaitė – to Milan University, Italy; E. Servienė – to Lund University, Sweden and University Libre de Bruxelles, Belgium; R. Navakauskienė – to Linköping University,

Sweden and Nencki Institute, Warsaw, Poland. The review committee views these exchanges as very beneficial to the study programme should be clearly expanded in the future

Likewise, faculty participation in professional organizations, editorial journal boards, peer reviewing, and conference development committees has been noted and needs to increase in the future. Faculty should strive to take senior positions on international editorial boards and in organizing international conferences and workshops. Of special note, is the fact that Professor Habil .dr. J. Kulys has been awarded the Lithuanian Science Award in the area of biomedical sciences in 2003 for his professional accomplishments which is an asset to this study programme.

The faculty that contribute to this study programme are involved in research programs in the Department of Chemistry and Bioengineering which is encouraged so that the teachers can explore practical aspects of work in their field of research and update the knowledge needed for staying current with the study programme. Several of the staff has reported prior experience prior to the VGTU position and this experience is viewed as a positive attribute that would strengthen their teaching experience. As reported in the study program reports, the average age of teachers involved in the program is 63.4 for professors and 56.0 for associate professors. Although this expertise is of benefit for the current students, for the long term longevity of the programme administrators need to introduce new staff into the programme before senior faculty retire. In addition, the external assessment group noticed that English language skills of some of the administrators and professors may need improvement.

4. Facilities and learning resources

Second cycle of Bioengineering study programme proceeds in the same building as for the bachelors students. Lectures for Master students are offered to provide possibilities to perform Master's thesis or to train practically in companies engaged in activities relevant to the learning outcomes of the study programme. Major part of lectures takes place in 4 classes of 20-38 workplaces. Some lectures are delivered in other place at Institute of Biochemistry. Laboratory work proceeds in two specialized classrooms of 15-17 workplaces. All premises intended for studies are in compliance with the requirements of safety at work and personal hygiene. There are all conditions for students with disability to successful studies. Classrooms for lectures are equipped with computers and video projectors. Wireless internet access is available which allows convenient use of personal computers during the lectures. Some studies proceeds in classroom of 20 workplaces equipped with PCs which are sufficient for performing the task set under the study programme.

During EU Structural Funds project "Biotefa", material basis for the studies was renovated. The list of 74 items of new laboratory equipment is presented in SER. Exploitation of the equipment has been started since 2011-2013. Two laboratories used for Master studies are equipped with all the instrumentation necessary for practical work. They have not only basic equipment but new instruments as well as refrigerated centrifuges, laminar hoods, fermenter, transfer and gel documentation systems, real time PCR equipment and etc.

Teaching materials for second cycle of Bioengineering studies are available at central library of VGTU and reading room of the faculty. Publications available at the central library represent the basis of learning resources for Master studies. Some other teaching materials can be found at the reading room. Students are provided with Internet access to 27 subscribed databases in various scientific areas and themes. This service covers free, full text scientific and scholarly journals in all subjects and languages. It is mentioned in SER that there are not sufficient amount of learning books presented at the library of University. During last 2 years Faculty's library acquired nearly 200 books for students teaching. Majority of those books were issued during the last 5-10 years. The library collects the newest scientific literature in English intended for Bioengineering study programme too.

Still as a problem in respect to material resources can be mentioned availability of facilities to provide higher level training during study process and elaboration of MSc thesis works. As an indicator to missing capacity to support research can be mentioned the fact that majority of MSc thesis are elaborated in cooperation partners – research institutes.

5. Study process and student assessment

Admission to postgraduate studies is organised by the admission commission of the University. No admission examinations are for the *Bioengineering* master study programme. The admission requirements are based on the principles commonly applied at the University. Applicants to the *Bioengineering* master study programme must be graduates of university-level studies and have Bachelor Degree in the corresponding area. Usually the students who indicate the *Bioengineering* study programme as the first priority are admitted.

Competitive scores had minor fluctuations during the period assessed, the mean value being rather high (9.81). Candidates by first priority and total admission had a significant minimum in the year 2011. This was related with of new master study programme appearance in Department of Chemistry and Bioengineering. Only one person out of 3 graduated. 2011, 12 places were offered funded under EU project “BIOTEFA” for the applicants to the *Bioengineering* study programme. In 2012, entrants to this study programme were offered 8 state-funded and tuition-paying places which means that 80 % of study places were funded.

Out of 23 students who were admitted in 2010, 13 successfully completed the studies in 2012. A drop-out analysis (SER Table 9) for the period of the programme implementation shows that full-time students usually terminated studies on their own will. The reasons for the discontinuation of studies are of personal nature.

Students are informed on the possibilities to write scientific articles, reports, participate in conferences. The majority of postgraduate students (57 %) report are positive about the conditions to participate in scientific conferences and to publish the results. The Faculty of Fundamental Sciences holds the national conference based on a yearly basis of young scientists *Science – Future of Lithuania. Bioengineering and Bioinformatics*. The students can present their scientific works and research papers there. Students can present their research work at the research work contests held by the Lithuanian Academy of Sciences as well.

The evaluation system of each module is provided in module card individually. The subjects of final thesis correspond to the *Bioengineering study* programme aims and learning objectives. The

evaluation of final thesis depends on supervisors and reviewers evaluation as well as on analytical value and practical application of the work. The final evaluation of the work is the average of all evaluations of commission members and the quality of presentation. The list of final thesis is available in the internet, the subject corresponds to the study program.

The criteria of assessing academic achievements of the students are linked to the anticipated learning outcomes of the studies. The level of student knowledge is measured according to the criteria set in the module of studies and each grade reflects the achieved learning outcomes. The knowledge of VGTU students is graded using a ten-point grading system, while knowledge is assessed in compliance with the ECTS grading scale (SER table 10).

Academic progress of students is revealed from the analysis of postgraduate students' examination results of the study courses. The examination results (SER Table 11) show that weighted average of grades is more than 8.

The length of the study programme is 3200 hours. The total length of auditorium work hours is 19,3 % of the programme scope. From these lectures take 56,4 %, laboratory-base work - 20,5 %, practical works –23 %. Students have 40 hours of work per week. Student's self-study is intended for students' preparation to contact work and performance of other tasks set out in study programmes without the teachers' guidance. The majority of MSc students (89,5 %) are positive about the time-table of training session and 100% of them believe the time-tables are published on time. A week of self-studies is scheduled in each semester of studies.

Measures are taken to guarantee an ethically sound and proper academic conduct in the study tasks. The cases of cheating during examinations are processed and corresponding actions are undertaken, the highest penalty is removal from the University. Essays and final theses of the students are presented in electronic versions and checked for plagiarism. A *bona fide* statement confirming the authenticity of the works must be signed by a student.

The chairperson, members of the committee for the study programme and supervisors provide regular consultations to postgraduate students. The students may also consult teachers engaged in the programme implementation and teachers delivering individual courses under the study programme at issue. All teachers have duty hours for additional consultations. Contact information of the University staff is available in the websites of the Departments of the Faculty. According to the master students questionnaire results, the time of lecturers' consultation is effective.

Students are provided with residences in the University campus according. Information on partial studies at foreign universities, integration in the process of international studies and ERASMUS program is provided by the Department of International Relations of the University. However, only one student, graduated in 2012 used the international mobility programme which shows extremely low students mobility.

Staff members of the Department of Chemistry and Bioengineering and FMF Dean's Office provide consultations to students on career opportunities. Close contacts are maintained with potential employers –UAB “Biocentras”, UAB “Biotechpharma“, Teva Sicor Biotech UAB, Thermo Fischer Scientific, etc. According to questionnaire results, majority of Bioengineering programme graduates remain positive to find employment after graduation their studies. During

the programme implementation period, eight of thirteen MS students, were employed by the companies mentioned above. Some students continue with the doctoral studies which are not available in the University, but the students can choose other Lithuanian Universities or study abroad.

6. Programme management

The programme management system is well functioning and is based on structured process organised at VGTU with identifiable responsibilities and tasks. At the management of the programme of importance is the strong position of the Department of Chemistry and Bioengineering in the VGTU. Positive leadership is of importance at successful functioning of the programme. An important element of the programme management is preparation of self-assessment report. However, the aim of self-assessment is not only to sum up existing situation, but look forward, to identify, weaknesses and develop solutions for them. In this respect development of staff renewal programme could be recommended. Further as a problem can be identified the system of quality assurance and student opinion consideration. If the expert team got an impression that student surveys are regular and well-functioning, then evidences about student feedback efficiency in respect to regular study process management was not so convincing: majority of students were not aware on the functioning of QA/QC system and to what degree their opinions are considered at the study quality management process.

Communication between students and academic staff is good (“open door” policy) and students as well as graduates appreciate it. An important aspect of the study programme management includes involvement of local and international stakeholders in development of the study program content. This aspect is especially important considering the applied character of the study programme and in this respect direct involvement of practitioners into the study processes (as lecturers, supervisors of BSc thesis) could be acknowledged. The same is true also in respect to work with alumni- much could be done to improve and develop well-functioning system how to work with alumni, considering opinion survey on the study quality, suggestions for study programme improvement, support for a life-long learning.

III. RECOMMENDATIONS

1.

At the development of the study program content, to pay more attention to the questions of ethical aspects in biotechnology

2.

Increase supply of elective courses

3.

To continue efforts to rise international research productivity of the staff, development of pedagogical skills.

4.

To increase international mobility of students

5.

To ensure program running in a long perspective, staff renewal need should be considered and development of staff renewal program could be recommended

IV. SUMMARY

Programme aims and learning outcomes are in line with international trends and they address national and international research and labour market needs. The learning focus, curriculum and research efforts were consistent with what needs to be accomplished by students in other biotechnology programmes internationally. The outcomes of the programme were supported by student reviews of the programme and by a strong need for this programme by the social partners. One learning aspect that was not sufficiently developed and that the committee strongly believes needs further attention is the ethical responsibilities in biotechnology. Also additional tutorial support for incoming students would be appreciated from side of students. Overall, the curriculum study programme is and provides good biotechnology education. Curriculum design is rational and is based on combination of studies in biochemistry with quantitative engineering topics, consistent with the title of the programme; still a wider selection of elective courses could increase student motivation and help to better prepare for changing requirements in the labour market. The staff of the programme is well skilled to deliver the proposed classes. Existing publication record of majority of programme staff is of acceptable quality, but there is a space to improve it. Likewise, all faculty staff need to focus on improving the impact factor of their publications over the next few years. The average age of teachers involved in the programme is 63 for professors and 56 for associate professors. Although this expertise is of benefit for the current students, for the long term longevity of the programme the programme administrators need to introduce new staff into the programme before senior faculty retire. Facilities of learning resources are of good quality and recently significant improvements in the study infrastructure have happened. However capacity of infrastructure at VGTU not always supports elaboration of MSc thesis work, so significant part of Master thesis are prepared in research institutes. Study process is functioning smoothly just as the programme management. Still there are possibilities to increase international mobility of students, to ensure factual possibilities to choose more optional subjects.

V. GENERAL ASSESSMENT

The study programme *Bioengineering* (state code 621J76001) at Vilnius Gediminas technical 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	3
3.	Staff	3
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)	3
	Total:	19

*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 Gedimino technikos universiteto studijų programa *Bioinžinerija* (valstybinis kodas – 621J76001) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	4
2.	Programos sandara	3
3.	Personalas	3
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	3
	Iš viso:	19

* 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

Programos tikslai ir numatomi studijų rezultatai atitinka tarptautines tendencijas ir nacionalinius bei tarptautinius mokslo ir darbo rinkos poreikius. Studijų kryptis, programos sandara ir vykdomi moksliniai tyrimai atitinka kitų tarptautinių biotechnologijos programų tikslus. Studijų programos rezultatai pateisina studentų lūkesčius. Socialiniai partneriai mano, kad ši studijų programa paklausi rinkoje. Ekspertų grupės nuomone, reikėtų skirti daugiau dėmesio etinei atsakomybei biotechnologijos srityje. Atvykstantiems studentams reikėtų didesnės kuratorių pagalbos. Studijų programa suteikia išsamių biotechnologijos žinių. Programos sandara tinkama ir atitinka studijų programos pavadinimą, studentams dėstomi ir biochemijos, ir inžinerijos dalykai; platesnis neprivalomų studijų dalykų pasirinkimas galėtų padidinti studentų motyvaciją ir padėtų geriau pasirėngti kintantiems darbo rinkos poreikiams.

Programos dėstytojų kvalifikacija tinkama. Kalbant apie moksliniais publikacijas, dauguma programos dėstytojų jų paskelbė pakankamai, tačiau publikacijų skaičių reikėtų didinti. Visi fakulteto darbuotojai per ateinančius metus turėtų išleisti daugiau publikacijų. Programos dėstytojų amžiaus vidurkis yra 63 metai (profesorių) ir 56 metai (docentų). Jų profesinė patirtis naudinga studentams, tačiau norint užtikrinti programos tęstinumą reikėtų priimti naujų dėstytojų, nelaukiant, kol vyresnio amžiaus akademinis personalas išeis į pensiją. Materialieji ištekliai yra geros kokybės, neseniai buvo ženkliai pagerinta infrastruktūra. Tačiau VGTU infrastruktūros pajėgumai ne visada suteikia galimybę parašyti gerą magistrantūros baigiamąjį darbą, taigi daugelis magistrantūros darbų rengiami mokslinių tyrimų instituteuose. Studijų procesas vyksta sklandžiai, kaip ir programos vadyba. Dar yra galimybių didinti tarptautinį studentų judumą, užtikrinti faktinę galimybę pasirinkti daugiau neprivalomų dalykų.

III. REKOMENDACIJOS

1. Tobulinant studijų programos turinį daugiau dėmesio skirti etiniams biotechnologijos aspektams.
2. Pasiūlyti daugiau pasirenkamųjų dalykų.
3. Ir toliau skatinti darbuotojus atlikti daugiau tarptautinių mokslinių tyrimų, tobulinti pedagoginius įgūdžius.
4. Didinti studentų tarptautinį judumą.
5. Siekiant užtikrinti programos ilgaamžiškumą, reikėtų apsvarstyti personalo atnaujinimo klausimą, rekomenduotina parengti personalo atnaujinimo programą.

<...>