



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

VILNIAUS UNIVERSITETO  
***MIKROBIOLOGIJOS (621C50001)***  
**VERTINIMO IŠVADOS**

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**EVALUATION REPORT**  
**OF *MICROBIOLOGY (621C50001)***  
**STUDY PROGRAMME**  
**AT VILNIUS UNIVERSITY**

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Išvados parengtos anglų kalba  
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## DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<b>Mikrobiologija</b>
Valstybinis kodas	621C50001
Studijų sritis	Biomedicinos mokslai
Studijų kryptis	Mikrobiologija
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	Mikrobiologijos magistras
Studijų programos įregistravimo data	2009-08-31, Nr.1-73, akredituota iki 2013-12-31

## INFORMATION ON ASSESSED STUDY PROGRAMME

Name of the study programme	<b>Microbiology</b>
State code	621C50001
Study area	Biomedical Sciences
Study field	Microbiology
Kind of the study programme	University studies
Level of studies	Second
Study mode (length in years)	Full-time (2)
Scope of the study programme in credits	120
Degree and (or) professional qualifications awarded	Master degree in Microbiology
Date of registration of the study programme	2009-08-31, No 1-73, accredited until 2013-12-31

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The Centre for Quality Assessment in Higher Education

# CONTENTS

CONTENTS .....	3
I. INTRODUCTION.....	4
II. PROGRAMME ANALYSIS .....	5
1. Programme aims and learning outcomes.....	5
2. Curriculum design .....	6
3. Staff .....	8
4. Facilities and learning resources .....	9
5. Study process and student assessment.....	10
6. Programme management .....	11
III. RECOMMENDATIONS .....	11
IV. SUMMARY .....	12
V. GENERAL ASSESSMENT .....	<b>Klaida! Žymelė neapibrėžta.</b>

## I. INTRODUCTION

The report is prepared by Expert Team developed for the evaluation of the Master study programme of Microbiology at the Vilnius University, which consists of five persons:

- **Trine Johansen Meza** - Senior Scientist of the Department of Molecular Biosciences, University of Oslo, Assistant Deputy Director General, Tilsynsavdelingen NOKUT;
- **Aleksandar Jovanovic** - Professor, Department of Endocrinology, Medical Faculty, University of Pristina/K.Mitrovica, Serbia, EC Academic expert, HERE project;
- **Laima Ivanovienė** - Kaunas University of Medicine, Lithuanian University of Health Sciences, Biochemistry Department, Head of Department;
- **Tonis Karki** - Associated Professor and Senior Researcher at the Department of Microbiology, University of Tartu, Faculty of Medicine;
- **Tadas Juknius** - student representative.

The Experts received the self-evaluation report, recommendations for experts, and the schedule for site visit from the Centre for Quality Assessment in Higher Education of Lithuania (SKVC) earlier via electronic channels. Experts were also provided with curricula, subject descriptions, CV's etc. of academic staff. Before the on site visit the team had an introductory meeting at SKCV.

According to the agenda, the experts visited the Vilnius University on 18<sup>th</sup> of September 2013, and had meetings with the vice-deans of the Faculty of Natural Sciences, academic staff, students, alumni and social partners.

All the discussions were conducted in an open and constructive manner, and the team thanks the members of the university for their help and cooperation during the evaluation process. A general enthusiasm and optimism was evident amongst the programme leadership, teachers and students. The social atmosphere in the faculty was open, informal, friendly and empathic. The evaluation team also had an acquaintance with library, teaching and research laboratories and general infrastructure which is used for the purposes of the Microbiology programme. The assessment team also had the opportunity to evaluate Master theses of the graduates from the programme of Microbiology.

The team was greatly impressed by the efforts and the dedications shown by the staff members of the Department of Microbiology and Biotechnology. The amount and quality of the work put into the curriculum was obvious to the evaluation team. Clearly, the University and Faculty of Natural Sciences aims to provide high quality and contemporary 'life science' type of course, in line with general European understandings.

At the conclusion of the visit, the assessment team presented its main findings and opinions from the evaluation.

Now, after carefully reading all of the above-mentioned documents and discussions with students, teachers, officials from faculty administration and social partners the team was able to form a rather clear written view of the curriculum of the Master study programme Microbiology in the Vilnius University.

## II. PROGRAMME ANALYSIS

### *1. Programme aims and learning outcomes*

The mission of the Faculty of Natural Sciences is to be keeper and promoter of highly educated Lithuanians through creating high-level research and providing science-based higher education. The mission of the Department of Microbiology and Biotechnology is to train microbiologists with the Master's degree in Microbiology for the use of research institutions, enterprises and higher education. Another important task is doing scientific research to guarantee the development of microbiology and related areas in Lithuania. The impression of the evaluation team is that the activities done within the Master program of Microbiology support that mission.

The Master' degree in Microbiology consists of two years of studies, altogether 120 ECTS, of which 30 ECTS are devoted to the final Master thesis. A contemporary Master study in Microbiology field in Lithuania was founded in ninetens' of last century and the present structure of the curriculum of Microbiology was gained during 2005-2006. The current Microbiology programme is devoted to prepare specialists of high professional qualification in microbiology. The programme must also grant students with skills based on theoretical and practical knowledge, expands employment possibilities in Lithuania as well as in other European countries.

The structure and objectives of the curriculum of the Master programme in Microbiology are formulated to support the mentioned mission of the department. The programme is in conformance with the requirements established by the National Qualifications Framework for Master's level curricula. Since the last accreditation review in 2005, several changes to the programme have been implemented in order to be in compliance with the changing conditions of labour market, international standards and suggestions from the SKVC. For example, according to the self-evaluation report (SER, page 6, § 4) the study programme was modified according to EU and Republic of Lithuania Ministry of Education and Science Single Programming Document 2.5 measure "Improving the quality of human resources in research and innovation" and rearranged in 2010 according to "The general description of the requirements for the Master's degree programs" in (Žin., 2010, No. 67-3375). SKVC accreditation expert conclusions and analyses were used for programme structure revision in year 2005 and later (SER, page 8, § 8; page 16, § 33).

According to the understanding of the evaluation team the scope of the Master's degree programme in Microbiology is rather wide. There are different areas that the Master programme does cover in the current curriculum (Microbiology, Virology, Cell Biology, Immunotechnology etc). It means that the content of the curriculum is partly not in confirmation with those of the corresponding European curriculums - the scope of the Lithuanian 'Microbiology' programme is wider than Microbiology in its classical sense. It is more similar in terms of content to the curriculums of 'Biotechnology', 'Molecular Biology' etc. The evaluation team is afraid that these semantic differences can lead to the 'underestimation' of graduates' education on the international labor market. In order to better reflect the actual scope of the curriculum and to give graduates expanded opportunities on labor market the evaluation team advises that the possibility of the change of the programme name should be considered.

According to the self-evaluation report and data collected during the site visit, programme development has been a continuous process and the development of the curriculum results from internal and external needs. However, it seems that to some extent the development may be slightly informally organised, developments being agreed person-to-person or more or less formal feedback from students. The evaluation team was told that in such a relatively small programme as the Microbiology, many things work very well informally because all of the

personnel know each other and meet regularly. However, in a time of change, the evaluation team recommends that the programme authorities may wish to consider whether a more formalised process might be necessary to ensure that programme (and subject's content too!) development continues to take place in a coherent and timely fashion.

The evaluation team is sure that the Microbiology programme establishes requirements that students must achieve in order to complete their studies and obtain the relevant qualification for practice in Lithuania. European influences are evident in all aspects of Microbiology programme aims, outcomes, content and implementation. Data presented in the self-evaluation report reflected the views of the Faculty and students and was confirmed during the site-visit.

The self-evaluation report clearly demonstrates the objectives and tasks of the study programme. Intended student learning outcomes are established on curriculum level, included in subjects/course units, and are the basis for assessment in individual subjects. The learning outcomes on the Microbiology study programme level are defined and generally relevant for the Master's level and according to self-evaluation team statement in accordance with the National Qualifications Framework. At large, these six outcomes – *knowledge and understanding of microbiology; ability to perform research; critical thinking and independent action; communication skills; personal effectiveness; practical skills* - (SER, pages 11-14, § 16-21) encompass needed requirements in knowledge, skills and competencies. However, the programme learning outcomes have been done in descriptive and explanatory way (*an example from SER page 12, § 16 – outcome 'Critical thinking and independent action' - Critical thinking and the ability to work independently is one of the primary goals of the programme; students further develop their competences to deal with intellectual concepts and scientific discussion. These competences are developed in laboratory work, preparation for seminars, graduate work and research papers and grant preparation etc, etc,*) and therefore outcomes are not so as they should be. Programme level learning outcomes must be the statement of what a student should be able to know, understand and/or be able to demonstrate on the completion of Microbiology programme. Well-recognized Bloom's taxonomy with a ready-made list of verbs should be used for writing learning outcomes. At the moment programme's outcomes look like a description of what is provided or delivered to the students.

On the contrary, the description of learning outcomes of course units (subject, module) in the Microbiology programme are well described and on subjects level clearly defined. On this level the outcomes clearly determine which teaching and learning activities the students have to complete during the course. In principle, the intended outcomes at subject level must relate to the programme outcomes. And *vice versa* - each programme outcome should find itself adequately represented at the subject level. For the evaluation team such kind of an alignment between general 'statements'/programme outcomes and subject outcomes was hard to establish - likely therefore that the programme outcomes are too general and blurry and not clearly defined. For example, one of the learning outcomes is written on the program level as '*personal effectiveness*'. How this outcome is adequately represented at the subject level is unclear. The evaluation team can only suggest to the Faculty that curriculum mapping may be a useful tool to help the Faculty accomplish that kind of alignment in the future. The learning outcomes and their links with competences and study subjects should be provided in the coming years.

## **2. Curriculum design**

Masters degree programme structure is most closely associated with a Bachelor's degree in Molecular Biology. It means that in some way the current Master programme does represent the extension of the Bachelor-level programme and allowing concentrate on stage for deeper, specialised and more comprehensive analysis of fundamental and applied microbiology problems, preparation of scientific research and practical work.

The organisation of studies is divided into two 20-week semesters within an academic year. A full course of study is comprised of 30 ECTS per semester or 60 ECTS per year of two semesters. The programme consists of 13 subjects, two scientific projects and Master thesis, altogether 120 credits. Yet, the structure of the curriculum consists of compulsory subjects only. It means that the entire curriculum is designed as very strict and inflexible. According to the national rules, so called “free subjects” taken from the other study programmes are not allowed on the Master programme level. It is allowed, however, to take up to 15 credits extra to the required compulsory 120 ECTS. Such kind ‘extra’ subjects give to the curriculum some flexibility. There are no elective courses in the Master programme. However, nowadays it is generally accepted that university level education should be flexible, supporting a variety of learning styles, yet keeping a balance between the individual educational needs of the student and the absolute requirement that all the learning objectives are attained. To attempt to solve the problem of curricular overload, a core compulsory curriculum is usually proposed where content and competences that are fundamental to the accomplishment of the learning outcomes are defined. At the same time, a list of elective courses is developed. These subjects could be more or less close to the area of microbiology, research based, or even other subjects of different faculties of the university. Such diversity in types of subjects will allow students to explore areas of particular interest in greater depth. Therefore the evaluation team strongly suggests that the Microbiology programme should be more flexible, to follow the Bologna concepts with elective courses and free subjects.

Altogether 29% of total study time is devoted for contact learning. There are five subjects in first, second and third semester, fourth semester is reserved for Master thesis. The courses are distributed evenly, the number of credits per semester is unified and in accordance with national and university rules. Organisation of studies is logically sequenced to achieve optimal integration of theory and practice. The overall structure of the Microbiology programme is comparable with many similar life science programmes within Europe.

Each study programme development should be based on the definitions of the programme outcomes. This approach to programme development was not new to the staff members. The evaluation team found during the site visit that the teachers whom the team met were familiar with the concept of the outcome-based programme/subject development and they had applied it when developing their own teaching subjects. The Microbiology course units/subjects have clearly defined and understandable learning outcomes that are in consistent with the requirements of the Master level. The assessment criteria of the subjects were based on learning outcomes and the students were familiar with this information. It was worth to notice that most of the subjects were not only limited to ‘understanding’ or ‘knowing’ but also have the category ‘is able to do’. The Faculty had defined the learning outcomes for all of the individual subjects and these were based on programme outcomes in general. At the same time the evaluation team couldn’t easily make an exact alignment between outcomes on subject and programme levels. Also, in most cases the assignments of leaning, teaching and methods inside of one particular subject are usually given without diversity.

In general, modern teaching methods are used and adapted as necessary to deliver knowledge in a most rational manner. Face to face work is supported by an appropriate combination of lectures, seminars and practical experiences. Depending on the aims of the subject discussing (for example - lab exercise, research project), very small group work or individual approach is used as method of study and learning. Roughly 70% of the credit point is independent work. Independent work incorporates working with scientific literature or building the written paper associated with the subject. To guarantee efficient independent work guidelines for independent work and seminar papers and list of necessary literature have been drawn up for all subjects. Throughout the subjects the teacher of the specific subject being studied supervises students.

The Microbiology study programme also includes two scientific research papers and one final Master thesis. The last one represents the integration of the overall knowledge and practical

skills gained during the Master studies. The evaluation team wants to emphasize that the principle of the research based Master programme is an excellent way to prepare students for their future professional careers. The students must perform three research-based projects within the second, third and the fourth semesters which are valued with 8, 12 and 30 ECTS respectively. The last and biggest one is the final Master thesis. The two smaller ones are actually the subunits of the final Master thesis but awarded with credits separately. The final Master thesis is also awarded with credits. In the opinion of the evaluation team the final Master thesis is a comprehensive individual scientific project and the students should not be awarded repeatedly for the same research. Instead, the Master thesis project should be given an overall summative score of 50 or 60 ECTS credits.

The topics of Master theses exclusively originate from the field of microbiology-virology, are experimental, and consist of literature overview, problem setting, methodology, result and analytical discussion part. However, it was noticed during the site-visit that the discussion part of the Master theses is rather short and therefore not informative and analytical enough. It is the evaluation team's opinion that the discussion part of the Master thesis should be more analytical and more extended. The thesis as whole but especially the discussion part demonstrates that the student is a skilled and credible professional in the area of microbiology research and shows that he or she is able to present the results in a scholarly manner. In that part of the thesis the gained analytical skills, synthesis of data and putting the research results in the contents of wider scientific scope are shown.

According to the evaluation team, judgment the Faculty designs curriculum to meet national and international standards by taking best practices into account, balancing theoretical knowledge with applied and practical skills, promoting innovation in students, and working closely with the Lithuanian enterprise community.

### *3. Staff*

The social atmosphere in the department and in the microbiology education is open, informal, friendly and emphatic. The same seems to be true of the relationship between staff and students. Students were content with the teaching quality although the evaluation team was concerned about the relatively high involvement of staff in research. According to the obtained information the staff members have been successful by sourcing of different scientific funds and grants. Partly such donations were involved to support and develop current Master programme.

The Faculty is composed of nine lecturers, most of them (2/3) are the employees of the Department of Microbiology and Biotechnology who all are holding a PhD degree (SER, pages 19, § 40). The number of full-time professors involved into Microbiology Master programme is three. Sufficient Faculty exists with the required qualification for delivery of the programme.

The personnel is composed of 9 lecturers, 6 of them are the employees of Vilnius University, Faculty of Natural Sciences, Department of Microbiology and Biotechnology. The personnel of Department of Microbiology and Biotechnology tutoring the study programme is given three technician staffs. The distribution of age among the personnel is medley; nevertheless the majority of lecturers are middle-aged. The rotation of personnel was not considered to be essential – it mainly happened via the substitutions of subjects underlying in the programme.

The university has established a set of guidelines in relation to the selection of academic staff following the requirements of the law. The recruitment of academic staff is given high priority and the focus has been on a continuous improvement of the academic qualifications, e.g. by encouraging and supporting the staff to acquire a Ph.D. An effort has been made to improve the number of foreign faculty through international mobility programmes and contracts with other



universities. The evaluation of the academic staff takes into consideration teaching abilities, research record, participation in development activities and results from student feedback.

The university guidelines set out the general principles of salaries, fees and teaching and research obligations. The individual contracts of staff members take into consideration the specific distribution between teaching, research and development activities as well as specific bonuses of obligations. During the site visit the evaluation team recognized that the staff members are actively involved in research. Research has been developed which focuses on areas close to Microbiology Master programme in which Master's thesis are build up. Faculty is systematically working towards improving its academic qualifications whilst taking part in research and development, seminars and conferences.

An important part of the internationalization process is the participation in international networks, international research conferences, seminars, staff and student exchange programmes etc. Faculty has been active in these activities and in various ways encouraged and supported individual members of staff to join mobility programmes, visit institutions abroad and develop joint projects. (SER, Annex 4). Three doctors and one junior scientific researcher were sent to the placements and participated in exchange programs (ERASMUS). Currently, the employers improved their skills is Milan, Washington and the University of Copenhagen (SER, pages 20, § 42).

The evaluation team recommends continued investment in departmental members' development as teachers and researchers and maximising collaboration with members of other departments to support programme teaching.

#### ***4. Facilities and learning resources***

The evaluation team toured the faculty buildings. The general impression is that the physical infrastructure of the Department of Microbiology and Biotechnology is sufficient to serve the needs of a contemporary life-science type school although the laboratory building is rather old. It has been renovated but there are plans for moving to a new building, which is going to be especially designed for lab works.

The teaching rooms are equipped with modern teaching equipment; the laboratories are well equipped with state-of-the-art research equipment. The classes and laboratories seem to be open for free use of students except during lectures and conducted laboratory exercises. The working conditions of both faculty and administrative staff meet the needs arising in an institution of higher education. Staff members are satisfied with their working conditions; the staff that the evaluation team met thought the physical facilities of the faculty are satisfactory.

Computers and Wi Fi are available. The library has a capacity of 40 places but is also connected to the university computer network via which students in elsewhere outside the university can easily access the available e-resources. However, during the meeting with students, the evaluation team recognized that the literal capacities of the library are not big enough, that the number of the most necessary books is not always adequate. On the other hand, online access to the research database was estimated as very good. Microbiology Master's degree students have online electronic access to the international databases such as *Web of Science*, *Willey*, *InterScience*, *Springer LINK*, *Science Direct* etc. These conditions give good opportunities for students to obtain study material, as well as prepare examinations and seminars.

According to the evaluation team, the judgment of the conditions for studying and carrying out research activities meet the requirements and the expectations of a higher education institution. The students extensively use the study information system and feel that lecture material and library recourses support them in effectively completing their studies.

## ***5. Study process and student assessment***

The admission of Master's degree studies in Microbiology is organised under Education and Science Ministry and University of Vilnius admission rules. Admission quotas have been increased to a future need of microbiologists in the Lithuanian society in 2012. Admission rules are clear and easily understandable. Most of the students choose microbiology studies after biology or similar study Bachelor programme, only in rare cases some students came from different programmes, and they should 'catch up', there is no bridge courses. However, based on the interviews with students and teachers it seems that educational level of the entrance students is adequate and corresponds to the requirements.

Most of the students show high motivation and satisfying results according to the teachers. During the studies the students and teachers relate in a very positive way with a strong involvement of teachers. The students seem to be satisfied with the study load and help from the teachers. The teachers have the opportunity to improve their pedagogical approaches by attending courses organized by the university central quality management department.

Students have opportunity to participate in conferences, publish thesis in local or international journals. Students are assessed throughout their studies in each individual course by their teachers. Syllabus shows the basis on which they will be assessed and the student learning outcomes that they are expected to meet. As a culminating experience, all students have to defend the final Master thesis. The evaluation team examined samples of thesis and found them to be sound. Theses at the Master levels are carefully vetted through final defence process that involves four faculty members and external chairperson. Students benefit from formative assessment of their progress toward meeting learning outcomes through programme-wide assessment due to Master thesis at the end of second year.

The technical and educational technology resources used to organise educational activities in the faculty are well managed. Students' representatives and the members of the teaching staff agreed that the study information system is well suited for their needs.

Students told the evaluation team that they are asked for feedback on every course. The Faculty utilises the university study information system to obtain regular feedback about the organisation of studies. According to the staff members, statements through this process the organisation of studies is continuously improved. Students and alumni also felt that the results of surveys are taken into account in improvement activities and told the evaluation team that they had noticed changes in the way that some teachers taught after the surveys.

The Faculty of Natural Sciences participates in ERASMUS agreements with other institutions of higher education in order to encourage students to study in other countries. Up to now 5 students have studied abroad, and 3 exchange students from other countries have been studying in the current curriculum. ERASMUS programme participant's number is rather low, probably due to short study period. The evaluation team emphasises that the internationalization initiative is critically important and supported university efforts in this regard.

Students have possibility to live in dormitories, to get scholarships, can participate in other social activities like sports, art etc.

Students are consulted about professional training and career opportunities during the events organized by university administration but students mentioned that practise places are given with recommendations per lectures.

Counselling is available for the students at the university level. A counsellor provides support to students facing academic difficulties. Authorities told that the university and the career centre organize the career days where students are given information on job opportunities. The career centre also connects students with employers and offers career seminars. However, the students informed the evaluation team that career centre should be more active in the career counselling

of Master students. Also the procedure of providing information about job opportunities should be structured better and rely on objective criteria instead of providing current non-formal contacts between the employers and the University.

The assessment strategy is diverse and includes evaluation of exams, tests, seminars, practicals, laboratories; discussion groups/project groups, presentations, and project work, reviews, analyses, reporting. Formative assessment methods include discussions and presentations, laboratory exams, student self-assessment, solutions for the certain problems. However, the evaluation team suggests that the assessment methods should be more specifically linked to the subject learning outcomes at subject level. In this way the outcomes could be measurable.

## ***6. Programme management***

The Master programme of Microbiology has a traditional vertical management hierarchy – from department level up to the state level - and a rather traditional management body's structure. The university level statutes require Faculty Council and a Microbiology Master's programme committee to the curriculum. All business of the Microbiology programme is dealt with by these bodies. Such structure was explained by management authorities and faculty staff members as the optimal structure for management of a small curriculum. It gives flexibility to react to the changes in the educational system and labour market developments in Lithuania. The evaluation team noted that mentioned structure is formalized and provide sufficient relevant opportunities for detailed debate about major curriculum issues and management.

The evaluation team is sure that the curriculum management supports and leads the improvement of processes and achievement of program objectives. The evaluation team found that liability at all management levels is defined. The responsibilities of the dean, vice-deans and programme manager are set out in the regulations.

Alumni are asked for their opinions about quality of instruction. Data from self-evaluation report and from alumni shows that the graduates of the Microbiology Master programme gain employment and also practically all of them are in the field of their speciality. During the visit, the employer representatives indicated that they were very satisfied with the knowledge and skills of the graduates. Employers' opinions are not surveyed but there is good contact of employers with the programme and there are various ways in which they keep in contact with the university. The representative of social partners is also involved into Microbiology Master's programme committee.

The quality assurance is based on the university study informational system and is utilised by programme management to collect and analyse feedback from students and to address changes in the delivery of the Microbiology curriculum, resources, theoretical knowledge and practical skills. Graduates and employers have indicated that the feedback process has led to continuous quality improvement. However, probably the evaluation should be more systematic. The assessment team sees a risk that too much importance could be given to the feedback from students if there is less data about other aspects of education quality, including the student achievements and results based on assessment by teaching staff.

## **III. RECOMMENDATIONS**

1. Scope of the programme is wider than microbiology in its classical sense, so the possibility of the change of the name 'Microbiology' should be considered;
2. The structure of the curriculum consists of the compulsory subjects only, there are no elective courses and therefore the entire curriculum is designed as very strict and inflexible.

- The curriculum should be more flexible, follow the Bologna concepts with elective courses subjects;
3. Programme's learning outcomes have been done in too descriptive way and should be rewritten;
  4. Intended outcomes at subject level must relate to the programme's outcomes. Learning outcomes on all of the courses should be harmonized with the study programme's learning outcomes;
  5. Assessment methods should be more specific and correspond to teaching and learning methodology and learning outcomes, so the learning outcomes could be objectively measurable;
  6. The University career centre should be more active, and include the database and survey of the graduates and alumni;
  7. The structure of the Master thesis and the evaluation system with repeated number of credits given should be considered. The discussion part of the students' Master theses should be more analytical and must be expanded;
  8. The number of textbooks and copies of the existing books in the local library should be increased.

#### **IV. SUMMARY**

The structure and objectives of the curriculum of Microbiology are clearly formulated to support the mentioned mission of the department. The programme is in conformance with the requirements established by the National Qualifications Framework for Master's level curricula. The curriculum is wide and well designed and provides a contemporary microbiology education, including practical skills. However, the scope of the programme is rather wide and there are many areas that the Master programme does cover in the curriculum. In order to better reflect the actual scope of the curriculum, the evaluation team advises that the change of the programme's name should be considered. The learning outcomes are defined and relevant for the Master's level. However, at the programme level the outcomes look like as a description of what is provided or delivered to the students. Learning outcomes on all of the courses should be harmonized with the study programme learning outcomes – they should be matched with each other.

The entire curriculum is designed as very strict and inflexible. According to the national rules, so called “free subjects” taken from the other study programmes are not allowed on the Master programme level. There are no elective courses in the Master programme. The evaluation team strongly suggests that the Microbiology programme should be more flexible, to follow the Bologna concepts with elective courses and free subjects.

Microbiology study programme includes two scientific research papers and one final Master thesis. The principle of the research based Master programme is an excellent way to prepare students for their future professional careers. Research papers are in reality the subunits of the final Master thesis but awarded with credits separately. The final Master thesis is also awarded with credits. In the opinion of the evaluation team the final Master thesis is a comprehensive individual scientific project and the students should not be awarded repeatedly for the same research. Instead, the Master thesis project should be given an overall summative score.

Teachers and researchers participating in the study programme fulfil the requirements by the law and have remarkable achievements in research. University has established a set of guidelines in relation to the selection of academic staff following the requirements of the law. The recruitment of academic staff is given high priority and the focus has been on a continuous improvement of the academic qualifications, e.g. by encouraging and supporting the staff to acquire a Ph.D.

Sufficient Faculty exists with the required qualification for delivery of the programme. The physical infrastructure of the Department of Microbiology and Biotechnology is sufficient to serve the needs of a contemporary microbiology school. The teaching rooms are equipped with modern teaching equipment; the laboratories are well equipped with state-of-the-art research equipment. Staff members are satisfied with their working conditions. Literal capacities of the library are not big enough, the number of the most necessary books is not always adequate. On the other hand, online access to the research database was estimated as very good.

The students show high motivation and satisfying results. Internal quality assurance is very good and includes the feedback system. The cooperation with social partners is extensive and very good.

## V. GENERAL ASSESSMENT

The study programme Microbiology (state code – 621C50001) at Vilnius University is given **positive** evaluation.

*Study programme assessment in points by fields of assessment.*

No.	Evaluation Area	Evaluation Area in Points*
1.	Programme aims and learning outcomes	3
2.	Curriculum design	3
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
	<b>Total:</b>	<b>20</b>

\*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:  
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Grupės nariai:  
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Prof. Dr. Aleksandar Jovanovic

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**VILNIAUS UNIVERSITETO ANTROSIOS PAKOPOS STUDIJŲ PROGRAMOS  
MIKROBIOLOGIJA (VALSTYBINIS KODAS – 621C50001) 2013-11-05 EKSPERTINIO  
VERTINIMO IŠVADŲ NR. SV4-347 IŠRAŠAS**

&lt;...&gt;

**V. APIBENDRINAMASIS ĮVERTINIMAS**

Vilniaus universiteto studijų programa *Mikrobiologija* (valstybinis kodas – 621C50001) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	3
2.	Programos sandara	3
3.	Personalas	4
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	4
	<b>Iš viso:</b>	<b>20</b>

\* 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)

&lt;...&gt;

**IV. SANTRAUKA**

Mikrobiologijos programos turinio sandara ir tikslai yra aiškiai suformuluoti ir prisideda prie katedros misijos įgyvendinimo. Programa atitinka Nacionalinės kvalifikacijų sandaros reikalavimus magistrantūros programų turiniui. Programos turinys platus ir gerai parengtas, suteikia šiuolaikinį mikrobiologijos išsilavinimą, įtraukiant praktinius įgūdžius. Tačiau

programos apimtis yra plati, magistrantūros programa apima daug sričių. Kad geriau atsispindėtų tikroji programos apimtis, vertinimo grupė pataria apsvarstyti programos pavadinimo keitimo klausimą. Numatomi studijų rezultatai apibrėžti ir atitinka magistro laipsnį. Tačiau programos rezultatai primena aprašą to, kas studentams teikiama arba dėstoma. Visų studijų dalykų rezultatus reikėtų suderinti su studijų programos rezultatais – jie turi atitikti vienas kitą.

Visa programos turinys yra labai griežtas ir nelankstus. Pagal nacionalines taisykles, į magistrantūros programą neleidžiama įtraukti iš kitų programų paimtų vadinamųjų „laisvųjų dalykų“. Šioje magistrantūros programoje nėra pasirenkamųjų dalykų. Vertinimo grupė primygtinai siūlo šią Mikrobiologijos programą padaryti lankstesnę, laikantis Bolonijos proceso koncepcijos dėl pasirenkamųjų ir laisvųjų dalykų.

Mikrobiologijos studijų programa susideda iš dviejų mokslo tiriamųjų darbų ir magistro baigiamojo darbo. Tai, kad magistrantūros programa pagrįsta moksliniais tyrimais, yra puikus būdas parengti studentus būsimai profesinei karjerai. Mokslo tiriamieji darbai faktiškai yra magistrantūros baigiamojo darbo dalys, bet jiems suteikiami atskiri kreditai. Magistro baigiamajam darbui taip pat skiriami kreditai. Vertinimo grupės nuomone, baigiamasis magistro darbas yra išsamus individualus mokslinis projektas, taigi studentams neturėtų būti nuolat skiriami kreditai už tą patį mokslinį tyrimą. Vietoj to magistro baigiamojo darbo projektui turėtų būti skiriamas bendras suminis balas.

Šioje studijų programoje dalyvaujantys dėstytojai ir tyrėjai atitinka teisės aktų reikalavimus ir yra daug pasiekę mokslinių tyrimų srityje. Universitetas yra parengęs gairių rinkinį, reglamentuojantį akademinio personalo atranką laikantis teisės reikalavimų. Akademinio personalo įdarbinimas yra vienas svarbiausių prioritetų, o akademinį kvalifikacijų tobulinimui skiriamas nuolatinis dėmesys: darbuotojai skatinami įgyti daktaro laipsnį ir yra remiami. Yra pakankamas skaičius dėstytojų, turinčių šiai programai dėstyti reikalingą kvalifikaciją. Mikrobiologijos ir biotechnologijos katedros fizinė infrastruktūra yra pakankama šiuolaikinės mikrobiologijos mokyklos poreikiams tenkinti. Mokymui skirtose patalpose yra moderni mokymo įranga, laboratorijose – šiuolaikiška mokslinių tyrimų įranga. Darbuotojus tenkina jų darbo sąlygos. Bibliotekos literatūrinė erdvė nepakankamai didelė, ne visada pakanka būtiniausių knygų. Antra vertus, galimybė naudotis elektroninėmis mokslinių tyrimų duomenų bazėmis įvertinta labai gerai.

Studentai labai motyvuoti, jų rezultatai geri. Vidinis kokybės užtikrinimas atliekamas labai gerai, jis apima grįžtamojo ryšio sistemą. Plačiai ir veiksmingai bendradarbiaujama su socialiniais partneriais.

### III. REKOMENDACIJOS

1. Šios programos apimtis yra platesnė nei mikrobiologijos klasikine prasme, taigi reikėtų apsvarstyti galimybę pakeisti programos pavadinimą *Mikrobiologija*;
2. Programa sudaryta tik iš privalomųjų dalykų, pasirenkamųjų nėra, todėl visa programos turinys yra labai griežtas ir nelankstus. Jis turėtų būti lankstesnis, atitikti Bolonijos proceso koncepciją dėl pasirenkamųjų studijų dalykų;
3. Programos numatomi studijų rezultatai yra pernelyg aprašomojo pobūdžio – juos reikėtų perrašyti;
4. Numatomi studijų dalykų rezultatai turi būti susieti su studijų programos rezultatais. Visų dalykų rezultatai turėtų būti suderinti su studijų programos rezultatais;



5. Vertinimo metodai turėtų būti konkretni ir turėtų atitikti mokymo bei mokymosi metodiką ir numatomus studijų rezultatus, kad studijų rezultatai galėtų būti objektyviai išmatuojami;
6. Universiteto karjeros centras turėtų būti aktyvesnis ir apimti duomenų bazės kaupimą bei absolventų apklausas;
7. Reikėtų apsvarstyti magistro baigiamojo darbo struktūrą ir vertinimo sistemą su skiriamu besikartojančiu kreditų skaičiumi. Studentų magistrantūros baigiamojo darbo aptarimo dalis turėtų būti analitiškesnė ir labiau išplėsta;
8. Vietos bibliotekoje turėtų būti daugiau vadovėlių ir esamų knygų kopijų.