Expert group joint opinion

Evaluation Procedure: Assessment of Study Field

Higher Education Institution: University of Latvia

Study field: Wildlife Sciences

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Summary of the Assessment of the Study Field and the Relevant Study Programmes

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The study field of Wildlife Sciences at the University of Latvia (UL), Faculty of Biology (FB) and study programmes of Biology (ABSP), Biotechnology and Bioengineering (ABSP), Biology (AMSP), and Natural Sciences (DSP), included in this study field are implemented based on the Strategy of the University of Latvia 2021-2027 and meet all the legal requirements of the regulatory enactments of the Republic of Latvia. The aims of the study field are focused on research-based education in biology and biotechnology, but these aims do not include the specifics of the DSP Natural Sciences. The management structure of the FB study field is well organized and oriented towards developing the study field. UL has established a system and developed procedures for student admission, recognition of study time, professional experience, previous formal and informal education, and assessment of student achievements and learning outcomes, which are logical and practical. The Quality Assurance System of UL and FB is very well developed, implemented and integrated into the study field and aids in accomplishing the objectives and learning outcomes of the study field and the pertinent study programmes. The quality assurance system is transparent, well organized and efficient, with numerous points of control to maintain principles of democracy and transparency.

The infrastructural, technical, administrative, scientific, educational, and financial resources needed for the implementation of the study field are well developed, and at the disposal of students and staff, still, there is space for improvement. Financing should be improved to ensure the sustainability and excellence of the study field programmes. The new building, modern and inclusive infrastructure, House of Nature and the House of Science of the UL Academic Centre, botanical garden, Kolka training center, new facilities, laboratories, UL Library and other assets create a good working atmosphere for the students and staff and provide a good setup for learning outcomes achievements. The FB has developed an effective system for collecting statistical data to ensure improvements in the study field based on the data.

The procedures implemented to attract qualified teaching staff are efficient and transparent. The directions of scientific research of the FB staff are relevant to the study field, and they are consistent with the UL, FB, development goals. The scientific activity is good and effective at all study levels of study programmes. There is an increased number of projects and scientific publications. Students in academic programmes at all levels participate in scientific and practical research. Students are encouraged to start early with an internship in collaborative institutes of FB, to gain practical skills and knowledge relevant to the study program. Within the framework of the study field, the FB collaborates with international institutions, number of relevant stakeholders such as employers, employers' organizations, municipalities, non-governmental organizations, and relevant Latvian scientific institutes such as Institute of Biology, the UL Institute of Microbiology and Biotechnology; the BIOR, the Latvian Biomedical Research and Study Centre, the Latvian Institute of Aquatic Ecology. This collaboration helps to achieve the objectives and learning outcomes of the study field and the pertinent study programmes.

The University of Latvia, FB, has acknowledged previous recommendations and is implementing them to improve the study field and study programmes, however, there is still space for improvement and certain recommendations still need to be further implemented. The image of the FB and study programmes among students, teaching staff, graduates, and partners is very good and represents a valuable resource for future activities.

Main strengths:

1) The study field goals and development plan have been well aligned and strongly contribute to the strategic goals of the UL. The management structure of the study field Wildlife Sciences and the corresponding four study programmes is well organized and oriented towards developing the study field.
2) Two study programmes (ABSP Biotechnology and Bioengineering, and DSP Natural Sciences) use an interdisciplinary approach in the implementation, which provides wider opportunities for the improvement and development of the study field.
3) Well-developed and applied quality assurance system, transparent, democratic, and complex, with few levels of control and avoidance of conflict of interest.
4) High demand in the job market for specialists in the field of biology, especially in the "Biotechnology and bioengineering" study programme. This study programme will be implemented in English in the future, increasing the opportunities for international students.
5) The UL respects the principles of fair and responsible conduct and has established the Unified Computer Plagiarism Control System and provides other HEIs in Latvia with the opportunity to use the System based on a cooperation agreement.
6) Teaching staff have support for their professional development. Language skills (English) of teaching staff are gradually being improved, as well as new teaching staff have been recruited.
7) Increased number of projects and research papers in the study field, published in international peer-reviewed journals. Involvement in excellent research in teaching at FB.
8) Students have opportunities to gain practical skills and knowledge relevant to the study programmes and are involved in research activities, practical study courses, using modern facilities of the FB, 24/7 open library and facilities, competencies of the researched involved in teaching at FB, as well as in research activities at relevant Latvian scientific institutes.
9) Good connection with labor market representatives and recognition as graduates are respected at/by the labor market. Graduates and students find investment in studying at FB valuable and feel proud and strong belonging to FB. The positive image of FB among stakeholders represents a valuable resource for Alumni network development.

Main weaknesses:
1) The aim of the study field is defined according to the content of the bachelor's and master's study programmes. Still, the content of the doctoral study programme is not taken into account in the formulation of the aim.
2) More financing is needed to ensure sustainability and excellence. Special attention is needed in the transparency of financing at DSP level. The laboratory equipment of FB should be improved to ensure high-level research and development activities.
3) The workload of the teaching staff has to be organised in a way it ensures sustainability and balance of workload.
4) Low mobility of student and teaching staff, international guest lecturers, and students.

I - Assessment of the Study Field

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1.1 Management of the Study Field

Analysis

1.1.1. The University of Latvia (UL) study field Wildlife Sciences comprises of four study programmes of different levels:
· two academic bachelor's study programmes:
- ABSP Biology, 43421
- ABSP Biotechnology and Bioengineering, 43421

· one academic master's study programme
- AMSP Biology, 45421
· one doctoral study programme
- DSP Natural Sciences, 51421.

The study field of Wildlife Sciences of the University of Latvia and study programmes included in this study field are implemented on the basis of the Strategy of the University of Latvia 2021-2027 and meet the requirements of the regulatory enactments of the Republic of Latvia.
The goals of the study field are determined by internationally recognized priorities in the offer of higher education and current affairs of Latvia's national economy, in accordance with the Latvian National Development Plan for 2021-2027 (NDP2027) and directly correspond to the following priorities of the NDP2027: 1) priority "Knowledge and skills for personal and national growth"; its direction of action "Science for the development of society, growth and security of the national economy"; 2) priority "Quality living environment and territorial development"; its directions of action "Nature and environment – "Green course"", "Technological environment and services", "Balanced regional development" (SAR, p. 18).
In the Self-Assessment Report (SAR) two aims of the study field are indicated:
1) The aim of the study field Wildlife Sciences is “to prepare specialists at the Bachelor's, Master's and Doctoral levels in biology and biotechnology in order to provide the country with specialists necessary in priority research directions and sectors of the national economy” (SAR, p. 17).
2) “The goal of the study field "Wildlife Sciences" is to ensure that life sciences – biology and biotechnology studies at the Faculty of Biology of the UL become a leading study offer at the level of higher education, which covers the national demand for wide-profile specialists at the level of basic studies in Latvia, while at the same time providing opportunities for specialization at higher study levels and in research directions, which are current in the labour market and science of Latvia and the EU countries. The goal of research development is to provide research-based education in the field of biology and biotechnology, ensuring the attraction of national funding for both fundamental research and applied research” (SAR, 18).
Both of these aims are focused on biology and biotechnology study programmes, as well as research-based education in biology and biotechnology, but these aims do not include the specifics of the DSP Natural Sciences, which consolidates the previous doctoral study programmes "Biology", "Physics, Astronomy and Mechanics", "Geography", "Geology", "Chemistry" and "Environmental Science", and which provides the possibility to specialize in different subfields of natural sciences. It would be necessary to review the aim of the study field and define it in accordance not only with the content of bachelor's and master's study programmes, but also to take into account the content of the doctoral study programme.
According to the Cabinet Regulations No. 322 “Regulations on the Classification of Education in Latvia”, Annex 2 (approved 13.06.2017.), the natural sciences is the thematic group of education (Natural sciences, mathematics and information technologies), which includes thematic areas: life sciences, environmental sciences, physical sciences, mathematics and statistics and computer science). In the current version, the name of the DSP Natural Sciences includes a broader concept than the name of the study field Wildlife Sciences.
But at the same time, the Cabinet Regulations No. 793 "Regulations Regarding Opening and Accreditation of Study Fields” (approved 11.12.2018), where Appendix1 lists all 32 study fields in higher education in Latvia, and this list does not contain the study field Natural Science; the list contains the following study fields: (13) Wildlife Sciences, (14) Geography and Earth Sciences, (15.) Chemistry, Chemistry Technologies, and Biotechnology and (16) Physics, Material Science, Mathematics and Statistics. The study field Natural Sciences is not defined in these regulations. Therefore, as UL management representatives stated during the meeting with the experts, the university, in accordance with the Cabinet Regulations No. 793 (approved 11.12.2018), chose the

most appropriate name for the study field – Wildlife Sciences. UL should request the Ministry of Education and Science to review the names of study fields and harmonize them with the Cabinet Regulations No. 322 “Regulations on the Classification of Education in Latvia” (approved 13.06.2017).
The management structure of the study field Wildlife Sciences and the corresponding four study programmes is well organized and oriented towards the development of the study field. Two programmes (ABSP Biotechnology and Bioengineering, and DSP Natural Sciences) use an interdisciplinary approach in the implementation of the study programmes, which provides wider opportunities for the improvement and development of the study field.
Upon graduating from the ABSP Biology, graduates obtain the right to study Biology through competition. After graduating from the AMSP Biology, graduates get the right to study at the DSP Natural Sciences. These three study programmes, as well as the recently established ABSP Biotechnology and Bioengineering, form a logical sequence of academic education ensuring the growth of students and the compliance of their qualifications with the needs of the labour market.

1.1.2. The SWOT analysis of the field of study Wildlife Sciences (SAR, p. 20 – 22, Table 2.1.2.1.) is carried out by the board of the study field and approved at the Council meeting of the Faculty of Biology. The SWOT analysis evaluates the strengths and weaknesses of studies and scientific work, as well as opportunities and threats in accordance with the aim of the study field.
It is indicated in the SWOT and has also been pointed out by the experts that the strengths of the study field and the study programmes included in it are the following: students have the opportunity to participate in the implementation of research projects; students often develop their final theses (Bachelor’s Thesis, Master’s Thesis, Doctoral Dissertation) in Latvian scientific institutes; modern and inclusive infrastructure is available for studies and scientific work in the House of Nature and the House of Science of the UL Academic Centre, as well as in scientific institutes; high productivity of research papers in the area of study field, published in international peer reviewed journals. Both SWOT and experts indicate that the weaknesses of the study field and the study programmes included in it are: the insufficient number of foreign students and lecturers and low mobility of the students and the teaching staff.
In order to reduce the influence of weaknesses on the development of the study field, certain measures have been developed and are being implemented (attracting international students, especially to the ABSP Biotechnology and Bioengineering; increasing the use of the experience and expertise of the UL FB researchers in interdisciplinary and international projects; strengthening and expanding cooperation in the field of study and research with the strongest Latvian scientific institutes; strengthening the career development of academic staff (tenure track), as well as promoting the involvement of both Latvian and foreign lecturers in the study process and furthering the development of joint research projects; etc.).
When analyzing the strengths and opportunities of the study field (SAR, p. 21), it is possible to conclude that they reflect only the ABSP Biology, the ABSP Biotechnology and Bioengineering, the AMSP Biology and the subfield Biology from the DSP Natural Sciences. The SWOT analysis does not manifest that the DSP Natural Sciences, integrates also other branches of natural sciences besides biology. The SWOT analysis has been carried out very qualitatively, but one gets the impression that it corresponds to the ABSP Biology, the ABSP Biotechnology and Bioengineering, the AMSP Biology and the previously implemented DSP Biology.
According to the SWOT analysis, the study field development plan has been drawn up (Annex 3-B. Study field development plan). In the study field development plan, the aims of the study field are aligned with the strategic goals of the UL, as well as a detailed description and mutual concordance of the goal, task, sub-task of the study field, as well as achievable and quantitative indicators are presented. The study field development plan has two parts: 1) “Goals and their conformance of the field of study “Wildlife Sciences” to the development directions and strategic goals of the UL”, where

the aims of the study field are aligned with the strategic goals of the UL, and 2) “The development plan and goals of the field of study 2021-2027”, where six subsections present a detailed description and mutual concordance of the goal, task, sub-task of the field of study, achievable indicator, quantitative indicators, and responsible person.

1.1.3. The collegial responsibility in the management of the study field of Wildlife Sciences lies with the Senate of the UL, the Commission for the Evaluation of the Quality of Study Programmes of the UL, the Council of the Faculty of Biology and the Council of the study field of Wildlife Sciences, which evaluate the quality of studies and make decisions on measures to ensure the quality of studies. The administration of the UL is responsible for the quality of studies, delegating the responsibility for the functioning of the study quality assurance system to the Academic Department (SAR, p. 22).
The responsibility for the quality of the study field Wildlife Sciences and the study programmes implemented within it rests with the head of the study field Wildlife Sciences, the Dean of the Faculty of Biology, and the study programme directors (SAR, p. 23).
Each study programme of the study field is led by a study programme director who manages the development and implementation of this study programme. The competence of the head of the study field is to ensure the management and development of the study field. The Council of the study field is a collegial study field institution that oversees the academic, professional and doctoral study programmes of all levels related to the study field.
The implementation of the joint ABSP Biotechnology and Bioengineering is monitored both by the study field councils and also by the study programme council established in accordance with the agreement between the UL and Riga technical university (RTU), which has two representatives (programme directors and vice-rectors) from each university (SAR, p. 35). The programme council determines and monitors that there are common quality requirements for the implementation of the study programme, including the student matriculation requirements, uniform descriptions of study courses.
Each faculty member involved in the study field of Wildlife Sciences is responsible for the quality of the content and implementation of the study courses delivered, research activity and professional development.
The students' responsibility is defined in their rights and duties to promote the implementation of the goals of the UL and excellence in studies by participating in the collegial institutions of the UL and regularly expressing their opinion in student surveys.
An important role in ensuring the study process is played by the Department of Study Services (SAR, p. 24), the Department of Academic Competence Development of the UL, the student self-government of the faculty, the Student Council of the UL.
The procedures for the management, quality assurance and development of study fields at the UL, the functions and operating principles of the Councils of Study Fields, the qualification requirements, obligations and rights of the heads of study fields and the directors of study programmes and sub-programmes of the field are determined in the Regulations on the Management of Study Fields at the UL (SAR, p. 23).
The management structure of the study field Wildlife Science and the corresponding four study programmes is well organized and oriented towards the development of the study field. The study field also has an interdisciplinary approach in the implementation of the study programmes (ABSP Biotechnology and Bioengineering, AMSP Biology (sub-programme "Bioinformatics"), DSP Natural Sciences), which provides wider opportunities for the improvement and development of the study field and the study programmes included in it.

1.1.4. The admission process at the UL, and therefore in the study programmes of the study field Wildlife Science, is regulated by the Terms of Admission at the University of Latvia and its subordinate orders, which determine the procedures for the given academic year (SAR, p. 26).

Requirements and criteria for study programmes are reviewed and updated annually, and according to the Article 46 of the Law on Higher Education Institutions, they are published on the UL website by November 1st. admission procedures vary by study level.
In various levels of studies, the admission procedures are different. Admission to undergraduate studies takes place in a centralized (SAR, p. 26) way by using the Unified Admission to undergraduate programmes. Admission to master's level study programmes is decentralized (SAR, p. 27), in each faculty, but within the same time frames. Admission is based on grades obtained during undergraduate studies. In programmes where previous education in different fields is allowed, an entrance test is used to determine the relevance of the applicant's prior knowledge to the field of the study programme. Admission to the doctoral programme is centralized. The applicant must submit the theme of the thesis and has to agree with the scientific advisor. The suitability of the applicant is evaluated by the doctoral council of the field of science.
The UL provides an opportunity to commence studies also in subsequent study stages, in accordance with the Regulations for commencing studies in subsequent study stages at the UL. A precondition for commencing studies in subsequent study stages is the recognition of previously mastered study courses or knowledge, skills, competence, learning outcomes achieved in previous education, which is regulated by the Regulations on UL Procedure for Recognition of Competencies Developed outside Formal Education or Through Professional Experience and Learning Outcomes Achieved in Previous Education as well as the recognition and alignment of academic activity and the UL Procedure for the Recognition of Study Courses and Knowledge, Skills and Competencies Acquired in Study Courses and Outside Formal Education or Through Professional Experience and Learning Outcomes Achieved in Previous Education (SAR, p. 27).
All procedures are published and available in the System of the UL Regulatory Acts, which is accessible to all UL employees and students by registering with the assigned username and password (SAR, p. 29).
The University of Latvia has established a system and developed procedures for student admission, recognition of study time, professional experience, previous formal and informal education, and assessment of student achievements and learning outcomes, which are logical and effective.

1.1.5. The UL has developed the “Procedure for Development and Updating of University of Latvia Study Courses”, which stipulates that information on the conditions for starting the acquisition of each study course, its aim, objectives, requirements for obtaining credit points, content of the study course, organization of the study process in contact classes, organization and assignments of students’ independent work, planned learning outcomes, methods of their assessment and the assessment criteria are to be included in all study course descriptions available to students in the UL Information System (LUIS) and the UL e-learning environment.
At the beginning of their studies at the Faculty of Biology (FB), students are informed about the organisation and implementation of studies in the relevant study programme, and at the beginning of each individual study course, lecturers inform students about the course organisation, content, study requirements, planned learning outcomes, examinations, and assessment criteria, as well as they explain the relevance of the study course to the achievement of the overall learning outcomes of the programme (SAR, p. 30).
The organization of study course examinations and the assessment of students’ achievements are carried out in accordance with the “Procedure for Organizing Study Course Examinations at the University of Latvia”, which is applicable to the assessment of the learning outcomes of full-time and part-time students registered in the UL study programmes of all levels.
Each study course has two types of examinations: mid-term examinations (with the total of midterm grades not less than 50% of the overall grade) and a final examination (with the exam grade not less than 10% of the overall grade). Examinations may be written or oral or combined (written and oral). The form and methods of examinations shall be chosen for the assessment of student achievements

and shall correspond to the teaching methods used in the study process in contact classes and in the organisation of student independent work (SAR, p. 30).
The basic criteria for the evaluation of final theses are determined by the “Requirements for the development and defence of final theses (Bachelor’s, Master’s, Diploma and Qualification Thesis) at the University of Latvia”. Additional criteria for the evaluation of the Final Thesis can be determined, which are approved by the Faculty Council upon the proposal of the department council.
In the UL as a whole and in the study field Wildlife Sciences, the methods, principles and procedures for the assessment of student achievements have been developed and clearly defined. The relevance of assessment methods and procedures to the achievement of the aim of the study programmes and students’ needs is analysed.

1.1.6. The UL in its activity respects the principles of fair and responsible conduct as stipulated in the Academic Ethics Code of the University of Latvia and in the Regulations on Academic Integrity at the University of Latvia. These regulations are publicly available to staff of the UL and its students (SAR, p. 32). In order to prevent violations of the principles of academic integrity, the UL has established the Unified Computer Plagiarism Control System (hereinafter – the System). With the help of the System, the examination of students’ final and doctoral theses is performed. A procedure has also been developed describing the further actions to be taken in cases when signs of plagiarism are detected. The UL has developed and follows certain procedures aimed at ensuring the observance of the principles of academic integrity and ensures certain procedures for checking plagiarism in the students’ final theses.
The UL as the developer of this System and its operator constantly updates the System and provides other HEI with the opportunity to use the System based on a cooperation agreement (the System is being used by 30 HEI in Latvia). The cooperation of several HEI in the field of using the System promotes more effective control of study papers in each HEI and Latvia overall (SAR, p. 33).
The SAR lists the most frequent examples of violations of the principles of academic integrity (identical examination protocols (SAR, p. 32), self-plagiarism and plagiarism (SAR, p. 33), information about which is received from the Unified Computerized Plagiarism Control System of the UL; and the actions of the university in case of violations that are in accordance with the Regulations on academic integrity at the University of Latvia. The UL plagiarism control system functions effectively, but despite this, UL also tries to ensure the originality of manuscripts submitted in journals of academic publishing or collections of research articles, which can only be achieved with the instruments that have access to closed or paid databases of international publishing houses. At present this opportunity is provided by the Turnitin LLC's service "Turnitin Similarity" (SAR, p. 34).
On 16.12.2022, the UL signed an agreement with the company Turnitin LLC for the implementation and use of the anti-plagiarism tool for the UL’s needs. It is planned that in September 2023, the implementation of the "Turnitin Similarity" system will be fully completed and put at the disposal of the UL users; it will also provide an opportunity to integrate the text originality checking tool into the e-learning platform and provide access to the tool for academic staff to check the originality of daily study papers.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The study field of Wildlife Sciences of the University of Latvia and study programmes included in this study field are implemented on the basis of the Strategy of the University of Latvia 2021-2027 and meet the requirements of the regulatory enactments of the Republic of Latvia.
Both aims of the study field Wildlife Sciences are focused on biology and biotechnology study programmes, as well as research-based education in biology and biotechnology, but these aims do not include the specifics of the DSP Natural Sciences. It is necessary to review the aim of the study field and define it in accordance not only with the content of bachelor's and master's study

programmes, but also taking into account the content of the doctoral study programme.
Considering that in the current version the name of the DSP Natural Sciences includes a broader concept than the name of the study field Wildlife Sciences, UL should request the Ministry of Education and Science to review the names of study fields and harmonize them with the Cabinet Regulations No. 322 “Regulations on the Classification of Education in Latvia” (approved 13.06.2017).
The management structure of the study field Wildlife Sciences and the corresponding four study programmes is well organized and oriented towards the development of the study field. Two programmes (the ABSP Biotechnology and Bioengineering, and the DSP Natural sciences) use an interdisciplinary approach in the implementation of the study programmes, which provides greater opportunities for the improvement and development of the study field.
According to the SWOT analysis, the study field development plan has been drawn up, where the aims of the study field are aligned with the strategic goals of the UL, as well as a detailed description and mutual concordance of the goal, task, sub-task of the field of study, achievable indicator, quantitative indicators, and responsible person are presented.
The management structure of the study field Wildlife Science and the corresponding four study programmes is well organized and oriented towards the development of the study field. The study field also has an interdisciplinary approach in the implementation of the study programmes (the ABSP Biotechnology and Bioengineering, the AMSP Biology (the sub-programme "Bioinformatics"), the DSP Natural Sciences), which provides wider opportunities for the improvement and development of the study field and the programmes included in it.
The University of Latvia has established a system and developed procedures for student admission, recognition of study time, professional experience, previous formal and informal education, and assessment of student achievements and learning outcomes, which are logical and effective.
In the UL as a whole and in the study field Wildlife Sciences, the methods, principles and procedures for the assessment of student achievements have been developed and are clearly defined. The relevance of the assessment methods and procedures to the achievement of the aim of the study programme and students’ needs is analysed.
The UL in its activity respects the principles of fair and responsible conduct as stipulated in the Academic Ethics Code of the University of Latvia and in the Regulations on Academic Integrity at the University of Latvia. UL has established the Unified Computer Plagiarism Control System and provides other HEI in Latvia with the opportunity to use the System based on a cooperation agreement.

Strengths:
1) The management structure of the study field Wildlife Sciences and the corresponding four study programmes is well organized and oriented towards the development of the study field. Two programmes (ABSP Biotechnology and Bioengineering, and DSP Natural sciences) uses an interdisciplinary approach in the implementation of the study programmes, which provides wider opportunities for the improvement and development of the study field.
2) Taking into account the SWOT analysis, the study field development plan has been drawn up, where the aims of the study field are aligned with the strategic goals of the UL, as well as a detailed description and mutual concordance of the goal, task, sub-task of the field of study, achievable indicator, quantitative indicators, and responsible person are presented.
3) The UL in its activity respects the principles of fair and responsible conduct as stipulated in the Academic Ethics Code of the University of Latvia and in the Regulations on Academic Integrity at the University of Latvia has established the Unified Computer Plagiarism Control System and provides other HEI in Latvia with the opportunity to use the System based on a cooperation agreement.

Weaknesses:

1) The aim of the study field is defined according to the content of the bachelor's and master's study programmes, but the content of the doctoral study programme is not taken into account in the formulation of the aim.

1.2. Efficiency of the Internal Quality Assurance System

Analysis

1.2.1. The UL has established a quality policy (which is publicly available at UL home page). The Quality Policy and the resulting Quality Action Policy are a set of quality-related principles, objectives and the actions necessary for their achievement. UL quality is defined as a measure of excellence, which characterises the ability to meet and exceed the visible and future needs of the involved parties, as well as to ensure the compliance of processes with the regulated requirements of the relevant sector, and international standards recognised in the organisation management.
As stated in the self assessment report - the quality management system of the UL is implemented in accordance with the principles of the Total Quality Management (TQM), integrating the approach of excellence into the corporate culture of the UL. For the implementation of total quality management, the UL uses an internationally recognised and applicable quality management methodology – the European Foundation of Quality Management (EFQM) excellence model. In the core activities the quality management system is deepened by developing internal quality assurance systems integrated into the quality management system, which are based on current sectoral standards and frameworks. The internationally recognised Results–Approach–Deployment–Assessment–and–Refine (RADAR) methodology is used to ensure the cycle and continuity of quality management at the UL; the Plan–Do–Check–Act (PDCA) approach is used in quality assurance systems.
To ensure the quality of higher education, the UL implements the Quality Assurance System (QAS) for Studies, which includes procedures for planning, ensuring, measuring, and evaluating the quality of higher education in accordance with the requirements of legislation of Latvia, the European Standards and Guidelines (ESG) for quality assurance in the European Higher Education Area (EHA), as well as for internal needs. In the UL planning for the development of the study field and improvement of the study programmes for a period of 6 years is ensured. The procedure for the implementation of study programmes is established in the internal legal acts of the UL, including regulation of the development of new study programmes, admission requirements, matriculation and registration for studies, development, implementation and review of study courses and modules, planning, implementation and assessment of study internship, organisation of assessments and final examinations, and rotation, the principles of academic integrity and their observance, exmatriculation, awarding of diplomas and certificates, the recognition of knowledge, skills, competence acquired through non-formal and extra-curricular education or in professional experience, recognition of learning outcomes achieved in the previous education, and referencing of academic activity, the procedure for conducting surveys, submission of student proposals and complaints, contestation of administrative decisions, doctorate promotion process, etc. UL ensures that the measurements and data necessary for quality assessment and improvement are collected and used for both immediate corrective action and regular evaluation and planning of further improvement. The 6-year study field development plan is monitored annually, the measurements are analysed, and the SWOT is discussed, if necessary, by introducing changes to the operational study programme implementation plans, to the study field plan or, when assessing the overall development of study fields within the framework of the UL Strategic Control, by making amendments to the UL Strategic Action Plans. For more information on quality assurance of studies, see Chapter 3.1 of the UL Quality Management Handbook. For the breakdown of responsibilities for quality management and assurance, see Section 2.5 of the UL Quality Management Handbook.
The UL quality assurance system is based on the participation of key stakeholders in the quality

assessment and improvement of the UL activities. Stakeholders of the UL are natural or legal persons, domestic and international, who use the services of the UL or whose socio-economic situation is affected by the activities of the UL. The key stakeholders are defined in Article 12 of the UL Quality Policy. The Study Programme Quality Assessment Commission (SP QAC) assesses the performance of UL study fields and study programmes, as well as makes proposals to the respective Faculty Council and the UL governance on the further development of the programmes. SP QAC reviews and provides opinions on study programmes, including, evaluates applications of new study programme concepts, new study programmes and closure proposals, significant changes in accredited study fields that require a decision of the SP QAC, as well as applications for new study modules and sub-programmes. When evaluating the concepts of new study programmes, annual reports of study programmes and study fields, the SP QAC is guided by the opinion of anonymous, independent experts. The SP QAC consists of vice-rectors, the Chairman of the Academic Commission of the Senate or his authorised representative, the Director of the Academic Department and representatives, the Representative of the Department of Study Service, the Internal Auditor, the Head of Quality, representative of the Library of the UL, a representative delegated by the Student's Council (hereinafter – SC) and a representative delegated by the UL Alumni Club.

It was evident that the internal QAS at the SF WLS is well developed, both in administrative and institutional way and is in compliance with the UL Quality management policy. The Quality Management Handbook gives detailed instructions on the mission statement, strategic directions and objectives, quality management characteristics, policy, action policy, hierarchy and allocation of responsibilities for quality assurance. It identifies in detail the practice of the UL in ESG implementation as well as SF WLS in cooperation between FB and the administrative department of UL. The hierarchy and implementation of the SF WLS quality assurance system ensures continuous improvement, development, and efficient performance of the study field and the relevant study programmes. The hierarchical structure where dean, FB council, SF WLS council, directors, lecturers and methodological staff is involved, ensures several levels of quality control and transparency of the QAS. The QAS is very well designed and implemented. The recommendations of students, graduates, employers, and professional organisations are taken into account in the implementation and improvement of study programmes. The QAS at FB is aligned with the goals of UL Strategy, that thrives in ensuring the well-being of students and staff, as well as developing a value-oriented and inclusive culture.

1.2.2. The UL has formulated the Quality Policy, which is detailed in the Quality Action Policy in line with its strategic core activities.

For quality assurance of higher education, the UL Studies Quality Assurance System (in compliance with ESG) has been implemented and integrated into the UL Quality Management System (in compliance with EFQM). For more information, see Part I, Section 1.3 of this document and Section 3.1 of the UL Quality Management Handbook (The Quality Management Handbook).

The establishment, maintenance, and improvement of the UL quality management system are performed by the management and heads of core structural units (deans of faculties) and their delegated employees. The Academic Department is responsible for the establishment, implementation, and improvement of the study quality assurance system, in close cooperation with the heads of study fields and directors of study programmes. Two collegiate committees have been established for quality assessment with the participation of the UL stakeholders: The Quality Advisory Committee and the Study Programme Quality Assessment Committee. For more information, see Section 2.5 of the UL Quality Management Handbook.

The procedures for the development and review of the relevant study programmes of the study field and the feedback mechanisms (including feedbacks to students, employers, and graduates) have been defined and they are logical, efficient, and available for all stakeholders (The Quality

Management Handbook).

1.2.3. The Study Programme Quality Assessment Commission (SP QAC) is organised in the way that representative delegated by the Student's Council (hereinafter – SC) and a representative delegated by the UL Alumni Club are involved in student complaints submission and evaluation. Their role in the SP QAC is to assure that students are involved in the mechanisms developed for submission of student complaints (SAR p. 22).
Students are also involved in giving feedback on the analysis of learning outcomes attained by students and survey results collected over several academic years are used to determine the needs of students and the applicability of assessment methods and procedures to the accomplishment of study programme objectives. Besides this students have the opportunity to be part of the improvement of the course descriptions and the e-study environment.
UL, in keeping with the principles of democracy and equality, and in line with the UL Quality Assurance Policy, in all stages of the study process, from admissions to final examinations, ensure the participation of applicants and students in the evaluation of the UL study process. In matters relating to the admission procedure, UL applicants have the right to lodge complaints with the Chairman of the Admission Board (SAR p. 39).
The right of UL applicants to lodge complaints regarding irregularities in the admission procedure are governed by the Terms of Admission at University of Latvia (the UL Senate decision No 2-3/68 of 31.05.2021), specifying the procedures for the lodging, processing, and appeal of the complaint. However, students have the right to submit suggestions and complaints regarding the study process and quality, the quality of material supply, the UL employees' performance of their duties, service culture and cooperation, as well as dishonest or unethical actions from the UL employees, in order to improve the quality of studies (SAR p.39).
To ensure the quality of the study process, in 2022 the UL reworked the Procedure for the Submission and Resolution of Students' Proposals and of 2002 and replaced it with the Order of Submitting and Examining Proposals and Complaints of the Students (the UL Order No 1-4/501 of 28.09.2022.) (hereinafter – the Procedure). This Procedure outlines the format in which either a single student or a group of students may make suggestions and grievances, as well as the order of registration and review. Faculty deans or vice rectors can receive proposals and complaints (if they have to do with the dean's duties or if they could negatively affect student enrollment in the future). According to the Procedure, complaints and responses to proposals must be filed within the deadline set in the Law on Submissions. It should be noted that this Procedure requires faculty deans and vice rectors to submit a report to the UL Quality Manager at the end of each academic year detailing the requests and complaints they have received, together with the choices they have made about them in the previous academic year. The UL Quality Manager evaluates these reports, examines trends, and then drafts a report for the UL Management. The developed procedure shows the internal control mechanism and cyclical monitoring of complaint filing, decision-making, and respect for students' rights and interests, which are crucial in ensuring this system functions as it should and in allowing for future improvement (SAR p. 40).
To fully evaluate the UL study processes, the Procedure for Organisation of Examinations in Study Courses at the University of Latvia (UL Senate Decision No.211 of 29.06.2015), which stipulates the right of students to submit complaints about the procedural or assessment order of the mid-term examinations and examinations in study courses, and the procedure for consideration of such complaints. The student has the right to file a complaint with the lecturer who graded the exam within five working days of receiving notification of the grade in ULIS (providing the student has asked the lecturer for justification of the grade prior to filing the complaint). Within five working days, the instructor must assess the application. The complaint will be sent to the Head of Department for consideration and action if the lecturer believes the student complaint is unjustified (SAR p. 40).

Regarding the evaluation of graduation examinations, the University of Latvia's Regulation on Graduation Examinations (UL Senate Decision No 183 of 27.12.2011) states that students have the right to appeal if the dean denies their request to take the graduation examinations or to appeal against the graduation examination process.
The UL also has an Academic Court of Arbitration, whose rules allow applicants to address any study-related difficulties, including control over adherence to assessment criteria, with this collegial entity. According to the University of Latvia's state-funded study place competition (rotation) mechanism, students have the right to challenge the university's decision to expel them (UL Senate Decision No. 381 of May 24, 2010). In turn, the Study Fee Relief Procedure (the UL Order No 1/89 of April 14, 2009) gives students the chance to contest decisions regarding the granting or refusing of tuition fee discounts within one month of receiving notification from the school. To do so, students must submit a written application to the UL Rector, who will then review it within that time frame (SAR p. 40).
While the University of Latvia's procedure for granting academic leaves of absence (UL Senate Decision No. 178 of 01.12.2008) gives students the ability to challenge the dean's decision to deny them a leave of absence. Additionally, the University of Latvia's Procedures for the Initiation of Studies in Subsequent Study Stages (UL Order No 1/128 of 08.06.2009) allows the opportunity to appeal the dean's decisions within a certain time frame (SAR p. 40).
The Internal Regulations of the Dormitories of the University of Latvia (UL Order No 1/171 of 30.06.2009) define the rights and obligations of students, including the right to file complaints about issues in student hotels, in accordance with the rights of students also outside the study process, for those students who use the UL student hotels. The manager of a student hotel deals with these problems (SAR p. 41).
Every student has the right to not only use the Academic Ethics Codex of the University of Latvia's (UL Senate Decision No 2-3/46 of 26.04.2021) right to address the UL Academic Ethics Committee about potential ethical violations, but also to make suggestions to the UL Academic Ethics Committee for improving the Code and its application (SAR p. 41).
The departments or commissions, where the proposals and complaints are filed, keep track of them, together with the findings of the inquiries made and the appropriate decisions.
The Regulations on Visiting Students from Latvian Higher Education Institutions (UL Order No 1/17, 25.01.2006) have defined the principle that visiting students also have the same rights and obligations as students at the UL, meaning that the system of submission and consideration of complaints and proposals is applicable to these students. As a result of the foregoing, the centralized section of the UL complaint and proposal filing and review system includes all aspects of a student's academic career, including enrollment at the UL, full-cycle studies, final exams, etc (SAR p. 41).
In accordance with the findings of student surveys and the good ratings of instructors and courses, the SF WLS has a comparatively low amount of student complaints. To avoid escalation, conflict situations are settled as early as feasible. Lecturers can concentrate on each student and their needs or requirements due to the small class size and low student-to-teacher ratio, which helps to avoid disputes. The COVID-19 pandemic in 2020, which occurred at the same time as the switch to online learning, may have been the source of the most dispute. Given the absence of internet connectivity among students and the professors' lack of prior familiarity with MS Teams, among other factors, this was a new experience for both parties. The teachers' formal inconsistencies in allowing final exams to be taken before the successful completion of the mid-term exams may have hampered the learning process. In order to receive a passing grade in one of the AMSP "Biology" courses, the student complained about the instructors' indulgence. The student was given an inadequate grade because she had not sufficiently mastered the course and the midterm exams were of unsatisfactory quality. This resulted in a string of complaints to the Department of Studies (now Academic Department), the UL Ethics Commission, and the Educational Quality and

Management Service. Without going into specifics on the resolution of the particular complaint, SF WLS conclusions have been reached and better adherence to formal requirements in midterm and final exams has been enforced (SAR p. 41).
It's also customary for students to complete surveys at the end of each course of study. If the results are much worse than those of other academics, the programme directors, the SF Director, the Dean, and the affected lecturers examine the survey results. These informal conversations between the SF WLS administrative and academic personnel are a proven method for resolving issues with study quality (SAR p. 41).
The system created for submitting student complaints and recommendations works well, encourages implementation of improvements, informs students of this chance, and provides feedback. Students have few ways of communication to address their feedback. They can give it to student representatives of a student council, the professors in their management roles, via student council, direct feedback to teaching staff, and student survey, which gives them opportunities to influence the learning process at FB on several occasions. The mechanism for submission of student complaints and suggestions is developed, effective, promotes the implementation of improvements, and students are informed about such opportunities and receive feedback.

1.2.4. Analysis of learning outcomes attained by students and survey results collected over several academic years are used to determine the needs of students and the applicability of assessment methods and procedures to the accomplishment of study program objectives. Students acknowledge the value of clearly stated targeted learning outcomes, specified assessment standards, and regular feedback on their academic progress in the surveys. To do this, the academic staff develops assessment criteria that are in line with the desired learning outcomes, which serves as the foundation for the assessment. They also work with colleagues, analyze students' accomplishments, and improve course descriptions and the e-study environment (SAR pg 43-44, Annex 8-B).
Evaluating learning outcomes, the basic assessment principles formulated in the regulations of the Cabinet No 141 the Regulations Regarding the State Standard for First Level Professional Higher Education (20.03.2001), No 512 the Regulations Regarding the State Standard for Second Level Professional Higher Education (26.08.2014) and No 240 the Regulations Regarding the State Standard for the Academic Education (13.05.2014) (SAR pg 31).
To evaluate the satisfaction of students, graduates and employers with the study quality and its results, as well as to implement the necessary improvement measures, the UL regularly organizes and compiles data from the following surveys: a survey on study courses and work of teaching staff; a survey at the start of studies; a survey of first-year students on study experience; a survey of final-year students on study experience; a survey of students, who discontinue studies; graduate survey; employers survey (SAR, p. 43, Annex 8-B). These surveys include:
Survey on study courses and teaching staff: This survey is conducted for all students to gather their opinions on the content of study courses and assess the performance of teaching staff. It helps identify areas for improvement in the study process and enhance study quality (SAR pg 43).
Survey at the start of studies: Conducted annually in ULIS, this survey aims to gather information for improving student recruitment activities. It seeks to understand student motivations for choosing UL, the sources of information they relied on, their evaluations of the application and registration processes, and their socio-demographic profiles (SAR pg 43).
Survey of first-year students on study experience: This electronic survey, conducted annually, focuses on gathering information to improve the study environment and enhance student adaptation. It explores students' views on different aspects of their studies and the support they require when starting their studies (SAR pg 43).
Survey of final-year students on study experience: Conducted electronically for each study program annually, this survey collects evaluations of the study program to inform its further development. Data is analyzed by program directors, the Dean, and the Study Programme Council, leading to

necessary improvement measures. Results are used for annual reviews, self-assessment reports, and study program development plans (SAR pg 43).
Survey of students who discontinue studies: Conducted throughout the academic year (electronically or on paper), this survey aims to identify reasons for study discontinuation and reduce student dropout rates. The results are shared with UL and Faculty management (SAR pg 43).
Graduates survey: This survey gathers feedback from graduates regarding program quality, acquired knowledge, skills, and competences, the program's contribution to their employment, and future study plans. It is conducted by program directors using a questionnaire prepared by the Academic Department (SAR pg 43).
Employers survey: Conducted by program directors, this survey seeks to understand how employers perceive the relevance of UL graduates' knowledge, skills, and competences to the labor market's requirements (SAR pg 43).

Surveys on study courses and work of the teaching staff are fully available to each respective member of teaching staff about their own implemented study course; to programme directors – about teaching staff and heads of teaching staff departments (head of department or subdepartment, head of study field, vice-dean, and dean), as well as the UL SC and student self governments of faculties (SAR pg 44).

The rest of surveys–a survey at the start of studies and surveys on student experience–summaries of results about their own study programme are available to students and programme director; on study programmes attached to the position – head of department or subdepartment, head of study field, vice-dean, and dean. Summaries of survey results on their own faculty are fully available to student self-governments of faculties, and on all study programmes to the UL SC (SAR pg 44).

Each year the head of the study field in cooperation with the study programme directors prepares a report on the operation of the study field and the programmes therein during the academic year. In the preparation of the report, statistical data is collected and analysed, and the obtained information is used for the evaluation and improvement of the study field (SAR pg 44).
In general, the results of student surveys are an important source of information to evaluate the overall quality of the study programme, the study environment, as well as to evaluate each of the study courses and lecturers individually.
The results of the course surveys are used to improve the programmes, to regularly update the courses of study, to evaluate the content of the topics, to avoid duplication, to introduce new forms of learning in the courses of study, for example, to introduce new laboratory work aimed at improving the research skills of the students (SAR pg 44).

Study course surveys, in which students evaluate both the course of study and the lecturer, have led to the conclusion that changes in the study plans are necessary; for example, in the ABSP "Biology" the course of study "English II" was excluded from the study plan because of low interest of students in this study course and low grades for this course. Based on the evaluations of the course "English I" (ABSP "Biology") and student feedback, discussions have been held with the lecturer on the way and content of the course, which has resulted in higher course evaluations in recent years. Student feedback on the course "English I" was also the basis for the decision to no longer make this course mandatory for all ABSP “Biology” students. Student critical feedback on the courses has also been the basis for replacing lecturers in several courses. For example, such changes have taken place in the ABSP "Biology" course "General Biology: Introduction to Cell Biology" and in the AMSP "Biology" course "Basic Skills for Innovation Activities" (SAR pg 44).

The graduated and employer surveys are the basis for understanding the ability of study

programmes to prepare graduates for the labor market. For example, based on alumni and employer assessments of alumni knowledge and skills in data analysis, the course "Practical Biometry for Biologists" of the AMSP “Biology” was moved from the Restricted Elective Part to the Compulsory Part (SAR pg 44).
The FB is collecting statistical data on a list of various topics to ensure information driven decision making on the study programmes, corresponding to the study field. The topics include statistics related to number of students, reason for dropouts and feedback from students on the courses, learning outcomes achieved, satisfaction with the study process. The statistical data collection mechanism is broad and efficient. From the SAR and site visit discussion with all stakeholders it was obvious that the mechanism for obtaining and providing feedback, students, graduates and employers, is effective and focused on the improvement of the study field. In general, students don’t have many complaints and all of their comments are considered carefully and due to QA procedure.

1.2.5. The target audience of the UL website https://www.lu.lv/en/ (hereinafter - the Website) is prospective and current students, employees, cooperation partners, researchers, and general public. The Website is designed to make available and to store public information, enabling visitors to access information about the UL activities in a digital form on the Internet (SAR pg 44).
The Website consists of the following sections:
ROTATING NEWS – essential information of the UL through the visual identity of the UL, which has certain parameters and strengthens the image of the University and promotes its visibility in the digital environment.
NEWS AND EVENTS – current affairs and planned events at the UL. The information is prepared by the Department of Communication in coordination with other UL structural units. DISCOVER UL – Information about studies, extracurricular activities, science.
STUDIES – with subdivisions:
- College study programmes;
- Bachelor’s study programmes;
- Master’s study programmes;
- Doctoral study programmes;
- Residency.
The information is prepared and posted on the Website by the Department of Communication in cooperation with the Academic Department and the Department of Study Service (SAR pg 45).
The STUDIES section in Latvian provides information on programme goals, objectives, learning outcomes, programme volume and duration, programme study language, information on job opportunities after graduation, as well as programme study plans. In case of questions, contact information is provided for further information. This section also publishes study-relevant information under the heading STUDY PROCESS – academic calendar, lecture timetable, tutorials, key documents and sample forms, information on mobility at HEI, recognition of experience/education, lifelong learning opportunities as well as references to the UL e-study environment and the ULIS (SAR pg 45).
The section contains information about the offers of the Library of the UL, information of the Career Centre, activities of the Students’ Council.
The two subsections STUDENT LIFE and EXTRACURRICULAR ACTIVITIES inform both existing and prospective students about student hotels, catering, parking and bicycle parking, mentor support, and information for people with disabilities. There is a wide range of information on how to enrich one’s extra-curricular life with sport, culture (SAR p. 45).
The ADMISSION section contains information for pupils, prospective and existing students. In this section, the pupils can get acquainted with the events and creative competitions organised by the respective faculty, the participation wherein and successful performance can give additional admission points. The prospective students may be introduced to the information on all levels of

programmes, admission requirements, loans, and scholarship information, as well as opportunities for the renewal of studies on the Website. The prospective students will be able to familiarize themselves with the most frequently asked questions and answers, information on the Career Centre activities, preparatory courses, and classes for pupils (SAR p. 45).
Other Sections – Science, Cooperation, About Us, provide more information about the UL activities in research, projects, conferences, cooperation partners, normative acts, strategy, etc.
The Website https://www.lu.lv/par-mums/dokumenti/pasnovertejuma-zinojumi/ (available only in Latvian) contains Annual Study Fields Self-Assessment Reports (SAR p. 46).
The Websites of the structural units (faculties) prepare information on the programmes offered by the respective faculty and on the scientific activities of the faculty. Content blocks are the same as the ones on the UL official site, but more specific information is posted directly about the respective faculty activities (SAR p. 46).
The FB website (https://www.bf.lu.lv/en) has changed significantly since the previous accreditation period. It provides information for applicants, students, staff, and other interested parties. The main sections of the website are similar to the overall system of the UL website: NEWS, ADMISSION, STUDIES, RESEARCH, COOPERATION, ABOUT US. The section ADMISSION at the FB contains information about the study programmes implemented by the Faculty, an informative text "Why to study at the FB" and a link to the School of Young Biologists, which offers activities for school students. The STUDIES section is intended for current students; it contains links to the current timetables of classes, academic calendar, office hours, information about opportunities to study abroad, information about scholarships governed by the University of Latvia Foundation and their beneficiaries from the FB, as well as conventions for writing final Theses. The RESEARCH section contains information on the projects implemented by the faculty, major publications, and dissertations defended at the FB. This section also contains information on the Biology section reports at the UL International Scientific Conference, and a link to the journal "Environmental and Experimental Biology", which is under the responsibility of the FB. The main cooperation partners of the FB in Latvia are listed in the COOPERATION section. The ABOUT US section contains basic information about the FB, its history, faculty, the field training site in Kolka and contacts. There is also a link to the FB Student Self-Government website, and a link to the news. This section also contains a link to the annual FB photo competition "My Best Picture of Latvian Nature This Year" (SAR p. 46 and Facebook).
The FB website is accessible from the UL website via the FB visiting card.
If the information for publication is submitted as a text in a foreign language other than English, a translation of the text into Latvian or its brief summary must be attached.
The heads of the UL departments are responsible for the preparation, correctness and updating of the information within the competence of their departments. The content administrators of the structural units' websites are responsible for maintaining the website, posting and regular updating of prepared information. For a given faculty, the person responsible for content placement is the marketing or public relations specialist or coordinator who administers the existing website, or an employee who has completed a short TYPO 3 content placement course in the Department of Information Technology. The UL Administration is responsible for the compliance of the information available on the website with the information available in official registers (SAR p. 46).
The available online data on the website of the UL and FB provides all the necessary information for students and applicants. The data are related to the technical and administrative information related to studying, as well as to scientific research and collaboration. Students have the opportunity to read latest news related to the study programmes corresponding to the study field and all relevant information is available as at least a brief summary, in English language. Students have access to the official registers (VIIS and E-platform), where they can get relevant information related to the implementation of the study programme. The Faculty uses social media for communication and dissemination, making the communication with students more attractive and accessible.

Conclusions on this set of criteria, by specifying strengths and weaknesses

A quality policy of UL has been very well developed by the FB and is available to the students, staff and general public. UL, in keeping with the principles of democracy and equality, and in line with the UL Quality Assurance Policy, in all stages of the study process, from admissions to final examinations, ensure the participation of applicants and students in the evaluation of the UL study process. The FB has established and supports a transparent and very efficient quality assurance system that assists in achieving the goals and learning outcomes of the study field and the related study programs. The system ensures that the relevant study programs of BSP Biology, BSP Biotechnology and Bioengineering, MS Biology and DS Wildlife Sciences, and the study area continue to advance and operate efficiently. The techniques for ensuring quality have been laid out; they are sensible, efficient, and accessible to all parties involved in the creation and examination of the relevant study programs of the study area as well as the feedback mechanisms, such as feedback from students, employers, and graduates.
The system set up for students to submit suggestions and grievances functions well, stimulates adoption of modifications, alerts students to this opportunity, and offers feedback. Students have several possibilities to give their feedback, using few channels, like student survey, student council, study director and others, and they are using all the possibilities. The efficient system in place at the UL for gathering statistical data ensures that information (statistics) on study programs that are pertinent to the topic of study is regularly gathered and examined. It is effective and aimed at expanding the study area to collect and disseminate input from students, recent graduates, and companies. The information provided to applicants and students about the study programs relevant to their field of study on the UL and FB website is published in all languages in which the study program is offered, and it is consistent with the information found in the official registers (VIIS and E-platform).

Strengths:
1) The higher education institution, UL, FB, has created a quality policy that is available to the students, staff and general audience.
2) The UL, FB has created and upholds a quality assurance system, which aids in the accomplishment of the objectives and learning outcomes of the study field and the pertinent study programmes. The quality assurance system is transparent, very well organised and efficient, with numerous points of control to maintain principles of democracy and transparency.
3) The QA system guarantees the ongoing development, advancement, and effective operation of the study area and the pertinent study programmes. The QA systems is very efficient and very well applied.
4) The study field's quality assurance methods are well-defined, logical, effective, and accessible to all stakeholders involved in formulating and reviewing study programs. Students have various transparent channels to provide feedback to UL, and the FB utilizes an efficient system for collecting and analyzing statistical data related to study programs. This comprehensive feedback process, involving students, recent graduates, and employers, contributes to evidence-based decision-making and effective strategies for enhancing education at all levels within the FB: BS, MS and DSP.
5) The system for submitting student complaints and recommendations works effectively by informing students of their right to provide feedback on various aspects, such as the study process, material supply, UL employees' performance, service culture, and ethics, thus encouraging improvements and providing valuable feedback.
6) The information provided to applicants and students on the website of the higher education institution about the study programmes pertinent to the study field corresponds to the information available in the official registers (VIIS and E-platform) and is published in all languages in which the study program is implemented.

Weaknesses:
Not identified.

Assessment of the requirement [1]

1 R1 - Pursuant to Section 5, Paragraph 2.1 of the Law on Higher Education Institutions, the higher education institution/ college shall ensure continuous improvement, development, and efficient performance of the study field whilst implementing its internal quality assurance system:

Assessment of compliance: Fully compliant

UL ensures improvement, development and operational efficiency of the study field (https://www.lu.lv/en/)

2 1.1 - The higher education institution/ college has established a policy and procedures for assuring the quality of higher education.

Assessment of compliance: Fully compliant

UL has a well-functioning quality system.
For more information, see Part I, Section 1.3 of this document and Section 3.1 and 2.5 of the UL Quality Management Handbook (Quality management (https://www.lu.lv/en/)

3 1.2 - A mechanism for the development and internal approval of the study programmes of the higher education institution/ college, as well as the supervision of their performance and periodic inspection thereof has been developed.

Assessment of compliance: Fully compliant

UL has a mechanism for the development and internal approval of the study programmes. Proof can be found in UL Quality Management Handbook, Section 3.1 (Quality management (https://www.lu.lv/en/)) UL Senate Decision No 102 of 24.04.2017

4 1.3 - The criteria, conditions, and procedures for the evaluation of students' results, which enable reassurance of the achievement of the intended learning outcomes, have been developed and published.

Assessment of compliance: Fully compliant

UL ensures achievement of the learning outcomes. Proof can be found in Quality Management Handbook, Section 3.2, subsection 2.1.(Quality management (https://www.lu.lv/en/) UL Order No 1/277 of 10.08.2018

5 1.4 - Internal procedures and mechanisms for assuring the qualifications of the academic staff and the work quality have been developed.

Assessment of compliance: Fully compliant

UL has highly qualified teaching staff. Proof can be found in UL Quality Management Handbook, Section 3.2. subsection 3.2. (Quality management (https://www.lu.lv/en/)

6 1.5 - The higher education institution/ college ensures the collection and analysis of the information on the study achievements of the students, employment of the graduates, satisfaction of the students with the study programme, efficiency of the work of the academic staff, the study funds available and the disbursements thereof, as well as the key performance indicators of the higher education institution/ college.

Assessment of compliance: Fully compliant

UL conducts student surveys. Proof can be found in UL Quality Management Handbook, Section 3.2, subsection 1.2; Section 3.1, subsection VII; Section 3.2, subsection 7. (Quality management

(https://www.lu.lv/en/)), SAR Annex 8_B_survey_analysis.pdf

7 1.6 - The higher education institution/ college ensures continuous improvement, development, and efficient performance of the study field whilst implementing its quality assurance systems.

Assessment of compliance: Fully compliant

UL ensures improvement, development and operational efficiency of the study field. Proof can be found in UL Quality Management Handbook, Section IX and X (Quality management (https://www.lu.lv/en/) (European Social Fund (https://www.ozolzile.lu.lv/projekti/eiropas-socialais-fond s/) (available only in Latvian), Erasmus+ (https://www.ozolzile.lu.lv/projekti/erasmus/)

1.3. Resources and Provision of the Study Field

Analysis

1.3.1. For the implementation of study fields, the UL ensures sufficient financial resources for the entire study process, including the remuneration of the teaching staff, the library, and other resources related to the implementation of studies, as well as the development of the study field. The main costs related to the implementation of the study process are the remuneration of the teaching staff and the costs related to the organization of the study process. The formation of the remuneration of the teaching staff is determined in the Planning and Accounting Regulations for Academic Personnel's Workload (the UL Order No 1/469 of 07.12.2016). To estimate the amount of funds required for financial provision, the UL calculates the prime cost of each study programme according to the methodology developed by the UL, which takes into account all the costs of providing the study process described above and information on the specific study programme plan, involved teaching staff, planned number of students, and other aspects, thus ensuring the reliability of the forecasts (SAR p. 47). To provide the necessary funds for the conduct of studies, the University of Latvia uses the subsidy from the state budget and tuition fees. Tuition fees are set at the end of each year for the following academic year to ensure timely availability of information. Indirectly, research funding sources for academic staff are also allocated for the development of study programmes, e.g., for research activities, participation in international projects, publication of scientific articles, preparation of international project applications, organization of scientific events at the UL, implementation of research development projects and long-term commitments, etc. One of the most important means of maintaining the scientific activity of the academic staff of the Study Field is the annual base and performance funding allocated to the UL and its basic structural units. From the UL centralized funds, the faculty of the Study Field can attend scientific conferences and cover the costs of publications. Faculties independently manage received funding within the current year's budget. The dean and the executive director of the respective faculty are responsible for the rational use of financial resources. Actual returns are recorded at the faculty level without separating results for each programme or study field (SAR p. 48).
The number and volume of scientific projects, applications, and funding have increased with the expansion of national science-funding competitions. Most research projects are interdisciplinary and involve researchers from the UL and other higher education institutions and research institutes in Latvia. The number and volume of contract research projects cooperating with Latvian high-tech (SAR p. 21). ·The number and volume of contract research projects in cooperation with Latvian high-tech companies is increasing. A system for funding scientific and applied research is sustainable, but there is still space for improvement. FB offers the widest choice of biology sub-disciplines at all levels of study in Latvia, as well as the only opportunity to specialize in biotechnology and bioengineering. Students do a large amount of practical work, and studying provides research-based study opportunities, offering students the possibility to participate in research projects at all levels of

the studies, which is highly encouraged but also requires the financial resources to ensure sustainability and excellence. Financial resources should be improved to assure sustainability and excellence. Diversification in funding and use of Alumni network in finding funding opportunities, like scholarships, investors, and other possibilities, could be helpful. The implementation of study field programmes is fulfilling the goals of UL's Strategy of having a unique study offer and high competitiveness of graduates, and the implementation of the study programmes is an innovative and research-based study where the involvement of students in research is a crucial part of the implementation of the study (LU_strategija_buklets_2021.pdf, p. 16). To achieve these goals, and especially to ensure the excellence of final theses in the branches of science implemented by the University of Latvia, it is necessary to have sustainable financial resources that will strengthen scientific excellence in strategic areas of specialization and research priorities and increase research capacity, including capacity in the fundamental sciences, which are as well UL Strategy goals. Increasing financial resources, especially at all levels of the study field, is very important for achieving UL Strategy goals and economic improvement based on the knowledge. The current financial support of UL has established a system for determining and redistributing the financial support required for implementing the study field of Wildlife Science and the corresponding study programmes. The financing at the level of DSP study is not fully transparent and does not provide information on financing long-term commitment of Ph.D. students. A system for funding scientific and applied research is sustainable, but there is still space for improvement.

1.3.2. The infrastructure of the House of Nature (build 2015) and the House of Science (built 2019) is available. The total indoor area of House of Nature is 18540 m², with 30 lecture halls, 45 student laboratories, and 69 research laboratories. All classrooms have a projector and laptop for presentations, as well as whiteboards. Interactive whiteboards are also available in some classrooms. On the seventh floor of the House of Nature, a greenhouse is available for scientific research and student training. The greenhouse has modern equipment for optimal plant growth conditions and automatic regulation. The House of Nature and the House of Science have a cafeteria, the Library of Natural Sciences, and individual work cubicles. The buildings are accessible for people with reduced mobility: there are several lifts and specially equipped sanitary facilities. The first two floors of the House of Nature are accessible to students 24 hours a day. The FB training laboratories have microscopes connected to stationary computers. The laboratories have freezers (both -20o C and -80o C) for the storage of samples and reagents. To enable practical work in biotechnology, a Sartorius Biostat fermentation set (8 fermenters with equipment), UHPLC ("Waters"), and gas chromatography ("SCION Instruments") systems for chromatographic analysis of fermentation metabolites, spectrophotometer, laboratory benchtop centrifuge for processing fermentation samples, as well as other laboratory equipment necessary for practical work (incubator-shaker, weighing scale, thermostats, plate reader, autoclave). According to the self-evaluation report the laboratory allows groups of up to 20-24 students to carry out fermentation training (SAR pg 49).
The House of Nature has five computer rooms (the largest with a capacity of 20 workstations). For teaching and research purposes, specific application software (ArcGIS, Bemese, CRYSTAL14, CrysTraMo, DFHBF, Eviews, FiMar, Geomatica, Idrisi, Mathematica, Matlab, Photomod, WUFI) is also 50 available. The UL offers students and staff a possibility to obtain Microsoft 365 ProPlus and made available for research are a biological agent collection, an entomological collection, a herbarium, a microorganism culture collection, the collections of the UL Botanical Garden. The FB supervises a field training site, the former Kolka "Old School". The training site is used for the ABSP "Biology" courses and for accommodating students and faculty conducting research in the Kolka area. The training site has a lecture hall, training laboratories, student and lecturer lounges and a kitchen. The premises have been renovated recently with the contribution from the UL and Faculty funds (SAR p. 50).

Although the infrastructure resources and material and technical support described in SAR 2.3.2 are sufficient for implementing the study field, further improvement of laboratory equipment is necessary to ensure competitiveness, particularly in research activities. Building on the improved research infrastructure and the increase in research capacity is one of the challenges for the FB, and it is necessary to develop a new and broader range of collaborative offers for business and professional organizations in biology, biomedicine, and biotechnology. It is necessary to improve the laboratory equipment and other settings of the new building facility. This requires more funding from various resources, to ensure sustainability and excellence in research and thesis development. According to the UL Strategy goals of developing studies based on science and practice, as well as significantly expanding the offer of international and interdisciplinary studies, using a student-centered and inclusive approach, this requires modern, well-equipped facilities and laboratories with modern instruments put in use. All of the study programmes of the FB study field are based on the involvement of students in research, at all levels of education, and well-equipped laboratories are crucial for the achievement of learning outcomes of the study programmes.

1.3.3. The UL Library is accredited as a library of national importance until 2027 (accreditation certificate No 22C of the Ministry of Culture). The guiding principle of the library's work is that its services are accessible to everyone, incl. any resident of Latvia providing free basic services and paid services (the UL Rector's Order No 1-4/387 of 10.08.2021). The Library of Natural Sciences is in the UL Academic Centre in the House of Nature (Jelgava Street 1) with a total area of 662.80 m^2. The Library of Natural Sciences has over 100 workplaces, including 20 workplaces for work with a computer. In the Library of the House of Science, an open-access collection, two self-service kiosks for borrowing, renewing, and returning books, and a self-service wall for laptops are available to the UL staff 24 hours a day. The self-service wall is equipped with 36 laptops. Using a student or employee ID card, the UL staff can borrow laptops at any time of the day and use them for 6 hours, not only in the library area but around the building.
The Library of the UL actively works with its target audiences – students at all programme levels, academic, research, and general staff – to promote information literacy and to provide in-depth knowledge and skills at working with electronic resources. The collection of the UL Library is formed following the directions of UL study and scientific work, and requirements of study programmes, to provide information with all UL study levels, namely, Bachelor's, Master's, doctoral, and scientific research areas. The acquisition of e-resources is a priority in the development of the collection. The print collection includes publications in the fields of environmental science, chemistry, biology, botany, zoology, medicine, and their sub-disciplines, in line with the implementation of the SF WLS. By type of publication, the collection includes books, serial publications, periodicals. Information on the UL Library is available in https://www.biblioteka.lu.lv/en/.
The UL Library, in cooperation with the UL Department of Information Technology, provides free online access to the UL e-Resource Repository at http://dspace.lu.lv/dspace/. To ensure free and permanent online access to the scientific achievements of the UL, the UL Library, authors of publications, representatives of UL structural units or of UL publications regularly upload the electronic versions of their publications, digitized information sources of cultural and historical value, dissertations and abstracts of UL faculty members to the UL e-Resource Repository. The digitized publications that are subject to copyright are offered by the UL Library for on-site use in the reading rooms of the branch libraries. Currently, the e-Resource Repository contains more than 11 578 publications in the SF WLS. In 2022, the UL will provide access to 42 e-resource platforms (e-books platforms, e-journals databases and individual subscribed e-journals, reference resources and tools, and mixed-format databases). Information on e-resources is available on the UL Library website, E-resources from A to Z and E-Resources by Discipline, and in the My Portal section Databases. The UL offers the possibility to use subscribed electronic information resources (databases, e-book platforms) outside the UL computer network by logging in with a LUIS username and password and

in some cases, with personal profile access data created while within the range of UL IP addresses. Subscribed multidisciplinary e-resources containing materials for the SF WLS include EBSCO Central & Eastern European Academic Source (CEEAS), Cambridge Journals Online, Emerald eJournals Premier, JSTOR, Latvian Standards Online reading Room, Letonika, LEETA – the News and Archives databases of the Latvian National Information Agency, Nature, OECD iLibrary, Oxford Journals, ProQuest Dissertations & Theses Global, SAGE Journals Online, SAGE Research Methods, ScienceDirect, Scopus, SpringerLink, Web of Science, Wiley Online Library (WOL) E-Journals (Full Collection (SAR p. 54).
The UL government is responsible for the improvement and purchase of methodological and informative provisions, in accordance with UL Library Terms of Use (UL Rector's Order No 1-4/9 of 07.01.2021, SAR (p. 50-54).
The channels for SF WLS to affect the process are not clear. The resources of the Library of Natural Sciences Library are available to students 24/7 and meet the needs of the study field. The library works as service to the public and is accessible to everyone: students, faculty, staff, other libraries, students at other universities, as well as any residents of Latvia, in accordance with UL Library Terms of Use (UL Rector's Order No 1-4/9 of 07.01.2021).
The FB Council has approved the methodological guidelines "Presentation of Practice Reports, Course Papers, and Bachelor's and Master's Theses" (document in Latvian), which provide students with additional information on the requirements for the presentation of final papers. It should be noted that practice reports refer to course reports produced by 1st and 2nd year students after training in biological field methods (SAR p. 32).
To prevent violation of academic integrity, following the order On the Plagiarism Control (Par plaģiāta kontroli, the UL Order No 1/125 of 22.04.2014) (available only in Latvian) the UL has created the Unified Computerised Plagiarism Control System (SAR p. 32)

For remote learning and distance learning programmes, one of the Office 365 online applications, namely, Microsoft Teams, is used, which enables online lecture delivery, lecture recording, and communication with students online. In addition to the MS Teams programme, for remote studies, the UL offers its students and staff the BigBlueButton information system (hereinafter – the BBB system), an open-source web-based online videoconferencing system. E-study environments use the open-source e-learning environment MOODLE (SAR p.56 and web page with the link to e-studies: https://estudijas.lu.lv/?lang=en), which is a modular object-oriented dynamic learning environment and is at UL not only the most methodologically and pedagogically efficient but also the most cost-effective e-learning solution. Courses created in the Moodle e-learning environment give students access to necessary study materials and activities. Teaching staff can conduct both student assessments and record their attendance. The examples of applications demonstrated during the meeting with staff show that the system works well.
The information and communication technology solutions used to ensure the study process are appropriate and effective.

1.3.5. There are three teaching staff groups at the UL: academic staff, who hold their academic positions based on elections; acting academic staff and visiting academics; and hourly-paid staff. In the case of elected academic positions, as well as the acting academic staff, the Regulatory Enactments on Academic and Administrative Positions at the University of Latvia regulate the recruitment and selection. According to the regulations, the following academic positions exist at the UL: professor, associate professor, assistant professor, senior researcher, lecturer, researcher, assistant, research assistant (SAR pg 57, Annex 9B and 10B).
Decisions on the need for certain positions are made by the faculties. Competitions for elected academic positions are announced openly. Public calls for applications for the elected academic positions, including the function and terms of reference for the respective position, are published on

the UL website https://www.lu.lv/par-mums/vakances/, internationally advertised vacancies: https://www.lu.lv/en/about-us/vacancies/, and also in National Scientific Activity Information System and State Employment Agency of the Republic of Latvia vacancy portal. The applicants for academic positions must deliver an open lecture, which is evaluated by two reviewers, who issue their opinion on the quality of the lecture. The election procedure is carried out either by the decision-making body of the relevant unit (in the case of assistants, research assistants, researchers, senior researchers, lecturers, and assistant professors – by the respective Faculty Council), or in the case of associate professors and professors – by the relevant Professors Council. Elections must take place within two months from the date of the call for applications. The personalia – docents, lecturers, assistants, senior researchers, researchers, and research assistants – are voted on by secret ballot. Professors and associate professors are voted openly (following the 05.11.2020 amendments of the 2nd Paragraph of Section 33 (in force from 01.01.2021) of the Law on Higher Education Institutions). An applicant who has received more than half of the votes of the members present with the right to vote shall be considered elected. According to the Law on Higher Education Institutions, lecturers are elected for 6 years (SAR pg 57).
Following the UL regulations, minimum requirements are set for all applicants for academic positions, i.e., knowledge of the state language following regulatory enactments, knowledge of foreign languages to the extent necessary for the performance of academic duties, and continuous improvement of their academic and scientific qualifications. Other requirements differ across academic positions; for instance, to qualify for the position of docent, the candidate must have a doctoral degree, while the requirements for associate professors are more demanding, i.e., they must have considerable academic and pedagogical experience, an extensive list of publications and experience in scientific research projects. If the Senate chooses to decline the proposal from the department and not to announce vacancies, a guest lecturer may be recruited; The Rector of the UL concludes an employment agreement for the entire term of office with the person elected. During the reporting period, many new teaching staff started to work in the study programmes as elected members of the academic staff. One more reason for the change is the career growth of academic staff, with some members having been elected to higher positions during the reporting period (SAR pg. 58).
Taking all mentioned above, the procedures are implemented and followed to attract qualified teaching staff. The process is open, and stakeholders are in the loop of information.

1.3.6. The UL Strategy 2021-2027 (SAR pg 58) emphasizes that the goal of the development and excellence-oriented personnel policy is to ensure the development, growth, and renewal of academic and general personnel, to create a performance-based personnel management system, which will also include competitive and motivating personnel remuneration, to improve academic staff career, development opportunities, to create a system for attracting local and foreign academic staff, as well as new talents, and to promote international mobility (Annex 3B). The professional development of the UL academic staff is organized following the Cabinet Regulations No 569 of 11.09.2018, the Regulations on the Necessary Academic and Professional Qualifications of Pedagogues and Professional Competence Development Procedures, where Paragraph 16 states: “Educators of higher education and colleges shall, by the end of the term of their election, undertake a vocational development programme on innovation in the higher education system, or the higher education didactics, or the management of educational work at 160 academic hours (including at least 60 contact hours). Professional development may include international mobility and participation in conferences and seminars relevant to the purpose of the professional development, as evidenced by submitted documents", as well as the Cabinet Regulation No 129 of 25.02.2021 the Procedures for Evaluating the Scientific and Teaching Qualifications or Results of Artistic Creation Work of an Applicant for the Position of Professor or Associate Professor and of a Professor or Associate Professor Holding the Position (SAR p. 59).

The European Union funded several training programmes for lecturers between 2018 and 2023, namely: 1) Online Learning Development and Digitization of Learning Content; 2) Innovations to Improve the Quality of Teaching 3) Academic Integrity. The Academic Integrity course was attended by the Programme Director. All programmes have been developed after prior analysis of the professional development needs of lecturers in the context of trends in higher education. As part of the implementation of the professional development system for the UL academic staff, the UL Academic Department conducted an electronic survey of the UL academic staff, which resulted in information on the current professional development needs of the lecturers of all faculties, and several lecturers expressed their readiness to engage in the development and provision of continuing education content to their colleagues in line with their professional and didactic development needs (SAR p. 60).
Within the framework of SAM project 8.2.2.1 "Renewal and Competence Development of Academic Staff at the University of Latvia", lecturers and general staff of the Study Field have been improving their academic skills and competencies with a wide range of training courses, namely: English - 28 persons; Development of Leadership Competences of Academic Staff (36 h) - 10 persons; Digital Skills Development (36 h) - 7 persons; Digital Media Literacy (24 h) - 4 persons; Public Speaking, Art of Speaking and Presentation Fundamentals for Engaging with Industry and Audience (16 h) - 4 persons; Commercialisation Training (16 h) - 4 persons; Scientific and Publishing Skills (32 h) - 7 persons; Development of Technological and Pedagogical Skills for Providing Study in Digital Environment (modules - 12 h) - 17 persons (SAR p. 60).

1.3.7. In the academic year 2021/2022, 108 lecturers participated in teaching the Study Field programmes, 66 of whom were from the FB and 52 from other faculties (SAR p. 62). Of the 66 FB lecturers, 11 were elected Professors, one visiting professor, 11 Associate Professors, 14 Assistant Professors, and 11 lecturers. The rest 11 were employed as hourly lecturers or acting academic staff (e.g., Assistant Professors). Of the 66 lecturers at the Faculty, 48 lecturers or 72.7% have a doctoral degree (mostly in biology). The structure of positions is adequate to support all levels of study programmes. The workload of all elected UL staff members consists of academic and scientific research work. The average distribution of the total academic and research workload of the Faculty of Biology is 52.5% and 47.5%, but it could be vice versa. All lecturers involved in the implementation of the study programmes have a working knowledge of English, but only lecturers with at least a B2 level of English are involved in implementing the study courses and programmes in English (SAR p. 62).
The teaching staff's workload in terms of coursework and research is organized in a way that empowers the strengths of the teaching staff, as those who are more prone to scientific work are having project and research activities, and those more interested in teaching activities have opportunity to develop their careers in this way. Therefore, the workload seems balanced according to personal preferences and with respect to the workload and legal requirements of the study programme. However, FB management should take care of some situations where the high number of contact hours hinders involvement in research, project preparation, implementation, and publication for some teaching staff, as mentioned in the SWOT analysis. The management should pay attention and revise the workload of teaching staff and make sure it is sustainable and balanced.

1.3.8. Academic support aims at providing students with information and advice on study issues throughout their studies. Academic support includes the implementation of the first-year support programme, and counseling on the study process. Academic support for students in academic matters is provided centrally by the UL Department of Study Service and by the responsible persons at the faculties: the programme director, curator, mentor, registrar, course lecturers, as well as the Student Council and the student self-governments of the faculties. The UL Library provides advice on

the use of library and internet resources. Student support units/ staff system is well developed. It involves: Faculty Student Self Government, Curators, Registrar, study adviser, Mentors, Student Council (SC), Study programme director,Department of Study Service (SAR pg. 63, Table 2.3.8.1). Career development support aims at enabling individuals at any stage throughout their lives to identify their interests, abilities, skills, and experience to make informed decisions about educational and/ or occupational choices, and to organize and manage their individual life paths in education, work, and other areas. Career development support is provided by the Career Centre of the UL Department of Study Service in cooperation with the faculties. A counseling psychologist provides psychological support for students to solve any personal and academic problems (relationship problems, conflict resolution, emotional difficulties) that arise during their studies. In cooperation with ESN (Erasmus Student Network), special events are organized for foreign students to get acquainted with local students, Latvian culture, and traditions.In cooperation with the association "Apeirons", an evaluation of infrastructure accessibility for people with disabilities has been carried out. Within the Study Field and the Faculty, support for students is provided in various ways: the faculties have an international relations coordinator, the faculty registrar and methodologists advise students on all issues related to the course of studies, registration for study courses, and act as mediators between students and lecturers in case of problem situations, each lecturer holds weekly office hours for students from the courses currently delivered. Students find valuable support in academic matters provided by the UL Department of Study Service and by the responsible persons at the FB faculties: the programme director, curator, mentor, registrar, course lecturers, as well as the Student Council and the student self-governments, they are having from their peers in all challenges regarding studying at FB.
The LU has identified the necessary support for students and a functioning support system has been established to meet the needs of students.

Conclusions on this set of criteria, by specifying strengths and weaknesses

A method for calculating and allocating the financial support needed for the implementation of the study field and the associated study programmes has been devised by the FB. A system for funding basic and applied research has been developed and put into place. The UL, FB has valuable infrastructural resources, materials, and technical assistance required for the implementation of the study field and has such resources at its disposal. The infrastructure of House of Nature, House of Science; 30 lecture halls, 45 student laboratories and 69 research laboratories, accessible to students 24 hours a day, UL Botanical Garden, training Kolka site and UL Library create valuable resources for students and learning. The new building, new facilities, laboratories and other assets create a good working atmosphere for the students and staff. Students and faculty staff have access to the financial, infrastructure and intellectual resources of FB. For the enhancement and procurement of material, methodological, informational, etc. provision, a unified system and procedures have been built. A system has been designed by the FB, for the enhancement and acquisition of methodological and educational resources. Students get access to softwares, databases and library resources that are appropriate for their subject of study. UL Library is very modern and well equipped with literature data, Information and communication technology solutions, necessary softwares, programmes, are employed to guarantee the efficacy of the studying. The UL, FB, has established and adhered to processes for luring in qualified teaching staff. These procedures are transparent, and the parties involved are informed of them. Resources and provision of study field is adequate. Taking all mentioned above the procedures are implemented and followed to attract qualified teaching staff. The process is open and stakeholders are in the loop of information. The demands of the teaching staff's professional and didactic development are deliberately identified, and appropriate improvement strategies are applied, followed by an evaluation of the outcomes and efficacy of the adopted procedures. This resulted in the attraction of

new teaching staff coming from Latvian Scientific institutes and a new generation of teaching staff with relevant knowledge and experiences. The number and volume of scientific projects, research projects in cooperation with Latvian high-tech companies, applications and funding has increased. Most research projects are interdisciplinary and involve researchers from both the UL and other higher education institutions and research institutes in Latvia. The FB UL has established a system for determining and redistributing the financial support required for the implementation of the study field Wildlife Science and the corresponding study programmes. A system for funding scientific and applied research is sustainable but there is still space for improvement. It is necessary to improve the laboratory equipment and other settings of the new building facility and this requires more funding from various resources. All of the study programmes of the FB study field are based on the involvement of students in research, at all levels of education and well equipped laboratories are crucial for achievements of learning outcomes of the study programmes. The financing at the level of DSP study is not fully transparent and does not provide information on financing long term commitment of PhD students. The FB has determined what kind of support students require for their studying, and a working support structure has been set up to address those needs. Academic support for students in academic matters is provided centrally by the UL Department of Study Service and by the responsible persons at the faculties: the programme director, curator, mentor, registrar, course lecturers, as well as the Student Council and the student self-governments of the faculties.

Strengths:
1) Modern facilities for both laboratory and field work.
2) Competent teaching staff with relevant scientific knowledge and experiences.
3) 24/7 open library.
4) Students have an opportunity to get involved in research activities very early during their studying.
5) Academic support for students is well developed; it includes the UL Department of Study 6) Service and responsible persons at the FB the programme director, curator, mentor, registrar, course lecturers, as well as the Student Council and the student peer mentorship.

Weaknesses:
1) Laboratory equipment of FB should be improved to ensure high level research and development activities. All of the study programmes of the FB study field are based on the involvement of students in research, at all levels of education and well equipped laboratories are crucial for achievements of learning outcomes of the study programmes.
2) Financial resources should be higher to ensure sustainability and excellence. Building the improved research infrastructure and the increase in research capacity for business and professional development in the fields of biology, biomedicine, and biotechnology, requires a broader range of collaborative offers and more funding from various resources. Financing at the level of DSP study is not fully transparent and does not provide information on financing long term commitment of PhD students.

1.4. Scientific Research and Artistic Creation

Analysis

1.4.1. The development plan of the Study Field has one of its objectives "to develop and improve innovative and research-based study offer, promoting student involvement in research at all levels of education." To achieve this, two objectives have been defined, and they are: 1) to ensure the quality of excellence-oriented scientific results (increasing the number of publications, participation in conferences, involvement of students in research); 2) to ensure science and practice-based

studies. Research activities within the FB implementing the study field wildlife science are carried out in all major fields of biology, which is also reflected in the structure of the Faculty with its seven departments, namely, the Department of Plant Physiology, Department of Botany and Ecology, Department of Human and Animal Physiology, Department of Hydrobiology, Department of Microbiology and Biotechnology, Department of Molecular Biology, Department of Zoology and Animal. Three UL institutes are also related to the research areas of the Study Field, and they are the UL Institute of Biology, and the UL Institute of Microbiology and Biotechnology. In the international evaluation of science, the UL FB, together with the above-mentioned institutes and other faculties and institutes, is part of the Natural Sciences cluster, which received an overall rating of 3 out of 5 (SAR p 65). The research of the faculty members (incl. students) of the Study Field in various subfields of biology is also carried out in other institutes: the BIOR, the Latvian Biomedical Research and Study Centre, and the Latvian Institute of Aquatic Ecology. The research of the faculty members of the Direction was also related to the UL priority research directions for 2016-2021, namely: Climate Change and Sustainable Use of Natural Resources; Biomedicine, Pharmacy; Regenerative Medicine, Biobanking; Ecology and Biodiversity are directly related with trends of industrial development (SAR p. 65). Still there is nothing currently used directly in the Industry, since the study programme has started and needs time to be developed. The research areas covered by the DSP "Natural Sciences" go "beyond" the immediate directions of the Study Field, as the study programme is a consolidation of six previously existing doctoral study programmes, namely, the DSP "Biology", the DSP "Physics, Astronomy and Mechanics", the DSP "Geology", the DSP "Geography", the DSP "Chemistry", and the DSP "Environmental Sciences". Although the DSP "Natural Sciences" is included in the SF WLS, its implementation is closely linked to the scientific activities carried out by the Faculty of Geography and Earth Sciences, the Faculty of Chemistry, the Faculty of Physics, Mathematics and Optometry.
The directions of scientific research of the study field correspond to the development goals of the UL and are relevant to items of industrial development. Subjects of the study field are included in the doctoral studies.

1.4.2. Participation in Latvian and international projects, scientific conferences, preparation of scientific publications, and other research activities of the Study Field "Natural Sciences" and FB faculty members are closely related to the study process and contribute to the integration of scientific knowledge into the study process. It should also be noted that most FB faculty members are simultaneously elected to scientific positions at the FB or at one of the scientific institutes (both at UL institutes and others). The research activities and specific knowledge obtained is directly integrated into many study courses, for example, study courses "Current Problems in Biology: Hypotheses I" and "II", "Current Problems in Biology: Methods I" and " II", both elected academic staff and invited lecturers to conduct lectures and seminars providing information on the latest research and current developments in the specific research field (SER p. 65-66). Similar courses at the DSP "Natural Sciences" are "Presentation of Research Papers" and "Research and Development Project Management". The doctoral study programme director integrates his project expertise and experience in preparing scientific publications into the statistics courses of all level study programmes (the ABSP "Biology" – the course "Biometry", the AMSP "Biology – the course "Practical Biometry for Biologists," the ABSP "Biotechnology and Bioengineering" – the course "Data Analysis and Mathematical Statistics," the DSP "Natural Sciences" – the course "Statistics in Natural Sciences"). Scientific discoveries in the study of the microbiome are included in the AMSP "Biology" course "Human Microbiome". Scientific research work is also an integral and independent part of the study process in all level study programmes (Bachelor’s, Master’s, and doctoral). In all study programmes final Theses are developed as research papers on topics chosen by students (SAR pg 66).
The scientific research of the study field is related to the study process in the study programmes of

all levels. Students have opportunities to do scientific work, have a large amount of practical work, and have research-based study opportunities, allowing them to participate in research projects at all levels of their studies. Researchers having scientific projects at FB and relevant Latvian Scientific institutes are involved in teaching at FB. The research activities and results promote the achievement of learning outcomes and are integrated in the study process in the study programmes of all levels.

1.4.3. International cooperation in research in the fields covered by the SF WLS takes several forms, the main ones being the production of joint scientific publications and participation in joint scientific projects. Cooperation in the implementation of projects takes place both within the FB and in various scientific institutes where faculty members of the Study Field work. In the list below are the international projects during the reporting period (2013-2021) in which the UL FB was involved is described: Improving adaptation and resilience of perennial ryegrass for safe and sustainable food systems using CRISPR-Cas9 technology - EditGrass4Food; European Network for Foodborne Parasites in Europe (EURO-FBP); Implementation and Sustainability of Microbial Resource Research Infrastructure for the 21st Century (IS-MIRRI21); Towards RUral Synergies and Trade-offs between Economic development and Ecosystem services (TRUSTEE); Horizon Europe project "Capturing the potential of Gene editing for a sustainable BioEconomy: GeneBEcon having started on 1 September 2022 (SAR pg 67). During the 2013-2021 162 publications were co-authored by scientists from Finland, 148 from Estonia, 120 from the United Kingdom, 104 from Germany, and 101 from Sweden. Active cooperation within the framework of the European University Association FORTHEM is planned for the next period. The number of international research projects is expected to increase in future. This development would support increasing funding through LCS grants, Structural Fund projects, and sectoral research programmes (SAR pg 67).
International cooperation in scientific research is relevant, ensured, and purposefully developed. Still, the opportunities for international collaboration and mobility of students and teaching staff using international cooperation should be improved.

1.4.4. In total, in the reporting period 2013-2021, the faculty members involved in implementing the Study Field published 869 scientific articles indexed in the Scopus database (SAR, Annex 13-A). The lowest number of publications was in 2016, with 68 publications, while the number of publications almost doubled in 2021, reaching 132 in Scopus. In 2021, the average of 2 Scopus-indexed publications per FB faculty member a year has been reached. A full list of publications by the academic staff is given in Annex 14-A and that of personal level in (SAR pg 67-68, Annex 14-B).
Research projects are carried out by the faculty members both at the UL and other scientific institutions. The faculty members have been or are currently involved in the FB projects (listed in point 1.4.3. of this report). To encourage faculty members to publish in high-quality scientific journals, the UL has introduced the UL Excellence Programme, which provides material support to a corresponding author for Q1-level publications in journals indexed in the Web of Science database. Under the Research Support Scheme, UL academic staff may apply for financial support to attend scientific conferences and to cover part or all the costs of publishing in open-access journals. Publications in open-access journals are also supported by the FB base and performance funding (SAR pg 68).
The number of scientific project applications and funding has increased, and most research projects are interdisciplinary and involve researchers from both the UL and other higher education institutions and relevant research institutes in Latvia. The number and volume of scientific projects, research projects in cooperation with Latvian high-tech companies, applications and funding have increased. Most research projects are interdisciplinary and involve researchers from both the UL and other higher education institutions and research institutes in Latvia (SAR pg 21). The teaching staff has 869 scientific articles in the period 2013-2021 (Annex 13B). This number of publications is

evidence of good scientific productivity that creates a good environment for the professional development of the teaching staff and a learning environment for students. Researchers involved in research projects are an excellent resource for students in several ways, providing intellectual resources, mentorship, guidance, in scientific work and opportunities for research activities. Collaboration of researchers with other scientific institutions, both national and international, creates a positive environment for the involvement of the teaching staff in scientific research. This results in creating a well-functioning and efficient research and scientific system. The workload for teaching staff in terms of coursework and research is set up in a way that plays to each individual's strengths. For example, those who are more inclined to scientific work have project and research activities, and those who are more interested in teaching activities have the chance to advance their careers in this way. However, as noted in the SWOT analysis and observed during site visit, there are also instances where the high contact hours prevent some teaching staff members from participating in research, development and project planning, implementation, and publication. The management needs to pay close attention to the workload of the teaching personnel and change it as necessary to ensure sustainability and balance in workload.

1.4.5. The Study Field Wildlife Science requires students in all study programmes and at all levels of study (Bachelor's, Master's, and doctoral) to produce a final Thesis (Bachelor's Thesis, Master's Thesis, doctoral dissertation) as an independent scientific study, thus ensuring that each student has at least an initial involvement in scientific or applied research. In 2021, out of the 38 defended Bachelor's Theses, 19 were developed at one of the FB departments, one in the Institute "BIOR," 10 in the Latvian Biomedical Research and Study Centre, one in the Latvian State Institute of Wood Chemistry, one in the Institute of Atomic Physics and Spectroscopy, one in the Institute of Biology, three in the Institute of Microbiology and Biotechnology, one in the RSU Institute of Microbiology and Virology, and one in the LSFI "Silava" (SAR p 69).
No doctoral Thesis has not yet been defended within the DSP "Natural Sciences" as the DSP "Natural Sciences" started in 2021. The DSP is a consolidation of six existing doctoral programmes, the directions of doctoral students' research are related to the fields of biology, chemistry, physics, geography, geology, and environmental science (SAR p 69).
Both at the FB and in research institutes, all level students are involved in scientific projects as lab technicians, research assistants or researchers. Such involvement has been increasing in recent years, as many projects such as FARP and NRP have the participation of students as one of their minimum requirements.
Students have a large amount of practical work and provide research-based study opportunities, offering students the possibility to participate in research projects in all levels of their studies. The students are actively participating at FB UL research activities as well as relevant scientific institutions like Latvian Biomedical Research and Study Centre, Institute "BIOR", Latvian Biomedical Research and Study Centre, Latvian State Institute of Wood Chemistry, Institute of Atomic Physics and Spectroscopy, Institute of Biology, Institute of Microbiology and Biotechnology, RSU Institute of Microbiology and Virology and LSFI "Silava". This active participation in research activities results in many theses for students working in relevant scientific topics and achieving a good level of knowledge practical and scientific skills required for their future career development and job market. Students are encouraged to get involved in research activities very early in their studies which gives them more time to develop their skills and find their professional talents and interests. The FB has very well-developed mechanisms to promote the involvement of the students in scientific research and it is very well-functioning and efficient, as it is evident from discussions during the site visit, many theses developed as results of research activities.

1.4.6. No activities in product, process development and marketing innovation could be monitored. Nevertheless, during the reporting period, several organizational innovations were applied at the

Study Field Life Science. In SAR, pg 70, the “organizational innovation” are listed: 1) The Study Programme Council has been replaced with the Study Field Council; 2) relocation of the Faculty, and consequently the whole study process, from Kronvalda Boulevard 4 to the Academic Centre of the University of Latvia, the House of Nature, Jelgava street 1; 3) The FB has introduced the post of marketing specialist (SAR pg 70). The activity in product and process development is not reported in SAR. The “organizational innovations” have a significant positive impact on the study process.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The directions of scientific research of the FB staff are relevant to the study field, and they are consistent with the UL, FB, development goals. It therefore makes sense and is appropriate for scientific research at the FB to be connected to the learning process. In all levels of study programmes, scientific and practical research, as well as its findings, are included into the learning process. International cooperation is actively being cultivated in the fields of scientific research related to the study field and the pertinent study programmes. The UL, FB, has created procedures to allow students and teaching staff participation in academic research. They operate effectively and very productively which is evidenced by the high number of publications published in international peer reviewed journals and number of thesis developed in relevant fields. The scientific activity is high and effective at all study levels of study programmes. Product and process development, particularly in the new study program of “Biotechnology and engineering” should be introduced into items of the final thesis. Innovative approaches are used in the research sector, and this greatly benefits the study process. Students are encouraged to start with internship in collaborative institutes of FB, to gain practical skills and knowledge relevant to the study programme.

Strengths:
1) Participation of students in research activities of UL research institutes and other relevant Latvian Institutets in development of final thesis at all levels of study programmes
2) Students have an opportunity to get involved in research activities very early during the studying and this is highly encouraged by FB.
3) Excellent collaboration with Institute “BIOR”, in the Latvian Biomedical Research and Study Centre, Latvian State Institute of Wood Chemistry, Institute of Atomic Physics and Spectroscopy, Institute of Biology, Institute of Microbiology and Biotechnology, RSU Institute of Microbiology and Virology, and LSFI "Silava"
4) Students are encouraged to start with internship in collaborative institutes of FB, to gain practical skills and knowledge relevant to the study program.
5) High productivity of research papers in the area of study field, published in international peer reviewed journals.
6) Projects related to the study field are applied and students have the opportunity to participate and develop their final thesis, explore their professional talents and interests.

Weaknesses:
1) The name of the study field “wildlife science” is confusing, particularly in respect of activities in “Biotechnology and bioengineering” and the new doctoral studies programme of “Natural sciences” including physics and geography
2) Innovative solutions related to product and process development are not monitored
3) International cooperation in the field of scientific research is an opportunity for mobility of students and teaching staff that is not used well enough.
4) Workload for some teaching staff should be revised in order to make more balance and assure sustainability.
5) Financial resources should be improved to ensure sustainability and excellence.

Assessment of the requirement [2]

1 R2 - Compliance of scientific research and artistic creation with the level of development of scientific research and artistic creation (if applicable)

Assessment of compliance: Fully compliant

UL teaching staff actively participate in scientific research. Proof can be found in the Annex13_B_scientific_activity_data.pdf and Annex 14 B 14_B_list_of_publications.pdf

1.5. Cooperation and Internationalisation

Analysis

1.5.1. As stated in the self assessment report and indicated in the document “List of partnership and cooperation agreements” as well as during the on site interviews the higher education institution (HEI) is cooperating with institutions from Latvia in following ways:
1) knowledge partnership-participation of leading researchers from scientific institutions in the SF WLS course delivery, supervision of Bachelor’s, Master’s and doctoral Theses, and in the activities of the Promotion Council, as well as in the activities of the University of Latvia (UL) study programme or Study Field Council, and in mobility of UL academic staff to broaden the spectrum of research. The most important partners - scientific institutions which are not UL structural units are the Latvian Biomedical Research and Study Centre, Latvian State Forest Research Institute "Silava", Latvian Institute of Aquatic Ecology, the Institute of Food Safety, Animal Health and Environment "BIOR", the Latvian Fund for Nature. Within the framework of the Study Field, there is also a wide and close knowledge partnership with scientific institutes which are UL structural units. The closest cooperation is with the Institute of Microbiology and Biotechnology, the Institute of Biology, the Botanical Garden, the Institute of Atomic Physics and Spectroscopy (SAR pg 70 - 71).
2) partnership for common goals, including the establishment of joint study programmes: the UL and Riga Technical University (RTU) joint Bachelor’s study programme (ABSP) "Biotechnology and Bioengineering" (SAR pg 71).
3) implementation of research cooperation projects, participation in European Union (EU) and Latvian programmes supporting research and innovation. The scientific staff involved in the Study Field are also involved in the implementation of joint research projects in cooperation with other scientific institutions within and outside the UL, which gives the opportunity to attract students to scientific work. Among such successfully implemented scientific cooperation projects are the European Regional Development Fund (ERDF) project "Optical Non-Invasive Hybrid Method for Early Diagnosis and Therapy Management of Sepsis" (2017-2019) implemented by the Institute of Atomic Physics and Spectroscopy and the Faculty of Biology (FB), the Norwegian Financial Mechanism project "Improving sustainable soil resource management in agriculture" implemented by the Faculty of Geography and Earth Sciences (involving the SF WS lecturers). The FB scientific staff also collaborates in the implementation of scientific cooperation projects with sports organizations - the Latvian Olympic Committee (LOC) to achieve common goals by scientifically assessing the health parameters of younger school-age children and their relationship with general physical fitness (the LOC and FB effective cooperation project "Physical activity and general health status of children" (2018-2022)). Within the framework of student scientific research, successful cooperation has been established with the Latvian War Museum for the assessment of microbiological contamination of exhibits (2015-2016) or with the Latvian pharmaceutical manufacturer Grindex for the microbial purity testing of pharmaceutical preparations (2021-2022) (SAR p 71).
The above-mentioned organizations include higher education institutions, employers, scientific institutions and non-governmental organizations and can be considered as the leading entities on governmental level and therefore valuable partners from the industry.

The above-mentioned aspects are used as criteria for the selection of cooperation partners corresponding to the study field in general and study programmes, namely, by evaluating the cooperation partners and they do make a contribution to the improvement of SF WLS.
The selection of cooperation partners is evaluated individually, examining each possibility of cooperation, depending on the form of cooperation (academic cooperation, cooperation in common scientific projects, knowledge partnership or other forms of cooperation). The effectiveness of collaboration is apparent and aims are met.

1.5.2. The HEI is cooperating with institutions from abroad in following ways:
1) research-joint projects and publications. Following the growing internationalization of science and research projects, the FB as a UL structural unit responsible for the SF WS implements several consortium research projects in partnership with scientific institutions from other countries. Some examples are the Norwegian Financial Mechanism project ("Improving adaptation and resilience of perennial ryegrass for safe and sustainable food systems using CRISPR-Cas9 technology - EditGrass4Food"; 2021-2024), in which the leading partner is the UL FB (project leader Prof. Nils Rostoks), and the cooperation partners are Norwegian University of Life Sciences, Tallinn University of Technology, and Lithuanian Research Centre for Agriculture and Forestry; the EU Horizon2020 project "Implementation and Sustainability of Microbial Resource Research Infrastructure for the 21st Century" (project leader Prof. Indriķis Muižnieks). The SF WLS academic staff have established a strong international cooperation in the field of publications, with the number of publications with foreign collaborators increasing year by year. The evidence is provided in the document “List of publications in the SCOPUS database from 2013- 2021” (SAR pg 72).
2) organization of international events - the SF WLS academic staff have participated in the organization of various international scientific and academic events, serving on both scientific and organizing committees of international congresses, conferences, and seminars both in Latvia and abroad. In Latvia, among the international events organized at the University of Latvia with the study field academic staff being the leading organizers, the highlights are the following events: the 7th International Conference of Geneticists of Baltics (October 2018), the European Conference of Biochemical Society (June 2019), the 3rd International Conference "Nutrition and Health" (December 2020), the Inaugural Conference of the EEA-NOR project EditGrass4Food (October 2021), International Barley Genetics Symposium (July 2022), Conference of European Charophytologists (August 2022). Information about those events are freely accessible on the web page of the HEI (SAR pg 72).
3) mobility of teaching staff - for the purpose of lecturing at foreign universities or scientific exchange, mobility is implemented within the framework of EU mobility support programmes (Erasmus, FORTHEM) or of individual projects implemented by the FB (EEC and Norwegian Financial Mechanism programme "Research and Scholarships'' project; EEZ/NFI/S/2015/031). Within the Erasmus programme, 8 FB staff involved in the implementation of the Study Field have participated in lecturing mobility during the accreditation period one professor at the University of Algarve in Portugal, one associated professor at the University of Jivaskile in Finland and one associated professor at the University of Oulu, Finland. Overall data on the teaching staff’s mobility is given in the document “statistical data of incoming and outgoing mobility of teaching staff” (SAR pg 72-73).
The lectures by visiting lecturers were mainly given in the framework of the Erasmus exchange mobility of lecturers, and they were either individual lectures or lectures of at least 8 academic hours integrated into study courses. Another way of recruiting guest lecturers for individual lectures is by inviting a foreign researcher/lecturer to give a lecture when the researcher/lecturer is visiting Latvia for a scientific or academic project not directly related to lecturing mobility. Such meetings with foreign scientists and attendance of their lectures are offered in the framework of Doctoral School events. Some examples include a lecture by the PhD from the VTT Technical Research Centre of Finland on the scientific and applied use of plant cell (Scientific and applied use of plant cell,

tissue and organ cultures) in March 2020; a lecture by the PhD from the University of Cambridge on research in plant ecology and wood anatomy in December 2019; a lecture by the professor. PhD of Biological Systems Engineering at Washington State University, on extraction of biofuels and bioproducts from plant matter (Low Cost Biofuels and Bioproducts from Plant Biomass) in October 2019; a lecture by the professor at the University of Florida, on landscape conservation in Latin America (Landscape conservation in Latin America: What bird behavior can tell us about habitat connectivity?) in March 2019 (SAR pg 73).
4) Student mobility - As indicated in the statistics of outgoing and incoming student mobility the students of the SF WLS programmes actively use the opportunities of the UL international projects for student mobility for study or practice. Study mobility for one or two semesters, as well as short-term study mobility (up to 1 week) is mainly used by students of Bachelor's and Master's study programmes, while practice mobility for an average of 3-4 months is most often undertaken by doctoral students. For the study and practice mobility, the SF students have been using the Erasmus, FORTHEM and EEA and Norway Grants programmes, as well as university bilateral cooperation agreements. The most widely used student mobility programme for both outgoing and incoming students is Erasmus+ study mobility. In the academic year 2021/2022, the FB concluded 35 cooperation agreements with European universities in the framework of Erasmus mobility. On average, 12-16 students of the Study Field go on Erasmus studies for at least one semester each year.
The above-mentioned cooperation with the organizations include higher education institutions, employers and scientific institutions. HEI contributes to scientific events relevant to the SF WS programmes and utilizes a broad spectrum of support mechanisms (SAR pg 73-74).
The above-mentioned aspects are used as criteria for the selection of international cooperation partners corresponding to the study field in general and study programmes, and do make a significant contribution to the improvement of SF WLS.
The selection of international cooperation partners is evaluated individually, examining each possibility of cooperation, depending on the form of cooperation (academic cooperation, cooperation in common scientific projects, knowledge partnership or other forms of cooperation). That is backed up by mutual agreements. The effectiveness of collaboration is apparent and aims are met.

1.5.3. The most important mechanism on how to attract the teaching staff has been the implementation of the project "Renewal and Competence Development of Academic Staff at the University of Latvia", which allowed the temporary recruitment of four foreign lecturers, one of whom has been elected to a permanent position of Assistant Professor. Since 2009, in cooperation with other UL faculties and Latvian higher education institutions, the FB has implemented two doctoral schools, namely, "Study for sustainable use of plant and soil biological resources" and "Animal diversity and quality of environment". The work of the schools took the form of lectures and seminars with the participation of several dozen foreign guest lecturers (SAR pg 74). The effectiveness of collaboration is apparent and aims are met.
The mobility of the outgoing teaching staff during the previous accreditation period was basically implemented within the framework of the Erasmus+ programme, where 2-3 lecturers of the study field went on lecture delivering mobility every year. The most important factor that limits the mobility of teaching staff for lecturing is the coordination of study plans with partner universities to make lecturing inclusive in the study plan of partner universities. Mobility of the teaching staff is reflected in the document "Statistical Data on the Incoming and Outgoing Mobility of Teaching Staff." However, it can be observed that the outgoing mobility is low and has even been 0 in the years 2020-2021 due to the pandemic (SAR pg 75). During the interviews with the teaching staff, there was a notion that it is impossible at the moment to participate comfortably in the mobility programmes since most of the teaching staff has research projects to manage at all times. Low outgoing mobility, especially when compared to incoming mobility rate must be considered as a

significant drawback and indicates that the mechanisms for mobility should be improved.
The number of outgoing students is between 5-24 students every year, where students go for both study and internship mobility. The number of incoming students is between 2-16 every year. During the restrictions of the COVID-19 pandemic (2020-2022), there was a significant decrease in the number of mobilities, which is starting to change during the last academic year. As it was found out in the interviews with existing and former students, the most critical factor that limits the mobility of outgoing students is the coordination of study plans, so that during exchange studies, the student can obtain the same number of credit points as at UL, as well as the limited offer of study courses in English in several universities (especially in southern European universities such as in Spain, Italy, Portugal, etc.). Personal life is a concern, too. However, students admit that they are encouraged to use options for mobility constantly. The dynamics of student mobility are shown in the document "Statistic of Student Outgoing and Incoming Mobility" and can be evaluated as rather low.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The UL, FB, has created systems to encourage student participation in scientific research, and they work effectively and appropriately. Students in academic programmes at all levels participate in scientific and/or practical research. Innovative approaches are used in the research sector, greatly benefiting the study process. Within the framework of the study field, the FB with foreign institutions, such as universities, relevant stakeholders like employers, employers' organizations, municipalities, non-governmental organizations, scientific institutes, such as the Institute of Biology, the UL Institute of Microbiology and Biotechnology; the BIOR, the Latvian Biomedical Research and Study Centre, the Latvian Institute of Aquatic Ecology. This collaboration helps to achieve the objectives and learning outcomes of the study field and the pertinent study programmes. The necessary research programmes and the unique characteristics of the study field are taken into consideration while choosing the collaboration partners. To recruit foreign teaching staff and students to the study field, FB has built a system and procedures. Low outgoing mobility, especially when compared to incoming mobility rate, must be considered as a significant drawback and indicates that the mechanisms for mobility should be improved. Alumni network of graduates, is a valuable resource that should be better developed and used as a resource for networking and promoting the career paths of students of FB and other opportunities offered by FB. The education offered at FB is highly valued by students and employers. The image of the FB and study programme among students, teaching staff, graduates and partners is very good and represents a valuable resource for future activities.

Strengths:
1) Broad spectrum of cooperation with partner organizations - local and foreign;
2) Significant contribution to scientific events like congresses, conferences, and seminars;
3) Students in academic programmes of UL, and FB at all levels participate in scientific and/or practical research.

Weaknesses:
1) Significant decrease in recent teaching staff mobility.
2) Insufficient/ weak mechanisms for prevention of limitations for the mobility;
3) In general, there is low mobility of the teaching staff, considering the total number of the staff.
4) International cooperation in scientific research has many opportunities for the mobility of teaching staff that should be used more.
5) Alumni network of graduates, is a resource that should be used more for networking and promoting the career paths of students of FB and other opportunities offered by FB.

Assessment of the requirement [3]

1 R3 - The cooperation implemented within the study field with various Latvian and foreign organizations ensures the achievement of the aims of the study field.

Assessment of compliance: Partially compliant

The current lack of mobility and motivation among students and teaching staff highlights an opportunity for the study field to strengthen its collaboration efforts with various organizations, both within Latvia and abroad, to better align with its aim and provide a more enriching educational experience. A large proportion of FB students participate in research and prepare a final thesis in other institutes of LU and academic institutions of Latvia. Proof can be found in the Annexes:
15_B_list_of_agreements.pdf16_B_foreign_students_teaching_staff.pd 17_B_student_mobility.pdf
18_B_teaching_staff_mobility.pdf

1.6. Implementation of the Recommendations Received During the Previous Assessment Procedures

Analysis

During the previous evaluation, this study field was given many recommendations in regard to legislation, documentation, mobility, as well as incoming and going mobility. See SAR annex 19B Report implementation recommendations.

1) It was recommended to implement more formal agreements in the field of international cooperations. The number of formal agreements increased in the framework of the Erasmus + programme, such as the Cardinal Stefan Wyszynski University in Warsaw, the University of Natural Sciences and Humanities (both in Poland). In September 2021, the University of Latvia, Riga Technical University and Kartagen Polytechnic University (Spain) signed a trilateral agreement in the field of academic cooperation, including the exchange of guest lecturers.

2) Regarding uniform requirements for the development of a doctoral thesis the recommendation is fully implemented. Changes have been made to the “by-law of the Biology Promotion Council of the University of Latvia”, specifying the requirements for a doctoral thesis, the types thereof, and the course of the promotion meeting.

3) Regarding better research and more publications in high-ranking coasts recommendation - the university has increased the number of publications in journals indexed to the Web of Science and Scopus databases.

4) Regarding the lack of a study programme, a future development plan - the recommendation is fully implemented. The Development plan was developed and approved together with SWID analysis for the “Wildlife Sciences” study field in 2022.

5) Regarding missing study modules for exchange students, starting from 2023, a study programme “Biotechnology and Bioengineering” will be implemented in English, therefore extending the offering of study courses for exchange students.

6) It was also recommended to increase the number of foreign students and teaching staff in study programmes implemented by faculty. The SAM 8.2.2. a project has been implemented, attracting

applicants who have been active in the study field programmes for at least one year and have already been elected to a permanent position in the FB. The number of foreign students increased from 1- 2 students (2010-2014) to 7-14 students (2017-2021).

7) Regarding the lack of study courses taught in English, a list has been established of the study courses of the ABSP and Biology AMSP, which are available in English in each of the semesters of the academic year. A new study programme “Biotechnology and Bioengineering” has been established, which will also be implemented in English from 2023./2024. academic year, therefore increasing the offer of study courses in English.

8) Regarding international mobility of local students needs to be increased, the recommendation is only partly implemented. Student mobility peaked in 2015/2016 (24 students), but as academic staff confirms, there has been a high degree of variability in recent years, linked to both The COVID-19 pandemic and an increase in the cost of living, which reduces students' willingness to go into exchange studies.

Regarding bachelor study programme “Biology” (code 43421).

1) It was recommended to improve the skills of bachelor-level students in research. There have been changes in study courses, making study courses more practical and up-to-date. For instance, for the study course Field course in botany and zoology number of credit points increased from 2 to 3 CP and for the study courses “Methods of Instrumental Analysis in Biology” and “Preparation of Projects and Publications”, content added to meet the latest scientific trends.

2) It was also recommended to increase the number of specialized courses. There have been changes in the Biology study plan, implementing new study courses, for instance, “Organic Chemistry”, “Introduction to Bioinformatics”, “Big data analysis of nucleic acid sequencing”, “Cancer Biology I” and “Basic Psychophysiology”.

Regarding master study programme “Biology” (Code 45421)

1) There was only one recommendation regarding the number of specialized courses. There have been changes in the Biology study plan, implementing new study courses, for instance, Human Microbiome”, “Model Systems in Biomedicine”, Molecular plant microbe-invertebrate Interactions,” “Modern Technologies in Biomedicine” and “Seed Physiology and ecology”. The programme also includes study courses provided by the Faculty of Computing.

Regarding the doctoral study programme “Natural Science” (Code 51421)

1) It was recommended to develop a system to replace highly qualified teaching staff in the event of illness or other problems. At the beginning of the implementation of the study programme, there are teaching staff at the disposal of the BF and other UL faculties involved in the implementation of the programme, which may be involved in the realization of study courses if one of the teaching staff is no longer able to continue teaching courses.

2) Regarding preparing and providing more information to future doctoral candidates on attracting guest lecturers, students are informed about guest lecturers, seminars, and other opportunities by e-mails and e-studies.

3) It was also recommended to develop the concept of “Doctors School”. UL has developed a

“Development Plan for doctoral programmes at the University of Latvia” in 2021, which determines the activities to be carried out to introduce the new concept of doctoral. However, academic staff indicates that appropriate legislative changes are expected to begin realizing the plan.

4) Regarding finding and entering into cooperation agreements with an institution of higher education in which students of doctoral studies in the “Natural science” programme could continue their studies if the implementation of the study programme to be licensed has been terminated. In 2022 an agreement with Daugavpils University on the opportunities to continue studying has been signed. This recommendation is fully implemented.

5) Regarding developing more diverse support mechanisms for the development phases of the promotion work, including grant funding for the development of promotional works and
funding for attending conferences, including transport and nighthouse expenditure. There have been changes implementing more support mechanisms for doctoral candidates, for instance, an increased amount from centralized funds (up to 500 EUR) available for participation in conferences and publishing science articles.

During the licensing of study programmes, a joint bachelor study programme “Biotechnology and bioengineering” has been licensed. It was well regarded by all stakeholders, with various parties stating that it has great potential to produce significantly needed specialists for the field. University has provided answers to short-term recommendations:

1) It was recommended to change the programme code in conformity with the requirements of existing regulatory enactments until the meeting of the Study Quality Commission. Recommendation is not implemented. The change of codes proposed by experts from 421 (Biology) to 422 (Biochemistry) according to UL and RTU is considered to be inconsistent with the content of the programme because of the overall size of the programme; approximately 40% consists directly of study courses in biology and its sub-sectors, while the amount of courses corresponding to biochemistry is less than 10%. The opinion was also agreed by the Study Quality Commission, which left the code unchanged.

2) Regarding changing the degree to be granted until the meeting of the Study Quality Commission, the degree to be awarded has been changed from “Bachelor of Natural Science” to “Bachelor of Natural Science in biology”, in accordance with the decision of the Study Quality Commission. This recommendation is fully implemented.

3) Regarding providing students with information from the first day of study that the courses to be studied require maximum attendance and the non-attendance of classes, even because of medical indications, is not possible. Before the beginning of each academic year, students have an informative meeting with the programme directors of UL and RTU and part of the teaching staff. During the meeting, students are also informed about general requirements. However, students have the possibility, for justifiable reasons (such as medical indications), also to delay one of the practical or laboratory works and finish it at another time, as agreed with the lecturer.

4) Regarding possibilities for developing the language competencies of the teaching staff involved, taking into account the plan of the planned programme on foreign learners from both the EU and non-EU countries. Teaching staff continues to improve English language knowledge so that the program can be fully implemented in English starting from 2023./2024. academic year. Since the licensing of the study programme, certificates on completion of English courses, passage of examinations and compliance of English knowledge with level C1 have been received.

5) In response to what the study programme directors say about the fact that most of the leading professionals in the sector are involved in the programme and will be teaching staff, it was recommended to ensure that all teachers have access to qualified substitutes. Since licensing of the study program, five teaching staff members at UL and four at RTU have been added and attracted lecturers who operate in parallel with the responsible lecturers of the study courses, reducing the pressure on the leading lecturer and preparing the additional lecturer for replacement.

6) Regarding the feedback from international students on the quality of the study program to improve its implementation. It is not implemented yet, since there currently aren't any international students.

7) Regarding increasing the number of highly qualified guest lecturers. UL and RTU have signed a trilateral agreement with Cartagena Polytechnic University, also including recruitment of guest lecturers in university courses from another university. However, as also students indicated in the interviews, the guest lecturer amount could be higher.

8) Consider the possibility of supplementing the study programme in the future with personality-forming courses, such as the history of philosophy, the history of art and literature, etc. It is planned to perform full evaluation of the existing content of the study program and possibilities for new study courses after the conclusion of the first entire cycle (in the summer 2023). Students can now choose personality study courses out of the elective courses.

Regarding long-term recommendations:

1) It was recommended to increase the number of budget places financed by the state. Both universities actively require additional budget places for the study program in annual negotiations with the Ministry of education and Science. At the same time, universities will also assess the possibility of redeploying internal budget places in favor of Biotechnology and Bioengineering study programme, considering the situation with the filling of the budget places and demand in other programmes.

2) Experts also encouraged minor changes to the curriculum. Computer programming should be better integrated with other courses. It was also recommended that the curriculum include a "generally applied skills" course focusing on how students can make themselves more understandable, how to effectively present their ideas to others, how to negotiate deals, how to operate successfully in the global social environment of the industry, etc. As previously described, it is planned to evaluate the content of the study program and make changes in the summer 2023.

3) Regarding further internationalization of teaching staff. In particular, Latvian specialists with significant international experience and senior specialists from abroad are recruited. RTU and UL have already concluded a trilateral agreement with the Cartagena Polytechnic University (Spain) on the involvement of teaching staff in the teaching of individual lectures by Biotechnology and Bioengineering ABSP.

The University of Latvia has made great efforts to acknowledge and implement all of the given recommendations since the previous assessment. Unfortunately, internationalization and exchange efforts have been troubled by epidemiological problems and global conflicts. However, this study field has successfully overcome its biggest previous challenges. It must be noted that there should be a continued effort to support any type of mobility and internationalization development.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The University of Latvia has acknowledged previous recommendations and is implementing them to improve the study field and study programmes. There are some deficiencies, but UL has addressed them and is still improving. Although there is a clear vision for solutions to all not fully implemented recommendations, the section is evaluated as partially adequate, based on the fact that certain recommendations still need to be further implemented.

Strengths:
1) High demand for the “Biotechnology and bioengineering” study programme, and it will be implemented in English starting the year 2023/2024, increasing the opportunities for international students.
2) Students appreciate different kinds of opportunities and practical study courses, for instance, field studies.
3) Language skills (English) of teaching staff are gradually being improved, as well as new teaching staff have been recruited.

Weaknesses:
1) Although there is a rise in the number of foreign guest lecturers, the amount could be higher, also based on the fact that the majority of them are short-term stays.
2) There is a lack of international students.

Assessment of the requirement [4]

1 R4 - Elimination of deficiencies and shortcomings identified in the previous assessment of the study field, if any, or implementation of the recommendations provided.

Assessment of compliance: Partially compliant

Majority of recommendations from the previous reaccreditation were taken into account there still is a low number of incoming and outgoing teachers, and international students. It is important to allocate significantly more resources and focus on improving mobility for both teaching staff and students to enhance integration with the global academic community, thereby boosting competitiveness and avoiding the negative consequences of limited mobility. Proof can be found in Annex 19_B_Report impementation_recommendations.pdf

1.7. Recommendations for the Study Field

Short-term recommendations

N/A
1) To ensure a comprehensive and aligned definition of the study field's aim, experts recommend revising the aim formulation process and to review aim explicitly incorporating the content of the doctoral study programme as well, along with bachelor's and master's study programmes. The goal should be specific in order to be able to present clear results achieved during the accreditation process.

Long-term recommendations

1) To ensure alignment with regulatory standards, we recommend that UL formally request the Ministry of Education and Science to review and harmonize the names of its study fields with Cabinet Regulations No. 322 “Regulations on the Classification of Education in Latvia” (approved 13.06.2017), with alignment achieved within nex accreditation period, ensuring its relevance and feasibility.
2) To enhance the sustainability and transparency of the study field, it is recommended that the institution diversifies its funding sources, particularly at the Doctor of Science (DSP) level, by actively pursuing a broader range of funding opportunities, prioritizing transparent financing for DSP programs, and maximizing the utilization of available research project funding, aiming to achieve improved financial resources to ensure excellence and sustainability at all levels of studies, with measurable success tracked through increased funding diversification and transparency within the next accreditation period.
3) Identify FB laboratory equipment that would help to support higher-level research and teaching activities. After identifying the resources, start their gradual acquisition.
4) The management needs to pay close attention and revise the workload of the teaching personnel and change it if necessary to ensure sustainability and balance of workload of teaching staff.
5) For significantly enhanced international mobility, it is recommended that the faculty actively promotes the benefits of mobility, utilizes communication channels for dissemination, implements mechanisms for reducing barriers to mobility, increases foreign guest lecturers, strengthens partnerships, establishes faculty exchange programs, seizes funding opportunities, enhances support services, integrates an international perspective into the curriculum, and explores digital mobility initiatives, ensuring measurable success through increased participation and improved international engagement over accreditation period.
6) To enhance science communication in biology, biomedicine, and biotechnology, it is recommended that the Faculty of Biology (FB) further leverage its marketing specialist position in collaboration with the UL Communication Department to effectively disseminate information on career development for PhD students, international mobility benefits, attraction of international stakeholders, entrepreneurial skills development, career paths for students, and the advantages of studying at FB in the job market, ensuring measurable success through increased interest and engagement of potential students and cooperation partners within the accreditation period.
7) To harness the potential of the Alumni network as a valuable resource for networking, career promotion, and collaboration opportunities, it is recommended that the Faculty of Biology (FB) actively develop and leverage this network, focusing on alumni engagement and awareness among students, teaching staff, graduates, and partners, with measurable success gauged by increased alumni involvement and resource utilization, to be accomplished within the next accreditation period.
8) Implement a comprehensive monitoring system for innovative solutions related to product and process development to ensure their effective tracking and evaluation, thus promoting innovation within the UL, FB.

II - "Biology" ASSESSMENT

II - "Biology" ASSESSMENT

2.1. Indicators Describing the Study Programme

Analysis

2.1.1. The ABSP Biology provides up-to-date theoretical and methodological knowledge in the sub-disciplines of biology. The Bachelor's Degree of Natural Sciences in Biology to be obtained at the ABSP Biology belongs to the field of Wildlife Sciences, and this study programme is the basis for the master's level study programme – AMSP Biology. Therefore, we can conclude that the ABSP Biology meets the goal of the study field Wildlife Sciences – "to prepare specialists at the Bachelor's, Master's and Doctoral levels in biology and biotechnology in order to provide the country with specialists necessary in priority research directions and sectors of the national economy".

2.1.2. The ABSP Biology is an academic bachelor's study programme and its amount is 120 Latvian credits (CP). The degree to be acquired – Bachelor's Degree of Natural Sciences in Biology. The language of implementation – Latvian.
The ABSP Biology is implemented as full-time intramural studies (three study years), in Latvian, admission requirements – secondary education. For the ABSP "Biology", the additional requirements include a centralised examination in Biology and a pass in Chemistry or Natural Sciences. The admission requirements (SAR, p. 109) correspond to the aims and objectives of the programme (SAR, p. 108).
The code of the study programme according to the classification of Latvian education - 43421, where the first part (43) of the code indicates that the type of the ABSP Biology is academic bachelor study programme and the digits of the second part of the code (421) indicate that the thematic area of education is Biology (the Cabinet Regulations No. 322 "Regulations on the Classification of Education in Latvia", Annex 2 (approved 13.06.2017.).
The aim, objectives, volume (CP), duration of the ABSP Biology, as well as the degree to be obtained after completing the study programme comply with the requirements of the Cabinet Regulations No 240 "Regulations on the State Academic Education Standard" (approved 13.05.2014.).
The learning outcomes of the ABSP Biology correspond to the 6th level of the Latvian Qualifications Framework (LQF), which is described in the Cabinet of Ministers Regulations No. 322 "Regulations on the Classification of Education in Latvia" (approved 13.06.2017.). They are aligned with the aim and objectives of the study programme. For example, Objective 4 of the study programme (SAR, p. 108) "to develop modern research skills and the ability to carry out independent research under the supervision of academic staff in a chosen field of biology, and to summarize the results in a Bachelor's Thesis which level corresponds to the requirements for scientific publication" corresponds to the 8th learning outcome of the study programme (SAR, p. 109) "conduct scientific research from hypothesis to results with scientifically correct data collection and analysis".
The title, code, degree to be obtained, aim, objectives, learning outcomes and admission requirements of the ABSP Biology are interrelated.

2.1.3. Since the previous accreditation period, such parameters of the ABSP Biology as the aim, objectives and learning outcomes to be achieved in the study programme have been changed. The aim of the study programme has been aligned with the Academic Education Standard (the Cabinet Regulation No 240 "Regulations on the State Academic Education Standard" (approved 13.05.2014.) and accordingly, changes have also been introduced in the objectives of the study programme and the learning outcomes to be achieved. Since the previous accreditation period, changes have been made to the scope and names of the study courses in mandatory Part A, restricted elective Part B and free elective Part C. The mandatory part has increased since the previous accreditation from 68 CP to 74 CP; the amount of restricted elective Part B has been reduced from 46 CP to 42 CP (SAR, p. 110).
The corrections introduced in the parameters of the ABSP Biology (the aim, objectives and results of the study programme) within the assessment of the study field are justified and would be supported.

2.1.4. The economic and social justification of the ABSP Biology is based on the fact “that biology is one of the most topical fields of modern science. Its rapid development in recent decades has also contributed to the development of other scientific fields such as agriculture, forestry medicine, etc., as well as to the development of innovative technologies and products used by different groups of society” (SAR, p. 116).
The ABSP Biology prepares specialists who, having graduated from the study programme, can work in all of the most important subfields of biology. Over the past six years, an average of 44 students graduate from the study programme each year. The SAR (p. 116) states that a greater proportion of them have paid work in the fields related to the study programme, “but only the survey of Master's graduates provides objective data on the employment status of ABSP graduates, as working Bachelors do not always work in their permanent place of employment” (SAR, p. 116). The information provided in the SAR (p. 116) presents the employment of the graduates of the AMSP Biology, but does not analyse the employment of the graduates of the ABSP Biology (e.g., the SAR mentions only one survey of the year 2022 where only 14 out of 43 ABSP Biology graduates were surveyed); other graduates of the last six years have not been not surveyed). During the visit, the experts found out that most of the ABSP Biology graduates continue their studies in master level programmes and this is a good indication of the quality of the bachelor’s study programme and student satisfaction with the acquired knowledge and the study process at the UL.

2.1.5 N/A

Conclusions on this set of criteria, by specifying strengths and weaknesses

The corrections introduced in the parameters of the ABSP Biology (the aim, objectives and results of the study programme) within the assessment of the study field are justified and would be supported. The name of the study programme, the degree, the aims, objectives, learning outcomes, and admission requirements are interrelated and meet the requirements of the regulatory enactments of the Republic of Latvia. The information provided by the SAR indicates the employment of the graduates of the AMSP Biology, but does not analyse the employment of the graduates of the ABSP Biology. During the last six years, the graduate survey has been conducted only once.
Most of the ABSP Biology graduates continue their studies in master level programmes and this is a good indication of the quality of the bachelor’s study programme and student satisfaction with the acquired knowledge and the study process at the UL.

Strengths:
1) Most of the ABSP Biology graduates continue their studies at master level..

No weaknesses have been identified

2.2. The Content of Studies and Implementation Thereof

Analysis

2.2.1.The study programme has been checked upon national regulations and the higher education standard and it fully meets the requirements.
The study programme provides academic education in all subdisciplines of biology, which are the responsibility of the seven FB Departments, namely, Department of Plant Physiology, Department of Botany and Ecology, Department of Human and Animal Physiology, Department of Hydrobiology, Department of Microbiology and Biotechnology, Department of Molecular Biology, Department of Zoology and Animal Ecology. The study programme is implemented in cooperation with the UL Faculties of Chemistry, Physics, Mathematics and Optometry, and Geography and Earth Sciences, as

well as with the UL and state research institutes and employers (SAR p 119).
The aim of these courses is to provide in-depth knowledge and skills in all sub-disciplines of biology like plant anatomy, microbiology, hydrobiology, biometry and others and to prepare students for specialized courses. The majority of academic staff are involved in the delivery of the general biology courses, thus giving students the opportunity of closer acquaintance. The description of the study courses indicate a high relevance to the topic. All of the study courses have dedicated and in depth descriptions with explanations on what knowledge, skills and competences a student will get as a learning outcome. Proportion of those capabilities is good and well balanced. All study courses have a specified prerequisites for attendance which should be considered as a good practice of ensuring the appropriate interconnection between different complexity levels as well as interdisciplinarity (SAR p. 119).
At the end of their studies, students are required to write a Bachelor's Thesis and defend it publicly. The Thesis includes individual research - experiments, observations and their analysis - under the supervision of the Thesis supervisor. The Bachelor's Thesis should demonstrate the student's mastery of methodological approaches in biology, the ability to set goals and objectives, the ability to obtain objective results and to reach relevant conclusions. It is evident that by the analysis of the descriptions of the study courses an acquisition of the above mentioned abilities is possible at a high level. For example especially valuable can be interdisciplinary interaction between biology and physics providing abilities in biophysics etc (SAR p. 119).
All courses in the study programme (except "Environmental Protection for Biologists") include laboratory/ practical work.
The lecturers of the study courses gain experience and knowledge about the current issues in subfields of biology by participating in scientific conferences, reading and publishing scientific articles, cooperating with foreign scientists within the framework of project implementation and with employers. Based on their experience and knowledge, lecturers update the course content on a regular basis and in line with the trends in the field, the labor market and scientific developments. For example the study course - "cancer biology" (SAR p. 119).
This constant increase of experience and knowledge allows the lecturers to stay relevant and up to date in the latest scientific trends and needs of the industry and the labor market.

2.2.2 N/A

2.2.3. As it is evident by the document "Description of study courses" the study programme uses a variety of teaching methods: lectures, laboratory work, seminars, group work. The main methods of knowledge acquisition and consolidation for undergraduates are lectures (introductory lectures, interactive lectures, summary lectures, problem-oriented lectures) and laboratory work. Practitioners, professionals from different institutions, are invited to lecture in individual courses in order to promote the unity of theory and practice. For example, the courses "Methods of Instrumental Analysis in Biology" and "Big Data Analysis for Nucleic Acid Sequencing" are taught by researchers from the Latvian Biomedical Research and Study Centre (BMC), and some laboratory work is carried out at the BMC as stated during the interview with employer representatives. Employers are involved in the implementation and development of the study courses (invited to lead individual seminars, which are often organized as exchange visits to workplaces, etc.) (SAR p.120).
Practical exercises, seminars, individual, pair and group work, discussions and project development, study tours to organizations in the field are widely used. Laboratory work reinforces the knowledge acquired in lectures and provides students with basic practical skills. Laboratory work includes descriptions and handouts for each student. Students work individually on simpler laboratory tasks, or in pairs or groups if they have to solve a complex problem (SAR p.121).
To achieve the learning outcomes, i.e., to acquire and consolidate knowledge, skills and develop competences, the study process is dominated by methods in which student activity plays an

important role. The study process uses methods that promote student communication in performing study tasks, solving real problems in the field and modeling situations. Through the development of their research competence, students have the opportunity to analyze and study in-depth problems of interest in the field in successive courses. In turn, seminars promote students' speaking, presentation, and discussion skills. Such skills are much needed and valued in the labor market. The HEI does a great job by promoting that (SAR p. 121).
The House of Nature at Jelgava Street 1 has classrooms where workstations can be adapted for group work. As seen on the site tour the classrooms are also suitable for individual work. Students can use digital technologies. Lecturers mostly use methods that encourage students' active participation, critical thinking, and reflection. The e-learning environment is used to support the learning process and independent study. An e-learning environment (Moodle) created for each study course provides students with access to lesson materials, assignment descriptions in addition to study materials related to the course topics, as well as study tasks to be performed (tests, forums, seminars, conferences, etc.). During the demonstrations all described above seemed easy to access, clear to understand and convenient to use (SAR p. 121).
Updating study programmes and their study courses, the student-centered approach is followed with particular attention paid to the meaningful formulation of learning outcomes, so as to promote dialogue between lecturers and students on study content, forms of organization and methods. Correctly formulated learning outcomes, in turn, promote students' understanding and ownership of their own learning, self-assessment and understanding of the assessment received. In the study process, lecturers use methods, forms of examination and assessment criteria that are appropriate to the study aim and the planned learning outcomes. The assessment criteria for awarding grades shall be made public in advance. Assessment provides an opportunity for students to demonstrate the extent to which they have achieved the expected learning outcomes. All assessments in mid-term and final examinations are recorded and made available to students in the e-learning environment. The justification for the grade is not provided in the e-learning environment for all courses, but the student can discuss it with the course tutor(s) (SAR p. 121).
During the interviews with existing students and graduates it was found out that they receive support and feedback from lecturers during their studies. The principles of student-centered learning encourage student mobility (recognition of learning outcomes), and students engage in research initiated by academic staff and social activities in the community, thus gaining meaningful experience in applying what they have learned in their studies to practice. Through the internal quality assurance policy, study programmes are implemented in such a way that students are encouraged to actively participate in the development of the study process. Policies and procedures are in place for the submission of student suggestions and complaints and for the handling of student appeals. The results of student surveys are evaluated and considered in the development of the study process. Thus the student centered learning principles are followed and very decent.

2.2.4 N/A

2.2.5 N/A

2.2.6. In the reporting period from the academic year 2013/2014 to 2020/2021, a total of 383 Bachelor’s Theses have been defended, with topics reflecting all sub-fields of biology, from molecular to ecosystems and biodiversity. The Theses predominantly have research and academic orientation.
Students' research works are done in the laboratory, or in the field, or in the field and the laboratory, using industry-specific laboratory and field research methods. In recent years, especially in the context of the COVID-19 pandemic constraints, there has also been work that is predominantly theoretical, with an emphasis on analysis of existing or publicly available data. At least half of the

themes are related to current research projects both at the UL FB and in their partner institutions. For example, many of the Bachelor theses topics are encompassed in important themes like biological diversity, which is stated in the National Development Plan of Latvia for 2021-2027 under Priority 4: “Quality Living Environment and Regional Development” in the direction of action: “Nature and the environment - the Green Deal” (SAR p. 123-126).
The final theses are highly relevant to the field and correspond to the study programme. The final theses are in alignment with the scientific institutions that are supporting their development and procurement for example the Latvian Biomedical and Research Center. The center proactively involves itself in the most recent utilization of the theses.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The study programme's content is concurrent, the study courses' and modules' content is connected and complementary, it aligns with the programme's goals, ensures the achievement of learning objectives, and it satisfies the demands of business, the labor market, and scientific trends. meets national regulations, including state education standards, professional (occupational) standards, or requirements for professional qualification. The study programme is modern and designed according to the needs of a market. The study implementation strategies aid in achieving the objectives and learning objectives of the study programmes and study courses. The ideas of student-centered teaching and learning are taken into account. The final theses are highly relevant to the field and correspond to the study programme. The final theses are in alignment with the scientific institutions that are supporting their development and procurement for example the Latvian Biomedical and Research Center. The center proactively involves itself in the most recent utilization of the theses.

Strengths:
1) Good balance between knowledge and skills obtained in the study programme;
2) High relevance of the students’ final theses.

Weaknesses:
1) No weaknesses were found

Assessment of the requirement [5] (applicable only to master's or doctoral study programmes)

1 R5 - The study programme for obtaining a master's or doctoral degree is based on the achievements and findings of the respective field of science or field of artistic creation.

Assessment of compliance: Not relevant

2.3. Resources and Provision of the Study Programme

Analysis

2.3.1. ". A detailed outline of the new premises of the Academic Centre of the University of Latvia is given in Part I, subchapters 1.3.1 - 1.3.4 of Expert Report. The ABSP "Biology" is implemented in the new premises of the Academic Centre of the University of Latvia, which provides an excellent environment for lectures, seminars and laboratory work. A detailed outline is given and analyzed in Part I, subchapters 1.3.1 - 1.3.4 of the SF WLS Self-Assessment Report. On the seventh floor of the House of Nature, there is a greenhouse available for scientific research and student training. The greenhouse is provided with modern equipment for optimal plant growth conditions and automatic regulation. There are special collections made available for research, and they are a biological agent collection, an entomological collection, a herbarium, a microorganism culture collection, the

collections of the UL Botanical Garden. The FB supervises a field training site, the former Kolka "Old School". The training site is used for the ABSP "Biology" courses "Field Course in Botany and Zoology", "Field Course in Ecology I", " Bryophyte and Lichen Ecology and Systematics ", and "Invertebrate Diversity and Conservation", as well as for accommodating students and faculty conducting research in the Kolka area. The information base, the material and technical base and the methodological support shared within SF WLS (see this report 1.3.) are adequate for the implementation of the ABSP “Biology” and achievement of the learning outcomes of the programme (SAR p. 126-127).
The academic and scientific activities teachers and students of the UL FB are carried out in the departments of the UL FB, as well as in the UL Institutes, the UL Botanical Garden, the Latvian Biomedical Research and Study Centre (BMC), the Scientific Institute of Food Safety, Animal Health and Environment (BIOR), etc. Overall, funding for higher education in Latvia is assessed as insufficient (SAR p. 127). However, it is possible to provide quality studies (lectures, seminars) within the existing funding. Due to limited funding, it is not possible to carry out laboratory work to the desired extent, which is also reflected in student surveys. The FB allocates part of its research base and study funding to Thesis projects. Only a small part of the Bachelor’s Theses are developed within the framework of various Latvian and foreign funded research projects. Additionally, for research access to common facilities of the National Research Centres located in various Latvian scientific institutions is provided. The financial resources should be higher to assure excellence at this level of study. The rise in financial resources is crucial to develop studies based on science and practice and promote the involvement of students in research at all levels of education, which is one of the goals of UL Strategy (LU strategy booklet 2021; SAR pg 16).

2.3.2. N/A

To provide the funding needed for the implementation of the ABSP "Biology", the UL uses the state budget subsidy set at EUR 3097 and the tuition fees of 2200 EUR for full-time studies for the academic year 2021/2022; the total study programme budget is expected to be EUR 514 thousand per year (SAR Table 3.3.1.). To estimate the amount of funds required for financial support, the UL calculates the cost price for study programmes according to a methodology developed by the UL. For the study programme “Biology” the estimated full-time cost of the study programme per student is EUR 2873 per year, and the total cost of the programme is EUR 499 902 per year, teaching staff costs are 47,9 % and general staff 13,2 %. The data presented in the SAR pg 129, Table 3.3.3 clearly prove that the UL has sufficient funds to implement the study programme and ensure its further development (SAR pg 127-130).
Based on the calculation (SAR pg 129), it can be seen that for the study programme to be profitable and for students to be provided with a quality study process, their number should reach 153 students. The number of full-time state founders students in the academic year 2021/2022 was 146 and fee-paying students 28 (SAR pg 129, Table 3.3.3) ensured the profitability of the study programme. The current amount of tuition fee 2200 EUR limits the number of fee-paying students.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The study provision—which complies with specific requirements and conditions for the implementation of the study programme—as well as the scientific provision, informative provision, material and technical provision, and financial provision—creates conditions for the achievement of the learning outcomes and suggests the possibility of ensuring a high-quality learning experience. The financing available to the study programme, the funding sources, and the use of funding guarantee that the study process is fully implemented, that the study program has the bare minimum of students necessary to ensure its financial viability, and that the development of the

study program is facilitated. Resources and provision of the study program ensure the implementation of study process but should be improved. The financial resources should be higher to assure the excellence at this level of studies.

Strengths:
1) Implementation of whole ABSP “Biology” study plans in conditions of limited funding by state
2) Training base of field studies at old “Kolka school”

Weaknesses:
1) High proportion of general staff costs:13.2% compared to 47,9% of teaching staff (or > 1:4).
2) Due to limited funding, it is not possible to carry out research and laboratory work to the desired extent.

Assessment of the requirement [6]

1 R6 - Compliance of the study provision, science provision (if applicable), informative provision (including library), material and technical provision and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes

Assessment of compliance: Fully compliant

Within limits of budget study provision, informative provision, material and technical provisions ensure the implementation of the study programme and learning outcomes. Proof can be found in the Annex:
25_1_B_compliance_standard_Biology_BSP.pdf

2.4. Teaching Staff

Analysis

2.4.1. The first part of Article 55 of the Law on Higher Education Institutions is fully complied by the ABSP "Biology" (SAR pg 130, Appendix 30-1-B). In addition to scientists from biology or allied subjects, the ABSP "Biology" is implemented by 9 Professors, 11 Associate Professors, 18 Docents, and 12 lecturers. Only scientists with a Master's or doctorate degree in biology or a closely related field are hired to supervise Bachelor's Theses, but there is also room for help from experts in the field and doctoral students with a Master's degree. The study programme's lecturers exhibit a high degree of instructional and research expertise. The study programme lecturers have scientific work experience as both authors of scientific publications and participants in the implementation of scientific projects, which generally confirms the qualifications of the related teaching staff as being appropriate for achieving the goal of the study programme and achieving the objectives. The qualifications are reflected in the CVs of study course lecturers. The study programme staff's scientific activities are directly related to the fields of research covered by the study programme, and they are involved in project management, project implementation, and the creation of scientific publications. Some examples are professor of courses General Biology was involved in project management of the project: “Latvia-Belarus framework project, Evaluation of the cloudberry (Rubus chamaemorus L.) genetic resources of Latvia and Belarus as a background for the breeding program and conservation (2019-2021), and has published scientific article in Hydrobiology. Another example is professor of Biochemistry who was involved in project Translocation of acetaldehyde synthesis reaction from Zymomonas mobilis cell interior to its periplasm; ERDF project, and published scientific article in journal Fermentation. The study programme staff co authored 419 scientific papers between 2017 and 2021 that were included in the Scopus database (for a complete list of publications, see SAR pg 130, Annex 14-B). Out of the 419 papers, 205 are in the fields of biology

and agriculture, 111 are in microbiology and immunology, 76 are in environmental science, and 75 are in biochemistry, genetics, and molecular biology.

2.4.2. Due to the generational shift and the hiring of new professors who had not previously worked for the UL, the UL FB significantly updated its teaching faculty throughout the reporting year. The UL FB lecturer renewal strategy has encouraged the participation of new professors in the learning process. The staff of highly competent lecturers has been bolstered by luring top scientists from cooperation partners - scientific institutes - as well as by encouraging the advancement of current lecturers. The number of Assistant Professors has increased during the reporting period mostly at the expense of lecturers' numbers and new lecturers joining the study programme. The variations in the number of lecturers show the same rising trend. Currently, 55 lecturers participate in the implementation of the ABSP "Biology" (SAR pg 131).
Changes in the composition and number of lecturers in the implementation of the ABSP "Biology":
Position 2014 → 2022: Professors 7 → 9; Associate Professors 8 → 11; Docents 10 → 18; Lecturers 9 → 12; Assistants and instructors 2 → 5.
The SAM 8.2.2 project "Renewal and Competence Development of Academic Staff at the University of Latvia" has emerged as a source of funding for aspiring scientists with ties to Latvia as of 2018. Initially (2014–2018), this process was implemented within the framework of the development of the UL FB, using internal resources. Since the project's start, three scientists with academic backgrounds have been involved: 1) a visiting Associate Professor who participated in teaching "Biochemistry II" in the spring of 2019 and 2020 as well as "Cancer Biology I" in the fall of 2019 (SAR pg 131). At the time, "Cancer Biology I" was made available as a new course, and it has remained a restricted elective course in the ABSP offer. Currently, the course is being delivered by a different lecturer. Two more professors were involved in teaching the course “Introduction to Plant Mineral Nutrition" and “General Ecology II” (for ERASMUS+ students) and "Genetic Analysis", as a visiting professor in Spring and Autumn 2021 and Spring 2022. They are actively dealing with the UL FB organisational matters, sharing his experience gained in foreign universities.
Changes in the composition of teaching staff have contributed to an increase in the quality of studies, as more associate professors and professors are involved in the implementation of the study programme.

2.4.3 N/A

2.4.4. In total, in the reporting period 2013-2021, the scientific activities of the study programme staff are directly related to the areas of study covered by the study programme, and they are active both in the management and implementation of projects and in the preparation of scientific publications. From 2017 till 2021, the study programme staff have co authored 419 scientific publications indexed in the Scopus database (SAR pg 130, Annex 14-B for the full list of publications). Of the 419 publications, 205 are in the field of agriculture and biology, 111 in the field of immunology and microbiology, 76 in the field of environmental science and 75 in the field of biochemistry, genetics and molecular biology.
A full list of publications by the academic staff is given in Annexes, 9-B, 10-B, 13-B, 14-B)
The scientific potential of the faculty members involved in the study programme implementation is also demonstrated by the fact that many of them hold scientific positions at scientific institutes in addition to their academic (lecturer) positions at UL, where they engage in active research activities and then incorporate their findings into the learning process. Examples include researchers from Latvian Biomedical Research and Study Centre, BIOR Institute, Institute of Biology, Latvian Institute of Aquatic Ecology, and UL Institute of Microbiology and Biotechnology.
The UL has launched the UL Excellence Programme, which offers financial support to a corresponding author for Q1 level articles in journals indexed in the Web of Science database, in

order to encourage faculty members to publish in high quality scientific journals. Academic employees at UL are eligible to apply for financial aid under the Research Support Scheme to attend scientific meetings and to partially or fully defray the costs of publishing in open access journals. The FB base and performance funding also provides support for publications in open access journals. Each member of the academic staff in the last six years has published in peer-reviewed editions, including international editions (Annex 9-B, 10-B, 13-B, 14-B).

2.4.5. Research activities within the FB implementing the study programme Biology are carried out in all major fields of biology, which is also reflected in the structure of the Faculty with its seven departments, namely, the Department of Plant Physiology, Department of Botany and Ecology, Department of Human and Animal Physiology, Department of Hydrobiology, Department of Microbiology and Biotechnology, Department of Molecular Biology, Department of Zoology and Animal Ecology. Three UL research institutes are also related to the research areas of the Study Field, and they include UL Institute of Biology, the UL Institute of Microbiology and Biotechnology. In the international evaluation of science, the UL FB, together with the above-mentioned institutes and other faculties and institutes, is part of the Natural Sciences cluster, which received an overall rating of 3 out of 5 (three out of six parameters were rated 4 out of 5). The research of the faculty members of the Study Field in various subfields of biology is also carried out in other institutes: the BIOR, the Latvian Biomedical Research and Study Centre, the Latvian Institute of Aquatic Ecology (SAR pg 130-132, Annex 14-B).
The research directions are also reflected in the themes of the UL annual international scientific conference sessions, i.e., Plant Physiology, Botany and Ecology, Microbiology and Biotechnology, Research and Protection of the Latvian Aquatic Environment, Zoology and Animal Ecology, Ecology and Biodiversity. The research of the faculty members of the Direction were also related to the UL priority research directions for 2016-2021, namely, Climate Change and Sustainable Use of Natural Resources; Biomedicine, Pharmacy; Regenerative Medicine, Biobanking; Ecology and Biodiversity.
The cooperation of teachers for the improvement of the ABSP "Biology" occurs at the following levels: personal contacts, cooperation within the department through department meetings, cooperation between departments at the UL FB level, cooperation between UL faculties through lectures, scientific research, cooperation with scientific institutions and employers through inviting guest lecturers, and agreeing on the topics for lectures, the topics for laboratory and practical work, and the order in which they are to be completed. The ABSP professors frequently update the study course content, modifying it to reflect the most recent developments and pressing biological challenges. However, the collaboration between the lecturers involved in the ABSP "Biology" is not consistent enough, so in the future, the following measures are anticipated to ensure the exchange of experience: class supervision (responsible - the FB dean, heads of departments, program directors), scientific seminars or think tanks, in which teaching staff and scientists from various subfields of the study programme Biology and Study Field are involved in scientific discussion and discussion of research findings In the academic year 2021/2022, 55 lecturers were involved in the implementation of the programme. With 171 students studying in the study programme, the student-to-faculty ratio was 171:55 ≈ 3.1 students per lecturer (SAR pg 131 - 132, Annex 14-B). Even though there are some examples of mobility, this should be improved for both teaching staff and students.
From the list of publications and projects implemented, development plan and evidences in site visit, it is clear that there are mechanisms implemented for mutual cooperation of the teaching staff in the implementation of the study programme. This ensures the achievement of the aims of the study programme and the interconnection of study courses within the study programme (SAR annex 30-1-B). Still, the international collaboration is not seized enough for mobility of students and teaching staff.

Conclusions on this set of criteria, by indicating strengths and weaknesses

The UL, FB, takes precautions to make sure that changes in the composition of the teaching staff do not negatively impact the quality of the study programme's execution or the study programme's conformity to the regulatory enactments' requirements. Each member of the academic staff has, required by the Law on Higher Education Institutions to have peer-reviewed publications published in the last six years, including international editions, which is accomplished. The achievement of the study programme's objectives and the linking of study courses within the study programme are made possible by the construction of a mechanism for the teaching staff's reciprocal collaboration in carrying out the study programme. The cooperation of teachers for the improvement of the ABSP "Biology" takes place from personal, to Department/ Faculty/ University/ international level. In total, From 2017 till 2021, the study programme staff have co authored 419 scientific publications indexed in the Scopus database..
During the reporting period, the UL FB has significantly updated its teaching staff, both due to the change of generations, and by attracting new lecturers who were not employed by the UL until now. The lecturer renewal policy implemented by UL FB has promoted the involvement of new lecturers in the study process. It has been possible to strengthen the team of highly qualified lecturers by attracting excellent scientists from cooperation partners - scientific institutes, as well as by promoting the growth of existing lecturers.

Strengths:
1) The UL takes careful measures to ensure that changes in the teaching staff's composition do not adversely affect the quality of the study programme's implementation or the study programme's adherence to the regulatory enactments' requirements.
2) During the reporting period, the UL FB has significantly updated its teaching staff, both due to the change of generations, and by attracting new lecturers who were not employed by the UL.
3) The UL FB succeeded in employing highly qualified lecturers by attracting excellent scientists from cooperation partners - scientific institutes, as well as by promoting the growth of existing lecturers.
4) The cooperation of teachers for the improvement of the ABSP "Biology" occurs at the following levels: personal contacts, cooperation within the department through department meetings, cooperation between departments at the UL FB level, cooperation between UL faculties through lectures, scientific research, cooperation with scientific institutions and employers through inviting guest lecturers, and agreeing on the topics for lectures, the topics for laboratory and practical work, and the order in which they are to be completed.
5) A The establishment of a mechanism for the teaching staff's reciprocal cooperation in carrying out the study programme enables the accomplishment of the study programme's objectives and the linkage of study courses within the study programme. The cooperation of teachers for the improvement of the ABSP "Biology" takes place from personal, to Department/ Faculty/ University/ international level.
6) Teaching staff was involved in research activities that resulted in a high number of scientific publications, published in international peer reviewed journals, in the reporting period.

Weaknesses:
1) Low mobility of teaching staff.

Assessment of the requirement [7]

1 R7 - Compliance of the qualification of the academic staff and visiting professors, visiting associate professors, visiting docents, visiting lecturers and visiting assistants with the conditions for the implementation of the study programme and the requirements set out in the respective regulatory enactments.

Assessment of compliance: Fully compliant

UL has highly qualified teaching staff. Proof can be found in the Annexes:
9_B_Study_field_Teaching_staff.xlsx
10_B_Teaching_staff_CV.pdf
13_B_scientific_activity_data.pdf
14_B_list_of_publications.pdf
30_1_B_section_55_Biology_BSP.pdf

2.5. Assessment of the Compliance

Requirements

1 1 - The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard

Assessment of compliance: Fully compliant

The study programme “Biology” volume is 120 CP of which 74 CP are compulsory part, 42 CP are the elective compulsory part and 4 CP for free elective part. There have been changes in CP distribution while saving the contents of the study programme and in accordance with the regulations of the Cabinet of Ministers of the Republic of Latvia no. 240 "Rules on state academic education standards" requirements.
See SAR annex: Compliance standard Biology No. 25-1-B.

2 2 - The study programme complies with a valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided if the completion of the study programme leads to a professional qualification (if applicable)

Assessment of compliance: Not relevant

3 3 - The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 561 , Paragraph two and Section 562 , Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Fully compliant

Study course descriptions and study materials are prepared in Latvian and English languages, and they satisfy requirements set in Law on Higher Education Institutions. See SAR annex: 27_1_B_Course_descriptions_Biology_BSP.pdf

4 4 - The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure according to which state recognised documents of higher education are issued.

Assessment of compliance: Fully compliant

The diploma issued complies with the state legislature and “Procedures by which documents certifying higher Education recognised by the State shall be issued” (Cabinet of Ministers No.202).
See SAR annex: Diploma Biology BSP No. 20_1_A.

5 5 - The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

Assessment of compliance: Fully compliant

The declaration that the academic staff of the academic study program meets the requirements set out in the third paragraph of the first part of Article 55 of the Law on Higher Education Institutions can be found in the SAR annex 30_1_B_section_55_Biology_BSP.

6 6 - Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Not relevant

7 7 - At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts (if applicable).

Assessment of compliance: Not relevant

8 8 - The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

Assessment of compliance: Fully compliant

The academic staff has sufficient Latvian language knowledge for implementing study courses, see SAR annex: 11_1_2_B_latvian_language_Biology_Biotechnology_Natural_sciences.

9 9 - The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language (if applicable).

Assessment of compliance: Fully compliant

The academic staff has sufficient foreign language knowledge for implementing study courses. See SAR annex: 12_1_2_B_english_Biology_Biotechnology_Natural_sciences.

10 10 - The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

Assessment of compliance: Fully compliant

Study agreements include all necessary parts set in legislation. See the SAR annex: 7_B_Standard_samples_of_study_agreement.

11 11 - The higher education institution / college has provided confirmation that students will be provided with opportunities to continue their education in another study programme or another higher education institution or college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.

Assessment of compliance: Fully compliant

University has a record order as confirmation that in case the implementation of this study programme is terminated students will be able to continue studies in the Daugavpils

12 12 - The higher education institution / college has provided confirmation that students are guaranteed compensation for losses if the study programme is not accredited or the study programme’s license is revoked due to the actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.

Assessment of compliance: Fully compliant

University has a rector's order that confirms it will compensate losses to students if the study programme is not accredited or loses its license and the student does not wish to continue studies in another study programme.
See SAR annex: 6_B_guarantees_compensations.

13 13 - The joint study programmes comply with the requirements prescribed in Section 55.(1), Paragraphs one, two, and seven of the Law on Higher Education Institutions (if applicable)

Assessment of compliance: Not relevant

14 14 - Compliance with the requirements specified in other regulatory enactments that apply to the study programme being assessed (if applicable)

Assessment of compliance: Not relevant

Assessment of the requirement [8]

1 R8 - Compliance of the study programme with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments.

Assessment of compliance: Fully compliant

The study programme fully complies with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments. Proof can be found in the Annex:
25_1_B_compliance_standard_Biology_BSP.pdf
28_1_B_mapping_Biology_BSP.xlsx
26_1_B_Study_plan_Biology_BSP.pdf
27_1_B_Course_descriptions_Biology_BSP.pdf

General conclusions about the study programme, indicating the most important strengths and weaknesses of the study programme

The study programme is justified and complies with the study field. The study programme is in line with the strategic goals of the University of Latvia. This study programme is well recognized by all stakeholders and should provide the labour market with skilled specialists. The content of the study courses corresponds to the objectives of the study programme and ensures the achievement of learning outcomes. Faculty has a wide provision of the material and technical base, which provides very good opportunities for learning a profession. The professional development of the teaching staff is encouraged. The name of the study programme, the degree, the aims, objectives, learning outcomes, and admission requirements are interrelated and meet the requirements of the regulatory enactments of the Republic of Latvia. The corrections introduced in the parameters of the ABSP Biology (the aim, objectives and results of the study programme) within the assessment of the study field are justified and would be supported. Most of the ABSP Biology graduates continue their studies in master level programmes and this is a good indication of the quality of the bachelor’s study programme and student satisfaction with the acquired knowledge and the study process at the UL. The study programme's content is concurrent, the study courses' and modules' content is connected and complementary, it aligns with the programme's goals, ensures the achievement of learning objectives, and it satisfies the demands of business, the labor market, and scientific trends. meets national regulations, including state education standards, professional (occupational) standards, or requirements for professional qualification. The study is modern and designed according to a need of a labor market. The study implementation strategies aid in achieving the

objectives and learning objectives of the study programmes and study courses. The ideas of student-centered teaching and learning are taken into account. The study provision, scientific provision, informative provision (including library), material and technical provision, and financial provision all meet the requirements for implementing the study program, establish conditions for achieving the learning outcomes, and suggest the possibility of ensuring a high-quality learning experience. The funding available ensures full implementation of the study plans of Biology programme. The UL, FB, takes precautions to make sure that changes in the composition of the teaching staff do not negatively impact the quality of the study programme's execution or the study programme's conformity to the regulatory enactments' requirements. Each member of the academic staff has, required by the Law on Higher Education Institutions to have peer-reviewed publications published in the last six years, including international editions, which is accomplished. The achievement of the study programme's objectives and the linking of study courses within the study programme are made possible by the construction of a mechanism for the teaching staff's reciprocal collaboration in carrying out the study programme. The cooperation of teachers for the improvement of the ABSP "Biology" takes place from personal, to Department/ Faculty/ University/ international level. In total, in the reporting period 2013-2021. During the reporting period, the UL FB has significantly updated its teaching staff, both due to the change of generations, and by attracting highly qualified lecturers/scientists from cooperation partners - scientific institutes, as well as by promoting the growth of existing lecturers. Teaching staff was involved in research activities that resulted in a high number of scientific publications, published in international peer reviewed journals, in the reporting period. In general the conclusions on the ABSP Biology programme is very positive, students have a positive image on the FB and time invested in studying there. Skills and knowledge gained in study programme biology are international and recognised worldwide. Students recognize the value of the programme and majority of them continue their studies in the master programme of biology.

Strengths:
1) Most of the ABSP Biology graduates continue their studies at master level.
2) Good balance between knowledge and skills obtained in the study programme;
3) High relevance of the students’ final theses.
4) Implementation of whole ABSP “Biology” study plans in conditions of limited funding by state
5) Training base of field studies at old “Kolka school”
6) The content of the "Biology" study programme is up-to-date and corresponds to industry trends.
7) High qualification of teaching staff and opportunities for improving the qualifications of teaching staff.
8) Students have an opportunity to get involved in research activities very early during their studying.
9) The UL takes careful measures to ensure that changes in the teaching staff's composition do not adversely affect the quality of the study programme's implementation or the study programme's adherence to the regulatory enactments' requirements.
10) During the reporting period, the UL FB has significantly updated its teaching staff, both due to the change of generations, and by attracting excellent scientists from cooperation partners - scientific institutes, as well as by promoting the growth of existing lecturers.
11) Teaching staff was involved in research activities that resulted in a high number of scientific publications, published in international peer reviewed journals, in the reporting period.

Weaknesses:
1) High proportion of general staff costs: 13.2% compared to 47,9% of teaching staff (or > 1:4)
2) Financial resources should be improved, currently they are limiting the excellence in laboratory work.

3) Low international mobility of teaching staff and students. Even though there are some examples of mobility, this should be improved for both teaching staff and students.

Evaluation of the study programme "Biology"

Evaluation of the study programme:

Excellent

2.6. Recommendations for the Study Programme "Biology"

Short-term recommendations

N/A

Long-term recommendations

1) It is recommended to optimize resource allocation and prioritize the development of teaching staff; it is recommended to carefully manage the proportion of financial resources allocated to general staff costs versus teaching staff, ensuring that a more significant share is dedicated to the enhancement and support of teaching staff, with measurable success determined by the shift in resource allocation achieved within the next accreditation period.
2) It is recommended to enhance the quality of the educational process and facilitate student participation in research projects during undergraduate studies at FB ABSP Biology, it is recommended to actively pursue diversified funding sources and allocate additional financial resources to the study program, with measurable success assessed through improved funding diversity and increased support for practical and research-based components of the program within the next accreditation period.
3) It is recommended to significantly increase international mobility opportunities for both students and teaching staff within the ABSP Biology program. It is recommended that the faculty actively and effectively promote the advantages of mobility, utilize existing tools, and implement suggested strategies, ensuring measurable success through a notable rise in the participation and attractiveness of mobility, to be achieved within the next accreditation period.

II - "Biotechnology and Bioengineering" ASSESSMENT

II - "Biotechnology and Bioengineering" ASSESSMENT

2.1. Indicators Describing the Study Programme

Analysis

2.1.1. The joint ABSP Biotechnology and Bioengineering was developed with the aim to combine two subfields of science (biotechnology – a subfield of natural sciences and bioengineering – a subfield of engineering sciences) into one study programme. “The ABSP "Biotechnology and Bioengineering" has been developed within the framework of the project "Design of Internationally Competitive Study Programmes Promoting the Development of the National Economy of Latvia at the University of Latvia" of the Specific Support Objective 8.2.1 of the Operational Programme "Growth and Employment" in cooperation between the University of Latvia and Riga Technical University” (SAR, p. 141). The joint ABSP Biotechnology and Bioengineering prepares highly qualified specialists and scientists for scientific labour markets in the various sectors of biotechnology bioengineering with

the Bachelor's Degree of Natural Sciences in Biology. The bachelor's degree to be obtained at ABSP Biotechnology and Bioengineering belongs to the field of Wildlife Sciences.

2.1.2. The joint ABSP Biotechnology and Bioengineering is an academic bachelor study programme and its amount is 120 Latvian credits (CP). The degree to be acquired – Bachelor's Degree of Natural Sciences in Biology. The languages of implementation – Latvian and English.
In Latvian, the ABSP Biotechnology and Bioengineering is implemented as full-time intramural studies (three study years); admission requirements – secondary education and successful assessment in biology or natural sciences, mathematics or chemistry or physics, as well as an additional centralised examination in one of the three subjects - biology or physics or chemistry - to ensure preparedness for the study programme.
In English, the ABSP Biotechnology and Bioengineering is implemented as full-time intramural studies (three study years); admission requirements – secondary education and English language skills at least level B2. The admission requirements correspond to the aims and objectives of the study programme (SAR, p. 136).
The code of the study programme according to the classification of Latvian education - 43421, where the first part (43) of the code indicates that the type of the ABSP Biotechnology and Bioengineering is an academic bachelor study programme, and the digits of the second part of the code (421) indicate that the thematic area of education is Biology (the Cabinet Regulations No. 322 "Regulations on the Classification of Education in Latvia", Annex 2 (approved 13.06.2017.).
The aim, objectives, volume (CP), duration of the ABSP Biotechnology and Bioengineering, as well as the degree to be obtained after completing the study programme comply with the requirements of the Cabinet Regulations No 240 "Regulations on the State Academic Education Standard" (approved 13.05.2014.).
The learning outcomes of the ABSP Biotechnology and Bioengineering correspond to the 6th level of the Latvian Qualifications Framework (LQF), which is described in the Cabinet of Ministers Regulations No. 322 "Regulations on the Classification of Education in Latvia" (approved 13.06.2017.).
The title, code, degree to be obtained, aim, objectives, learning outcomes and admission requirements of the ABSP Biotechnology and Bioengineering are interrelated.
The only thing that could be reprimanded, regarding the information provided in SAR (p. 137) about the joint study programme, is that the place of implementation of the study programme is not only the University of Latvia. It would be desirable to indicate also Riga Technical University as the place of implementation of the study programme, because it is mentioned in the text (SAR, p. 147) that "RTU studies take place in Ķīpsala, where the RTU Ķīpsala student campus is located" and from the SAR and meeting with the study programme director and academic staff it was understood that part of the study courses are implemented in the RTU laboratories and specialized lecture rooms.

2.1.3. Since the licensing of the programme, within the parameters of the study programme changes have been introduced in the learning outcomes and the degree to be awarded: the learning outcomes to be achieved have been revised to highlight only the main results that are expected to be achieved during the study programme, as well as to prevent fragmentation of the learning outcomes; the degree to be awarded has been changed from Bachelor of Natural Science to Bachelor of Natural Science in Biology to match the study programme code and the Cabinet Regulations No. 322 "Regulations on the Classification of Education in Latvia" (approved 13.06.2017., Annex 2)
The corrections introduced in the parameters of the joint ABSP Biotechnology and Bioengineering (the degree to be awarded and the learning outcomes of the study programme) within the assessment of the study field are justified and would be supported.

2.1.4. Biotechnology is one of the main technologies in the 21st century and it is applied in such important fields as medicine, pharmacy, agriculture, environmental protection, food and chemical industry, energy, etc., and it plays an important role in providing innovative products, new jobs and growth both in Latvia and in the European Union. Consequently, the need for new highly qualified specialists capable of working in the above-mentioned sectors is growing, and the joint ABSP Biotechnology and Bioengineering is designed to prepare young scientists and specialists capable of working in both biotechnology and bioengineering.
Student statistics (SAR, Annex 24-3-B) presents the number of students in the joint ABSP Biotechnology and Bioengineering, which convincingly shows that the study programme is demanded (the number of fee-paying students is greater than those who study in budget places) and the number of students in a group (26, 27, 30) is sufficient for the implementation of the study programme.
The statistical data on the graduates are not provided in the SAR, as the programme will have its first graduates only in June, 2023.

2.1.5. The ABSP Biotechnology and Bioengineering is a joint study programme implemented by the University of Latvia together with Riga Technical University. Biotechnology is only integrated as one of the sub-fields in the bachelor's or master's study programmes “Biology” of UL and RTU, for example, in the bachelor's and master's study programmes “Biology” implemented by the University of Latvia, or in the RTU’s bachelor’s study programme "Chemistry Technology", but the existing study programmes are unable to prepare specialists who possess knowledge of both fields, i.e. of natural sciences and engineering at the same time. In October of 2019, an agreement was signed between the University of Latvia and Riga Technical University on the development of a joint ABSP "Biotechnology and Bioengineering" within the framework of the project "Design of Internationally Competitive Study Programmes Promoting the Development of the National Economy of Latvia at the University of Latvia".
By implementing an interdisciplinary approach to achieve the aims of the joint ABSP Biotechnology and Bioengineering, University of Latvia and Riga Technical University bring into the study programme their own special experience and strategic, purposeful use of infrastructure.
The study programme has been implemented already for three academic years and the number of students, the feedback from the study programme directors (UL and RTU), academic staff and students (feedback was obtained during the evaluation visit) indicate that its implementation is successful. The interest of potential students in studies at the joint ABSP Biotechnology and Bioengineering could increase if the number of budget places in the study programme continued to increase.
In annex (SAR, Annex 23-B) the compliance of the joint ABSP Biotechnology and Bioengineering with the provisions of the Law on Higher Education Institutions is substantiated.
The ABSP Biotechnology and Bioengineering has established a study programme council, which includes programme directors from the sides of the UL and RTU, as well as the Vice Rectors of both universities. The Council of the Joint Programme examines issues related to planning of the study programme, student admission, problems identified in the implementation of study courses (SAR, p. 35).
The communication channels and hierarchy between UL and RTU have space for improvement. During site visit it was clear that it works but more clear communication channels and hierarchy in communication could be implemented. The communication between teaching staff and management of the study seems clear and efficient, but the students did not have a clear picture of the communication channels and responsibility. For example student feedback and surveys organisation should be clearly communicated with students, as well as access to the UL and RTU resources using students email addresses. Since communication is crucial for the implementation of the joint study programme between two Universities, this should be improved.

The development and implementation of this joint study programme is justified and ensures a high-quality study process.

Conclusions on this set of criteria, by specifying strengths and weaknesses

ABSP Biotechnology and Bioengineering is a joint study programme implemented by the University of Latvia together with the Riga Technical University and it is designed with a to combine two subfields of science (biotechnology – a subfield of natural sciences and bioengineering – a subfield of engineering sciences) into one programme. The joint ABSP Biotechnology and Bioengineering is envisaged to prepare highly qualified specialists and scientists for scientific labour markets in the various sectors of biotechnology bioengineering with the Bachelor's Degree of Natural Sciences in Biology. The name of the study programme, the degree, the aims, objectives, learning outcomes, and admission requirements are interrelated and meet the requirements of the regulatory enactments of the Republic of Latvia. The communication channels and communication hierarchy between UL and RTU have space for improvement. The study programme has been implemented already for three academic years and the number of students, the feedback from the programme directors (UL and RTU), academic staff and students (feedback was obtained during the evaluation visit) indicate that its implementation is successful.

Strengths:
1) By implementing an interdisciplinary approach to achieve the aims of the joint ABSP Biotechnology and Bioengineering, University of Latvia and Riga Technical University bring into the study programme their own special experience and strategic, purposeful use of infrastructure.

Weaknesses:
1) The communication channels and hierarchy between UL and RTU have space for improvement. More clear communication channels and hierarchy in communication could be implemented regarding the students duties and responsibilities. Since communication is crucial for the implementation of the joint study programme between two Universities, this should be improved.

2.2. The Content of Studies and Implementation Thereof

Analysis

2.2.1. The compulsory part of the study programme includes 26 study courses (including Bachelor's Thesis) of a total amount of 92 CP. The restricted elective part comprises a total of 22 CP and includes seven study courses of a total amount of 30 CP. In addition, the study programme has an elective part of 6 CP. At the end of the study programme, students shall produce a Bachelor's Thesis of 10 CP (SAR p. 142, Annexes 28-3-B, SAR 26-3-B).
The courses are arranged in the study programme plan (Annex 26-3-B) in such a way as to initially provide students with fundamental knowledge of biology, biotechnology, bioengineering and natural sciences (chemistry, physics, mathematics), as well as economics and management sciences. In the further study process, students acquire in-depth knowledge of various issues related to biotechnology and bioengineering, of the equipment/facilities used, practical experience in the organization of work in enterprises, as well as the legal framework thereof. In the restricted elective part, students can choose specific examples of biotechnology applications (medical biotechnology, industrial biotechnology, genetic engineering, agrobiotechnology) or acquire additional knowledge in data processing and teamwork. The learning outcomes of the study courses are defined in such a way as to ensure the achievement of the overall results of the study programme, according to the knowledge, skills, and competencies to be acquired. The contribution of each course to the achievement of the overall programme outcomes is given in the course mapping (SAR Annex 28-3-

B). The study course descriptions like for example, “Basics of Economics and Management”, “Basics in microbiology”, “Biological Reactors” and others, indicate that they are interconnected and complementary, very useful, and up to date (SAR p. 143 - 144).
The updating of study courses in line with the latest trends in the field is foreseen. As an academic study programme, it does not include study practice in a classical sense. However, as it is evident in the document “ Descriptions of Study Courses” the study programme includes a number of study courses where students have not only theoretical studies but also face-to-face visits/ excursions to biotech companies and waste treatment plants like the course “Introduction to the Design of Biological Systems”. Also, several students participate in research in several institutions of Latvia during their studies; the latter can be considered as practice in a classical sense.
Overall the content of the Biotechnology and Bioengineering study programme is topical, corresponds to the objectives of the study programme, and ensures the achievement of learning outcomes, as well as meets the needs of the industry, labor market, and scientific trends as it was noticed during the interviews with representatives of the employers and the study programme directors from both HEIs.

2.2.2. NA

2.2.3. Oral, written and combined study and assessment methods are used during coursework and examinations (SAR p 144, Annex 27-3-B). To foster the development of students' research competence, students are given the opportunity to analyze and study in-depth problems of interest in the field in successive courses. In the seminars, students enhance their speaking, presentation, and discussion skills. The study process uses methods that promote students’ communication in performing study tasks, solving real problems in the field and modeling situations. Updating study programmes and their courses, the student-centered approach is followed with particular attention paid to the meaningful formulation of learning outcomes, to promote dialogue between lecturers and students on study content, forms of organization and methods. Students receive support and feedback from lecturers during the study process. The assessment criteria are made public in advance. Assessment provides students with the opportunity to demonstrate the extent to which they have achieved the expected learning outcomes.
The principles of student-centered learning encourage student mobility (recognition of learning outcomes), and students engage in research and social activities in the community initiated by academic staff.Meetings with students with the participation of UL and RTU programme directors are held twice a semester to discuss the study process and identify shortcomings in conducted study courses. To ensure the implementation of the ABSP "Biotechnology and Bioengineering" in English, only lecturers whose English language proficiency is at minimum B2 level (most have C1 and C2 levels) are involved in the study programme implementation. There will be no difference in delivery methods between the implementation in English and Latvian (SAR p 145).
As this is joint study programme between LU and RTU, students are students of both universities at the same time, with access to all resources offered by both universities. Each of the universities is responsible for teaching specific study courses. Both universities provide study courses within one semester, but in planning the lecture list, in one day only, classes are planned in one of the universities, so students do not have to move between buildings. Regular meetings between teaching staff from both universities are organized to ensure that the content of studies is not overlap and that the teaching principles are applied equally. Both universities are equally responsible for ensuring the quality of studies and the student-centered study process (SAR p. 146).
The study implementation methods contribute generously to the achievement of the aims and learning outcomes of the study courses and the study programme. Student-centered learning and teaching principles are considered.

2.2.4. N/A

2.2.5. N/A

2.2.6. The self-evaluation report and corresponding materials were presented long before the 2020/2021 students defended the thesis this spring (SAR pg 146). The topics of the students' final thesis mentioned in the interview with the study programme director were in line with the study programme.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The study programme's content is up-to-date, the study courses content is connected to and complementary to one another, it aligns with the programme's goals, ensures the achievement of learning objectives, and it satisfies the demands of business, the job market, and scientific trends, meets national regulations. The courses provide students with fundamental knowledge of biology, biotechnology, bioengineering and natural sciences (chemistry, physics, mathematics), as well as economics and management sciences. The study programme's objectives and learning objectives are furthered by the study implementation strategies. Priority is given to ideas of student-centered education and teaching. As this is joint study programme between LU and RTU, students have students rights of both universities at the same time, with access to all resources offered by both universities.

Strengths:
1) Good proportion of academic and technical courses. Aim to produce more practical oriented graduates with strong academic knowledge too.
2) English as a communication/ lecturing language for internationalization.

Weaknesses:
1) Absence of the tailored Master of science study programme to continue the studies in field of biotechnology and engineering
2) Students are facing some challenges related to organisation of the lectures and exercises between two universities.

Assessment of the requirement [5] (applicable only to master's or doctoral study programmes)

1 R5 - The study programme for obtaining a master's or doctoral degree is based on the achievements and findings of the respective field of science or field of artistic creation.

Assessment of compliance: Not relevant

2.3. Resources and Provision of the Study Programme

Analysis

2.3.1. The study plan: description of courses and admission requirements are available on LU webpage Biotechnology and Bioengineering (lu.lv), study plan. Admission of students at the expense of the State budget, private and legal persons shall be ensured by the UL in accordance with the admission regulations and admission requirements harmonised by the SPBB Council. Distribution of courses between Universities is fixed in the study plan: description of courses (3.2.1 This report). The obligations of both Universities related to study programme are fixed in Agreement on the development and implementation of a joint study programme Agreement signed February 28, 2020

(HEI Other annexes). SPBB shall be chaired in each of the Parties by the SPBB Directors and the Joint Council of the SPBB of the Parties: the SPBB Council is composed of 4 (four) representatives, 2 (two) representatives from each Party, including the SPBB Director appointed by each party. The members of the Council shall be appointed by each Party in accordance with the procedures laid down by the Parties. Decisions shall be taken by the Council by mutual agreement between the representatives.
In the framework of project No 8.1.1. 0/17/I/010 “Modernization of the Infrastructure and Concentration of Resources of the University of Latvia STEM Study Areas”, there UL has acquired a Sartorius Biostat fermentation equipment set (8 fermenters with equipment), UHPLC ("Waters") and gas chromatography ("SCION Instruments") systems for chromatographic analysis of fermentation metabolites, spectrophotometer, laboratory benchtop centrifuge for processing fermentation samples, as well as other laboratory equipment necessary for practical work (incubator-shaker, weighing scale, thermostats, plate reader, autoclave) (SAR pg 147).
Additionally, all resources available at RTU are available for the implementation of the study programme too. The information base, the material and technical base and the methodological support are adequate for the implementation of the study programme and achievement of the learning outcomes of the programme, which confirms the possibility of ensuring a quality study process in the future. RTU studies take place in Ķīpsala, where the RTU Ķīpsala student campus is located (SAR pg 148). After the completion of the construction, RTU Ķīpsala student campus will become the most modern engineering study center in the Baltics. RTU buildings are equipped with modern climate control equipment, technical solutions, buildings are controlled remotely and it is possible to monitor energy consumption to make the buildings more comfortable for students, teachers, scientists and guests. One of the results achieved in developing RTU infrastructure is participation in the Green Metric rating, where RTU Ķīpsala student campus is recognized as the 59th greenest in the world, and RTU as the 129th greenest university in the world, thus confirming the connection with the goal of the study program "Biotechnology and Bioengineering”. RTU Ķīpsala student campus currently has 54 classrooms, 187 laboratories, 19 special study rooms, 10 computer classes, 12 workshops and several research centers of national importance, which are available for the implementation of various study programmes, including “Biotechnology and Bioengineering”. There is also a student service hotel on the campus with 950 beds. Other elements of RTU infrastructure are also available for the needs of students and teachers - canteens and cafes, photocopiers, student hotels, RTU sports and recreation centers, swimming pool etc. RTU Water Systems and Biotechnology Institute provides the necessary equipment (e.g. microscopes, bioreactors) and materials for laboratory work and research in the study courses "Fundamentals of Microbiology", "Biotechnological Reactors", "Introduction to Environmental and Industrial Biotechnologies". The study course "Fermentation - identification and purification of end products" takes place in the premises of the Institute of Organic Chemical Technology.
The scientific activities of the programme staff are directly related to the areas of study covered by the programme, and they are active both in the management and implementation of projects and in the preparation of scientific publications. In 2020 and 2021, the programme staff have co-authored 146 scientific publications indexed in the Scopus database (see Annex 14-B for the full list of publications). The informative provision is described in (SAR p. 142-143) and financial provision 2.2.3 of this report.
The management system of SPBB created between UL and RTU has proved effective and sustainable. The study programme creates prerequisites for the achievement of the learning outcomes and ensures fundamentals of a study of (industrial) biotechnology.

2.3.2. N/A

2.3.3. To provide the funding needed for the implementation of the ABSP “Biotechnology and Bioengineering”, the UL uses: the state budget subsidy for 18 students from the Ministry of

Education and Science, set at EUR 3097 for full- time studies for the academic year 2021/2022; study fees full-time studies EUR 2400 per year (2023/2024. ak.g. EUR 2700 EUR); full-time studies for foreigners – EUR 3200 per year. 15 foreign students are starting 2023/2024 (SAR pg 149). In view of the above-stated, the total study programme budget 2023/2024 is expected to be EUR 259,7 thousand per year (SAR pg 149, Table 3.3.1). In order to estimate the amount of funds required for financial support, the UL calculates the cost price for study programmes according to a methodology developed by the UL. Taking into account the estimated number of 83 full-time students in the study programme and existing study plan, the estimated full-time cost of the study programme per student is EUR 2705 per year and the total cost of the programme is EUR 224 515 per year (SAR p. 149). According to SAR pg 176, Table 3.3.2. the percentage breakdown of costs in the study programme is similar to those of other bachelor and master study programmes: proportion of general staff compared to teaching is 28%. Based on the calculation from the data presented in SAR pg, 176, Table 3.3.1, it can be seen that for the study programme to be profitable and for students to be provided with a quality study process, the number of fee-paying students in the study programme should be at least 110. In turn, if there were only state-funded students in the study programme, then their number should reach 73 students.

The study programme developers expect 75 international students to study in the study programme. With this number of students, the estimated cost of the full-time studies in the ABSP "Biotechnology and Bioengineering" per student is EUR 3103 per year and the total cost of the study programme is EUR 232,725 per year. For the next few years such a number of foreign students seems unrealistic and making calculations on the basis of 18/65/15 (state founded, Latvian fee, foreign fee) total revenue is 260 000 and cost 270 000 Eur.

According to agreement (Annex Agreement_LU_RTU_Biotechnology.pdf, point 4.1.8.) the Parties shall make efforts to increase the funding of study places to be allocated to the SPBB from the State budget.

The funding available to the bachelor study programme "Biotechnology and Engineering", funding sources and the use of funding ensures contribution to implementation of the study process, the study programme has the number of students that ensures implementation of the study programme and facilitates the development of the study programme. Still, more funding should be planned in order to maintain sustainability and excellence of the programme. There is a low proportion of state funded study places (18 beside 65+15 fee-paying), particularly compared with Biology programmes and this should be improved. Since the programme contributes to goals of UL Strategy being a unique study offer educating high competitiveness of graduates, and contributing to developing an innovative and research-based study offer at UL, special attention should be paid to sustainability in financing. The rise in financial resources is crucial to develop studies based on science and practice and promote the involvement of students in research at all levels of education, which is one of the goals of UL Strategy (LU_strategija_buklets_2021.pdf; p. 16). The financial resources should be higher to assure excellence at this level of studies.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The study provision—which complies with specific requirements and conditions for the implementation of the study programme—as well as the scientific provision, informative provision, material and technical provision, and financial provision—creates conditions for the achievement of the learning outcomes and suggests the possibility of ensuring a high-quality learning experience. The financing available to the study programme, the funding sources, and the use of funding guarantee that the study process is fully implemented, that the study program has the bare minimum of students necessary to ensure its financial viability, and that the development of the study program is facilitated. Resources and provision of the study program ensure the implementation of the study process but should be improved. The financial resources should be

higher to ensure excellence at this level of study.

Strengths:
1) Combination of the infrastructure of UL and RTU in implementation of the study process
2) Courses in English promote students' and teachers mobility and international collaboration

Weaknesses:
1) There is a Low proportion of state-founded study places (18 beside 65+15 fee-paying), particularly compared with Biology programmes.
2) Financial resources should be improved to contribute to excellence in laboratory work and thesis development regarding the excellence.

Assessment of the requirement [6]

1 R6 - Compliance of the study provision, science provision (if applicable), informative provision (including library), material and technical provision and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes

Assessment of compliance: Fully compliant

Resources and provision of the study programme ensure the implementation of study process.
See SAR Annex:
Agreement_LU_RTU_Biotechnology.pdf

2.4. Teaching Staff

Analysis

2.4.1. The teaching staff members involved in the implementation of the study programme complies with the requirements of the first part of Article 55 of the Law on Higher Education Institutions (SAR pg 152 -153, Appendix 30-1-B).
25 lecturers are involved in the implementation of the study programme, including 6 Professors, 4 Associate Professors, 4 Docents, 4 lecturers and 7 university teachers. The number of Professors and Associate Professors (10) fully complies with the first part of Article 55 of the Law on Higher Education Institutions, which requires that at least five Professors and Associate Professors participate in the implementation of the study programme. Of the 25 lecturers, 18 hold doctoral degrees (SAR pg 153).
All the lecturers involved in the study programme have English language proficiency of B2 level, and 16 have English language proficiency of C1 or C2 level. The scientific activities of the study programme staff are directly related to the areas of study covered by the programme, and they are active both in the management and implementation of projects and in the preparation of scientific publications. In 2020 and 2021, the study programme staff have co authored 146 scientific publications indexed in the Scopus database (see Annex 14-B of SAR for the full list of publications). Of the 146 publications, 60 are in the field of agriculture and biology, 38 in the field of biochemistry, genetics and molecular biology, and 35 in the field of immunology and microbiology (SAR pg 153).
Since the licensing of the study programme, eight of the faculty members involved in its implementation have participated in various continuing professional development courses (“ELearning Environment”, “Distance Learning”, “Digital Media Literacy”, “Research and Publication Skills”, “Project Preparation”, “Commercialisation”, “Leadership”, “Laboratory Management”, “Research Ethics for Academics”, “Academic Integrity”, “Curriculum Development and Management”), with some skills acquired in the courses directly applicable to the study process. Four lecturers have improved their English language skills by obtaining C1 level certificates. This

demonstrates the readiness of the teaching staff to support the study process also in English when needed (SAR pg 153).
The qualifications of the teaching staff and their previous experience in academic and scientific work, including in areas directly related to the study courses included in the ABSP "Biotechnology and Bioengineering", generally confirm that the qualifications of the teaching staff involved in the programme are appropriate to achieve the aim and objectives of the study programme (SAR pg 153).
In the implementation of the study programme, RTU has involved a total of 13 lecturers, of which 8 are professors, 1 associate professor, 2 assistant professors, 1 lecturer and one foreign visiting docent. Everyone has a PhD in engineering, economics or mathematics. Accordingly, teaching staff with appropriate qualifications and knowledge in the relevant fields have been selected to provide the study programme (SAR pg 153 -154).
All involved teachers have multifaceted knowledge and skills in the academic, scientific and practical fields, including in cooperation with industry, which provides students with the opportunity to go on study visits during their studies. 57% of RTU teaching staff are experts of the Latvian Science Council in such sub-sectors as environmental biotechnology, mathematics, economics and business, political science, electrical engineering, electronics, information and communication technologies, construction and transport engineering, chemistry, chemical engineering, materials science, which certifies the competence of the teaching staff topics in scientific news. The qualification is also confirmed by active participation in the study courses of other study programmes, their teaching and participation in various institutional positions not only at RTU, but also at the international level (SAR pg 153, Annex 30-3-B).

2.4.2. Since the licensing of the study programme, five additional lecturers have been involved in its implementation of courses “Biophysics”, “Introduction to Cell and Gene Engineering”, “Metabolism”, “Biomolecules and Cells”, “Cultivation and Physiology of Microorganisms” “Gene and Cell Technology”. The additional lecturers (except for the course “Biophysics”) work alongside the lecturer in charge of the course, simultaneously lifting part of the workload of the senior lecturers, as well as gaining experience in teaching specific courses, so that they can replace the other lecturer if necessary. All newly recruited lecturers have appropriate qualifications (experience in academic work, or experience in scientific projects and scientific publications) so that the recruitment of new lecturers does not reduce the quality of lecturing in the study programme. Three of the five newly recruited lecturers have English language skills at C1 level and two at B2 level (SAR pg 153-154, Annex 30_3_B).
25 UL faculty members are involved in the implementation of the study programme in the academic year 2022/2023. The study programme has 72 students, resulting in a student-to-faculty ratio of 72:25 ≈ 2.9 students per faculty member.

2.4.3. N/A

2.4.4. In the reporting period the scientific activities of the study programme staff are directly related to the areas of study covered by the programme, and they are active both in the management and implementation of projects and in the preparation of scientific publications. In 2020 and 2021, the programme staff have co authored 146 scientific publications indexed in the Scopus database (see SAR Annex 14-B for the full list of publications). Of the 146 publications, 60 are in the field of agriculture and biology, 38 in the field of biochemistry, genetics and molecular biology, and 35 in the field of immunology and microbiology.
The scientific activities of the programme staff are directly related to the areas of study covered by the programme, and they are active both in the management and implementation of projects and in the preparation of scientific publications. In 2020 and 2021, the programme staff have co authored

146 scientific publications indexed in the Scopus database (see Annex 14-B for the full list of publications). Of the 146 publications, 60 are in the field of agriculture and biology, 38 in the field of biochemistry, genetics and molecular biology, and 35 in the field of immunology and microbiology.
All involved teachers have multifaceted knowledge and skills in the academic, scientific and practical fields, including in cooperation with industry, which provides students with the opportunity to go on study visits during their studies. 57% of RTU teaching staff are experts of the Latvian Science Council in such sub-sectors as environmental biotechnology, mathematics, economics and business, political science, electrical engineering, electronics, information and communication technologies, construction and transport engineering, chemistry, chemical engineering, materials science, which certifies the competence of the teaching staff topics in scientific news. The qualification is also confirmed by active participation in the study courses of other study programmes, their teaching and participation in various institutional positions not only at RTU, but also at the international level.
The scientific potential of the faculty members involved in the ABSP implementation is also demonstrated by the fact that many of them hold scientific positions at scientific institutes in addition to their academic (lecturer) positions at UL or RTU, where they engage in active research activities and then incorporate their findings into the learning process. Examples include researchers working at the Latvian Biomedical Research and Study Centre, BIOR Institute, Institute of Biology, Latvian Institute of Aquatic Ecology, and UL Institute of Microbiology and Biotechnology (SAR pg 68).
Research projects are carried out by the faculty members both at the UL and other scientific institutions. The FB faculty members have been or are currently involved in the following FB projects, for example: “Development of new therapeutic and prophylactic treatments against COVID-19 and coronaviruses” (NRP project), "Development and characterization of genome-edited blueberry (Vaccinium corymbosum L.) cultures for production of high-value secondary metabolites" (FARP project), " Impacts of habitat fragmentation on the physiological parameters of birds, obsolescence, microbiome and decreases in boreal forests" (FARP project), " Injectable in situ self crosslinking composite hydrogels for bone tissue regeneration (iBone)" (FARP project), " Molecular, physiological and ecological evaluation of Latvian genetic resources of valuable wild legume species, Trifolium fragiferum, in a context of sustainable agriculture " (FARP project), " Improving adaptation and resilience of perennial ryegrass for safe and sustainable food systems using CRISPR Cas9 technology - EditGrass4Food " (European Economic Area Financial Mechanism project), "European Network for Foodborne Parasites in Europe (EURO-FBP)" (COST project), etc (SAR p. 68).
The UL has launched the UL Excellence Programme, which offers financial support to a corresponding author for Q1 level articles in journals indexed in the Web of Science database, in order to encourage faculty members to publish in high quality scientific journals. Academic employees at UL are eligible to apply for financial aid under the Research Support Scheme to attend scientific meetings and to partially or fully defray the costs of publishing in open access journals. The FB base and performance funding also provides support for publications in open access journals(SAR p. 69).

2.4.5. Cooperation between teaching staff in the implementation of the study programme takes place regularly and at different levels. Regular meetings were held during the development of the study programme in order to prepare both the overall content of the study programme and the content of individual study courses, to form a unified, complementary study course offer, as well as to prevent duplication of study course content in study courses (both within the UL and with study courses taught by RTU faculty members) (SAR p.154). However, the cooperation on international level and mobility of the students and staff is low. The communication towards students, communication channels and hierarchy in communication regarding the students and their responsibilities, is not very well developed. Since communication is crucial for the implementation of the joint study programme between two Universities, this should be improved.

Every semester, meetings of the UL and RTU lecturers involved in the programme's implementation are held to evaluate the lessons learned from the study courses' implementation the previous semester, to evaluate the feedback students have provided on the study courses, and to determine whether it is necessary to modify the teaching style to suit the students of a given study year, taking into account their prior knowledge and level of preparedness. The student-centered teaching strategies that need to be included into each of the study courses are additionally addressed at the regular sessions (SAR p.155).
25 UL faculty members are involved in the implementation of the study programme in the academic year 2022/2023. The study programme has 72 students, resulting in a student-to-faculty ratio of 72:25 ≈ 2.9 students per faculty member (SAR p. 155).

Regarding weak international mobility of teaching staff and students, reflection goes in the direction of fostering a globally engaged academic community, that could include some of international educational institutions and research institutes. Since the involved teachers have multifaceted knowledge and skills in the academic, scientific and practical fields, including in cooperation with industry, this could be beneficiary for student mobility to go on study visits during their studies. The teaching staff involved in the joint ABSP has various institutional positions not only at UL and RTU, but also at the international level, which provides a valuable network of professionals that could be involved in both staff and student mobility. Moreover, the lack of tailored study after this programme could be used as an opportunity for student mobility. Since the joint study programme is applied in English, the mobility, combined with good communication, of both students and staff should be used for promotion of studying at the programme and attracting, both, international students and international teaching staff.

Conclusions on this set of criteria, by indicating strengths and weaknesses

The UL takes precautions to make sure that changes in the composition of the teaching staff do not negatively impact the quality of the study programme's execution or the study programme's conformity to the regulatory enactments' requirements. Each member of the academic staff is required by the Law on Higher Education Institutions to have five peer-reviewed publications published in the last six years, including international editions, which is accomplished. The achievement of the study programme's objectives and the linking of study courses within the study programme are made possible by the construction of a mechanism for the teaching staff's reciprocal collaboration in carrying out the study programme. The cooperation of teachers for the improvement of the ABSP "Biotechnology and Bioengineering" takes place from personal to Department/ Faculty/ University/ international level. The scientific activities of the programme staff are directly related to the areas of study covered by the programme, and they are active both in the management and implementation of projects and in the preparation of scientific publications in the field of agriculture, biology, biochemistry, genetics, molecular biology, immunology and microbiology.
During the reporting period, the UL FB has significantly updated its teaching staff, both due to the change of generations, and by attracting new lecturers who were not employed by the UL until now. The lecturer renewal policy implemented by UL FB has promoted the involvement of new lecturers in the study process. It has been possible to strengthen the team of highly qualified lecturers by attracting excellent scientists from cooperation partners - scientific institutes, as well as by promoting the growth of existing lecturers.

Strengths:
1) Universities involved in implementing the joint study programme ABSP "Biotechnology and Bioengineering" created a relevant and modern study programme, developed in English to attract international students.

2) The scientific activities of the study programme staff are directly related to the areas of study covered by the study programme, and they are active both in the management and implementation of projects and in the preparation of scientific publications in the field of agriculture, biology, biochemistry, genetics, molecular biology, immunology and microbiology.

Weaknesses:
1) The communication channels and hierarchy between UL and RTU have space for improvement.
2) Low mobility of teaching staff.

Assessment of the requirement [7]

1 R7 - Compliance of the qualification of the academic staff and visiting professors, visiting associate professors, visiting docents, visiting lecturers and visiting assistants with the conditions for the implementation of the study programme and the requirements set out in the respective regulatory enactments.

Assessment of compliance: Not relevant

UL has highly qualified teaching staff. Proof can be found in the Annexes:
9_B_Study_field_Teaching_staff.xlsx
10_B_Teaching_staff_CV.pdf
13_B_scientific_activity_data.pdf
14_B_list_of_publications.pdf

2.5. Assessment of the Compliance

Requirements

1 1 - The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard

Assessment of compliance: Fully compliant

The study programme “Biotechnology and bioengineering” volume is 120 CP of which 82 CP are compulsory part, 22 CP are the elective compulsory part and 6 CP for free elective part and 10 CP for Bachelor’s thesis. The content of the programme is developed in accordance with the regulations of the Cabinet of Ministers of the Republic of Latvia no. 240 "Rules on state academic education standards" requirements.
See SAR annex:
25_3_B_compliance_standard_Biotechnology.

2 2 - The study programme complies with a valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided if the completion of the study programme leads to a professional qualification (if applicable)

Assessment of compliance: Not relevant

3 3 - The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 561 , Paragraph two and Section 562 , Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Fully compliant

Study course descriptions and study materials are prepared in Latvian and English languages, and they satisfy requirements set in Law on Higher Education Institutions.

See SAR annex: 27_3_A and 27_3_B.

4 4 - The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure according to which state recognised documents of higher education are issued.

Assessment of compliance: Fully compliant

The diploma issued complies with the state legislature and “Procedures by which documents certifying higher Education recognised by the State shall be issued” (Cabinet of Ministers No.202). See SAR annex: 20_3_B_diploma_Biotechnology

5 5 - The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

Assessment of compliance: Fully compliant

The declaration that the academic staff of the academic study programme meets the requirements set out in the third paragraph of the first part of Article 55 of the Law on Higher Education Institutions can be found in the SAR annex 30_3_B_section_55_Biotechnology_BSP.

6 6 - Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Not relevant

7 7 - At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts (if applicable).

Assessment of compliance: Not relevant

8 8 - The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

Assessment of compliance: Fully compliant

The academic staff has sufficient Latvian language knowledge for implementing study courses, see SAR annex: 11_1_2_B_latvian_language_Biology_Biotechnology_Natural_sciences.

9 9 - The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language (if applicable).

Assessment of compliance: Fully compliant

The academic staff has sufficient foreign language knowledge for implementing study courses. See SAR annex: 12_1_2_B_english_Biology_Biotechnology_Natural_sciences.

10 10 - The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

Assessment of compliance: Fully compliant

Study agreements include all necessary parts set in legislation. See the SAR annex: 7_B_Standard_samples_of_study_agreement.

11 11 - The higher education institution / college has provided confirmation that students will be provided with opportunities to continue their education in another study programme or another higher education institution or college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.

Assessment of compliance: Fully compliant

University has a record order as confirmation that in case the implementation of this study programme is terminated students will be able to continue studies in the Daugavpils university's academic bachelor study programme "Biology".
See SAR annex: 5_B_agreement_LU_DU.docx

12 12 - The higher education institution / college has provided confirmation that students are guaranteed compensation for losses if the study programme is not accredited or the study programme's license is revoked due to the actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.

Assessment of compliance: Fully compliant

University has a rector's order that confirms it will compensate losses to students if the study programme is not accredited or loses its license and the student does not wish to continue studies in another study programme.
See SAR annex: 6_B_guarantees_compensations.

13 13 - The joint study programmes comply with the requirements prescribed in Section 55.(1), Paragraphs one, two, and seven of the Law on Higher Education Institutions (if applicable)

Assessment of compliance: Fully compliant

Programme complies with the requirements prescribed in Section 551, Paragraphs one, two, and seven of the Law on Higher Education Institutions.
See SAR annex: Annex 23-B. Compliance of the joint study programme with the provisions of the Law on Higher Education Institutions.

14 14 - Compliance with the requirements specified in other regulatory enactments that apply to the study programme being assessed (if applicable)

Assessment of compliance: Not relevant

Assessment of the requirement [8]

1 R8 - Compliance of the study programme with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments.

Assessment of compliance: Fully compliant

The requirement has been met and fulfilled, and all requirements set in different regulatory enactments are satisfied.

General conclusions about the study programme, indicating the most important strengths and weaknesses of the study programme

The study programme is justified and complies with the study field. The study programme is in line

with the strategic goals of the University of Latvia. This study programme is new and joint with Riga Technical University but it is well recognized and should provide the labor market with highly skilled specialists. The study programme is designed to combine two subfields of science (biotechnology – a subfield of natural sciences and bioengineering – a subfield of engineering sciences) into one programme. The joint ABSP Biotechnology and Bioengineering is envisaged to prepare highly qualified specialists and scientists for scientific labour markets in the various sectors of biotechnology bioengineering with the Bachelor's Degree of Natural Sciences in Biology. The name of the study programme, the degree, the aims, objectives, learning outcomes, and admission requirements are interrelated and meet the requirements of the regulatory enactments of the Republic of Latvia. The communication channels and hierarchy between UL and RTU have space for improvement. The study programme has been implemented already for three academic years and the number of students. The feedback from the study programme directors (UL and RTU), academic staff and students (feedback was obtained during the evaluation visit) indicate that its implementation is successful. The study programme's content is up-to-date, the study courses'/modules' content is connected to and complementary to one another, it aligns with the programme's goals, ensures the achievement of learning objectives, and it satisfies the demands of business, the job market, and scientific trends, meets national regulations. The study programme's objectives and learning objectives are furthered by the study implementation strategies. Priority is given to ideas of student-centered education and teaching. This study programme has the potential to be developed and taught in Latvian and English languages, acquiring students from Latvia and other countries. The study provision which complies with specific requirements and conditions for the implementation of the study programme as well as the scientific provision, informative provision, material and technical provision, and financial provision creates conditions for the achievement of the learning outcomes and suggests the possibility of ensuring a high-quality learning experience. The financing available to the study programme, the funding sources, and the use of funding guarantee that the study process is fully implemented, that the study programme has the bare minimum of students necessary to ensure its financial viability, and that the development of the study programme is facilitated. Resources and provision of the study programme ensure the implementation of the study process. The UL takes precautions to make sure that changes in the composition of the teaching staff do not negatively impact the quality of the study programme's execution or the study programme's conformity to the regulatory enactments' requirements. Each member of the academic staff is required by the Law on Higher Education Institutions to have five peer-reviewed publications published in the last six years, including international editions, which is accomplished. The achievement of the study programme's objectives and the linking of study courses within the study programme are made possible by the construction of a mechanism for the teaching staff's reciprocal collaboration in carrying out the study programme. The cooperation of teachers for the improvement of the ABSP "Biotechnology and Bioengineering" takes place from personal, to Department/ Faculty/ University/ international level. The scientific activities of the study programme staff are directly related to the areas of study covered by the programme, and they are active both in the management and implementation of projects and in the preparation of scientific publications in the field of agriculture, biology, biochemistry, genetics, molecular biology, immunology and microbiology. During the reporting period, the UL FB has significantly updated its teaching staff, both due to the change of generations, and by attracting new lecturers who were not employed by the UL until now. The lecturer renewal policy implemented by UL FB has promoted the involvement of new lecturers in the study process. It has been possible to strengthen the team of highly qualified lecturers by attracting excellent scientists from cooperation partners - scientific institutes, as well as by promoting the growth of existing lecturers.

Strengths:
1) By implementing an interdisciplinary approach to achieve the aims of the joint ABSP

Biotechnology and Bioengineering, University of Latvia and Riga Technical University bring into the study programme their own special experience and strategic, purposeful use of infrastructure.
2) Universities involved in the implementation of the joint programme ABSP "Biotechnology and Bioengineering" created a relevant and modern study programme, developed in English to attract international students with study programme staff that are working in the fields directly related to the areas of study covered by the programme.
3) Combination of the infrastructure of UL and RTU in implementation of the study process.
4) Good proportion of academic and technical courses. Aim to produce more practical-oriented graduates with strong academic knowledge, too.
5) The scientific activities of the study programme staff are directly related to the areas of study covered by the programme, and they are active both in the management and implementation of projects and in the preparation of scientific publications in the field of agriculture, biology, biochemistry, genetics, molecular biology, immunology, and microbiology.

Weaknesses:
1) The communication channels and hierarchy between UL and RTU have space for improvement. Clear communication channels and hierarchy in communication could be implemented regarding the organisation of the study programme, students' obligations and their responsibilities. Good communication is crucial for the implementation of the joint study programme between two Universities and it should be improved.
2) Financial resources should be improved to develop an innovative and research-based implementation of the study programme and thesis excellence.
3) Students are facing some challenges related to organization of the lectures and exercises between the two universities.
4) Low proportion of state-founded study places (18 beside 65+15 fee-paying), particularly compared with ABSP Biology programme.
5) Absence of the tailored Master of science study programme to continue the studies in the field of Biotechnology and engineering in Latvia
6) Low mobility of the students and teaching staff.

Evaluation of the study programme "Biotechnology and Bioengineering"

Evaluation of the study programme:

Good

2.6. Recommendations for the Study Programme "Biotechnology and Bioengineering"

Short-term recommendations

1) It is recommended to provide clarity and guidance to students considering MSc biotechnology studies, it is recommended to outline clear and comprehensive perspectives for pursuing this program both in Latvia and abroad, ensuring measurable success by achieving greater student understanding and awareness within the next 2 years
2) To enhance communication efficiency and clarity between UL and RTU, it is recommended to establish clear communication protocols, including designated contact points and a standardized method for addressing student issues, aiming for measurable success by implementing these improvements within the next 2 years.

Long-term recommendations

1) It is recommended to increase the proportion of state-funded study places, aligning with labor market demands and UL's strategic goals, with measurable success tracked through the expansion of state-funded positions and improved financial resources, aiming to implement this change within the next accreditation period.
2) To enhance the organization and coordination of lectures, exercises, and student responsibilities between the two universities, it is recommended to establish clear protocols and mechanisms for efficient collaboration, ensuring measurable success through improved coordination and communication within the next accreditation period.
3) To address the need for advanced studies in biotechnology and engineering, it is recommended to explore the development of a tailored Master of Science program, considering either the creation of a Biotechnology Master of Science program at UL or the acquisition of resources to financially support Master's studies within relevant biotechnology programs, with measurable success assessed through the establishment of a concrete plan within the next accreditation period.
4) To further enhance the quality of the study program and facilitate natural development, it is recommended to increase the proportion of laboratory exercises, with measurable success tracked through the quantifiable increase in laboratory-based learning components within the next accreditation period.
5) To foster a globally engaged academic community and enhance international mobility for teaching staff and students, it is recommended to leverage the multifaceted expertise and institutional positions of the involved teachers, promote study visits, and utilize the English language medium of the joint program for effective communication and networking, with measurable success indicated by increased international mobility and engagement within the next accreditation period.

II - "Biology" ASSESSMENT

II - "Biology" ASSESSMENT

2.1. Indicators Describing the Study Programme

Analysis

2.1.1. The AMSP Biology aims at providing knowledge in a specific subdiscipline of biology, while providing an overview of the development of the field as a whole, preparing graduates for practical work in science, business or public administration, as well as for further studies at doctoral level (SAR, p. 82). The AMSP Biology gives students an opportunity to specialize in different branches of biology (molecular biology, ecology, plant physiology, microbiology, etc.).

2.1.2. The AMSP Biology is a full-time study programme with the implementation duration of two years and the amount of 80 Latvian credits (CP). The language of implementation – Latvian. The degree to be acquired – Master's degree of Natural Sciences in Biology.
The code of the study programme according to the classification of Latvian education – 45421, where the first part (45) of the code indicates that the type of the AMSP Biology studies is an academic master’s programme and the digits of the second part of the code (421) indicate that the thematic area of education is Biology (the Cabinet Regulations No. 322 “Regulations on the Classification of Education in Latvia”, Annex 2 (approved 13.06.2017.).
The admission criteria (Bachelor's degree in Natural Sciences, second level professional higher

education (or education equal to it) in Biology, Agricultural Sciences and Medicine, and entrance examination) correspond to the aims and objectives of the study programme as well as the learning outcomes as stated in SAR (p. 83). Enrolment in master's degree study programmes is based on grades obtained during undergraduate studies. In study programmes that allow for prior education in various fields, the entrance examination is used to determine the correspondence of the candidate's prior knowledge to the field of the study programme. These applicants are given an entrance interview during which they are assessed on their answers to seven questions about their previous education, their background in biology, their motivation to study in the AMSP "Biology", and their ideas on the choice of the topic of their Master's Thesis. If necessary, the applicants will be advised on the necessary actions to be taken in order to successfully study in the AMSP "Biology", e.g., they will be recommended to contact the head of a specific FB department, pointed at their knowledge gaps and actions to fill these gaps, etc. (SAR, p. 27).
The aim, objectives, volume (CP), duration of the AMSP Biology, as well as the degree to be obtained after completing the study programme comply with the requirements of the Cabinet Regulations No 240 “Regulations on the State Academic Education Standard” (approved 13.05.2014.).
The learning outcomes of the AMSP Biology correspond to the 7th level of the Latvian Qualifications Framework (LQF), which is described in the Cabinet of Ministers Regulations No. 322 “Regulations on the Classification of Education in Latvia” (June 13, 2017).
The title, code, degree to be obtained, aim, objectives, learning outcomes and admission requirements of the AMSP Biology are interrelated.

2.1.3. According to SAR (p. 85 – 90), since the previous accreditation of the study field, the definitions of parameters – the aim and objectives of the study programme, as well as the results to be achieved within the AMSP Biology have not been changed.

2.1.4. During the last six years, an average of 43 students have been enrolled in the study programme and it has been graduated by an average of 32 graduates each year (SAR, Annex 24-2-B. Student statistics). To increase the competitiveness of the study programme, the sub-programme "Bioinformatics" has been created in cooperation with the UL Faculty of Computing (SAR, p. 92). After completing the study programme, graduates with a master's degree can work in all major subfields of biology. This is evidenced by the data of the graduate survey on their employment, which shows that 92% of the graduates who took part in the survey work in a field related to their speciality. Among the main employers are scientific institutes, universities, as well as state institutions and various private companies (SAR, p. 92). 20-30% of the AMSP Biology graduates continue their doctoral studies in both Latvia and abroad.
Taking into account the above written, we can conclude that the AMSP Biology is economically and socially justified.

2.1.5. N/A

Conclusions on this set of criteria, by specifying strengths and weaknesses

The AMSP Biology provides knowledge in a specific subdiscipline of biology, while providing an overview of the development of the field as a whole and giving students a possibility to specialize in different branches of biology.
After completing the study programme, graduates with a master's degree can work in all major subfields of biology. This is evidenced by the data of the graduate survey on their employment, which shows that 92% of the graduates who took part in the survey work in a field related to their speciality. 20-30% of the AMSP "Biology" graduates continue their doctoral studies both in Latvia and abroad.

Since the previous accreditation of the study field, the definitions of parameters – the aim and objectives of the study programme, as well as the results to be achieved within the AMSP Biology have not been changed.

Strengths:
1) The AMSP Biology provides knowledge in specific subdisciplines of biology, at the same time providing an overview of the development of the field as a whole.
2) 92% of the AMSP Biology graduates work in a field related to their speciality; 20-30% of the graduates continue their doctoral studies both in Latvia and abroad.

No weaknesses have been identified

2.2. The Content of Studies and Implementation Thereof

Analysis

2.2.1. The study programme has been checked upon national regulations and the higher education standard and fully meets the requirements.
The study programme provides academic education in all subdisciplines of biology, which are the responsibility of the seven FB Departments, namely, Department of Plant Physiology, Department of Botany and Ecology, Department of Human and Animal Physiology, Department of Hydrobiology, Department of Microbiology and Biotechnology, Department of Molecular Biology, Department of Zoology and Animal Ecology. By the words of the study programme director and the employer representatives the programme is implemented in cooperation with other UL Faculties, the UL and state research institutes, as well as employers (SAR pg 94 - 95).
Taking into account student surveys, a significant amount of the courses employ the analysis of scientific literature in the form of seminars, which ensures that students are able to critically analyze the latest scientific literature from the perspective of both experimental methods and theoretical novelty. It can also be deducted by analyzing the document “Description of study courses”.
Changes have been made to the Master's study programme (AMSP) "Biology" to ensure that the AMSP meets the Academic Education Standard by providing courses in the compulsory part in the amount of 24 credit points (CP). Taking into account the requests from students and employers, as well as the competitiveness of similar study programmes, additional courses, namely, "Practical Biometry for Biologists" and "Science Communication for Biologists" have been included into the mandatory part of the AMSP "Biology", as well as the volume of the study course "Bioethics" has been increased to 3 CP. The document “Plan of the study programme” is proof of that. In addition, since 2018 it has been possible to specialize in Bioinformatics. For this purpose, some courses of the Faculty of Computing have been included in the AMSP “Biology” and the content of some existing AMSP “Biology” courses has been supplemented. The most significant changes have been introduced in the study course “Current Problems in Biology”, where new content (lectures, seminars and practical work) is provided for students of the bioinformatics sub-field. In addition to these changes, the course offered in the restricted elective part is regularly reviewed to ensure that it is in line with the latest trends in the field. This process is largely coordinated by the Heads of Departments, who are more familiar with the trends in the specific subdiscipline of biology. For example, in line with the latest scientific trends and taking into account the involvement of new specialists, including foreign, in the implementation of the AMSP “Biology”, it is possible to offer the courses “Human Microbiome”, “Model Systems in Biomedicine”, “Principles of Developmental Biology”, and “Molecular Plant-Microbe-Invertebrate Interactions” (SAR pg 95).
The description of the study courses indicate a high relevance to the topic. All of the study courses have dedicated and in depth descriptions with explanations on what knowledge, skills and competences a student will get as a learning outcome. Proportion of those capabilities is good and

well balanced. All study courses have a specified prerequisites for attendance which should be considered as a good practice of ensuring the appropriate interconnection between different complexity levels as well as interdisciplinarity.

2.2.2. The awarding of the AMSP is based on the achievements and findings of the relevant field of science.
Cabinet of Ministers Regulations No. 240 “Regulations on the State Academic Education Standard” grants that all graduates of the Master's study programme receive a Master of Science degree in Biology, but during their studies they specialize in different sub-disciplines of biology for example human physiology, biochemistry, microbiology, animal ecology and develop a Master's Thesis on a topic and with research methodology like biometric data analysis specific to that sub-discipline. A Master's Thesis is considered as a complete scientific study, often developed within the framework of a scientific project. The student is expected to carry out a largely independent scientific research work using research methodology appropriate to the sub-discipline, as well as to conduct the analysis and interpretation of the results of the scientific research under the supervision of a researcher (with a doctoral degree). As per the document “Description of study courses” it is great to see that the progress during the thesis work is monitored throughout other courses like “Current problems in Biology” (SAR p. 96).
The scientific projects are granted on a competitive basis and as a result all stakeholders ensure to provide maximum benefit for the research field, industry and society in general. Scientific data undergo public often peer reviewed scrutiny which can be viewed as a good practice.

2.2.3. The document “Description of study courses” indicates that oral, written and combined assessment methods are used in the courses and examinations. A variety of methods are used to acquire and consolidate knowledge, such as introductory lectures, interactive lectures, summative lectures, problem-oriented lectures, project - based learning and research activities. Practitioners, professionals from different institutions, are invited to lecture in individual courses in order to promote the unity of theory and practice. Practical exercises, seminars, individual, pair and group work, discussions and project development, study tours to organizations in the field are widely used. Employers are involved in the implementation and development of the study courses (invited to lead individual seminars, which are often organized as exchange visits to workplaces, etc.). That was evident during the meeting and interviews with the teaching staff and representatives of the employers. To foster the development of students' research competence, students have the opportunity to analyze and study in-depth problems of interest in the field in successive study courses for example “Habitat and species conservation” in three successive courses. Seminars in the courses foster students' speaking, presentation, and discussion skills. To achieve the learning outcomes - to acquire and consolidate knowledge, skills and develop competence - student-centered principles govern the study process. The study process uses methods that promote students' communication when performing study tasks, solving real problems in the field and modeling situations. Which should be beneficial and of a high value for the students (SAR p.96 - 97).
The physical environment of studies is also gradually changing: classrooms can be easily converted for group or individual work and students can use digital technologies. Lecturers mostly use methods that encourage students' active participation, critical thinking, and reflection. The e-learning environment is used to support the learning process and independent study. An e-learning environment (Moodle) created for each study course provides students with access to lesson materials, assignment descriptions in addition to study materials related to the course topics, as well as study tasks to be performed (tests, forums, seminars, conferences, etc.). With the reasons for the mark, All graded assessments in mid-term and final examinations are recorded and made available to students in the e-learning environment (SAR p. 97).
Updating study programmes and their study courses, the student-centered approach is followed with

particular attention paid to the meaningful formulation of learning outcomes, so as to promote dialogue between lecturers and students on study content, forms of organization and methods. Correctly formulated learning outcomes, in turn, promote students' understanding and ownership of their own learning, self-assessment and understanding of the assessment received. In the study process, lecturers use methods, forms of examination and assessment criteria that are appropriate to the study aim and the planned learning outcomes (SAR p. 97).
Students receive support and feedback from lecturers during the study process. The assessment criteria are made public in advance. Assessment provides students with the opportunity to demonstrate the extent to which they have achieved the expected learning outcomes. All of the mentioned above promotes a student centered learning and can be considered as an appropriate approach to reach the aims of learning outcome.

2.2.4. N/A

2.2.5. N/A

2.2.6. The topics of the Final (Master's) Theses of the AMSP “Biology” reflect the diversity of subdisciplines of biology, from molecular to ecosystems, from the title “Alterations in blood sera metabolome and blood transcriptome in hospitalized COVID-19 patients” to the title “Assessment of the ecological status of Talsi and Vilkmuiža lakes according to phytoplankton and macrozoobenthos”. As it can be seen in the web page of the HEI, the theses mostly have research and academic orientation, and often, their results have already been presented at local and international scientific conferences for example International Scientific Conference of the University of Latvia. Most of the works are developed either in a laboratory or in the field, using industry-specific laboratory and field research methods. In recent years, especially in the context of the COVID-19 pandemic constraints, there have also been theoretical Theses with a focus on the analysis of existing or publicly available data for example for a white clover in Europe. With the development of the sub-field of bioinformatics, it is expected that there will be more works developed outside the laboratory and entirely devoted to the analysis of genomic, transcriptomic, proteomic, or metabolomic data. Most of the Theses are related to current research projects both at the UL FB and in partner institutions and are rated very good, excellent or outstanding grades (SAR p. 98).
The final theses are highly relevant to the field and correspond to the study programme. It was found out during the interview with the representatives of the employers that it is a mutually beneficial process as the employers promote the most relevant topics for the research while students gain experience in performing certain tasks and utilizing methods and knowledge.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The AMSP study programme's content is current, the study courses' and modules' content is connected and complementary, it aligns with the programme's goals, ensures the achievement of learning objectives, and it satisfies the demands of business, the labor market, and scientific trends, meets all applicable national regulations. The topics of the Final (Master's) Theses of the AMSP “Biology” reflect the diversity of subdisciplines of biology, from molecular to ecosystems. The awarding of a degree in the case of a master's study programme is based on the accomplishments and discoveries made in the pertinent scientific or creative field. The study implementation strategies aid in achieving the objectives and learning objectives of the study programme and study courses. The principles of student-centered teaching and learning are taken into account. A variety of methods are used to acquire and consolidate knowledge, such as introductory lectures, interactive lectures, summative lectures, and problem-oriented lectures, project - based learning

and research activities

Strengths:
1) Diverse representation of the subdisciplines of the study programme and high relevance of the students' final theses.
2) Broad spectrum of study methods that greatly contribute to the achievement of the aims of the study programme.
3) Most of the Theses are rated as very good, excellent or outstanding.

Weaknesses:
No weaknesses were found

Assessment of the requirement [5] (applicable only to master's or doctoral study programmes)

1 R5 - The study programme for obtaining a master's or doctoral degree is based on the achievements and findings of the respective field of science or field of artistic creation.

Assessment of compliance: Fully compliant

The AMSP study programme's content is current, the study courses' and modules' content is connected and complementary, it aligns with the programme's goals, ensures the achievement of learning objectives, and it satisfies the demands of business, the labor market, and scientific trends, meets all applicable national regulations. The topics of the Final (Master's) Theses of the AMSP "Biology" reflect the diversity of subdisciplines of biology, from molecular to ecosystems. All criteria are met. Basis of getting the master's and doctoral degree is evident. Proof can be found in the Annexes:
25_2_B_compliance_standard_Biology_MSP.pdf
28_2_B_mapping_Biology_MSP.xlsx
26_2_B_Study_plan_Biology_MSP.pdf
27_2_B_course_descriptions_Biology_MSP.pdf

2.3. Resources and Provision of the Study Programme

Analysis

2.3.1. A detailed outline of the new premises of the Academic Centre of the University of Latvia is given in Part I, subchapters 1.3.1 - 1.3.4 of Expert Report (SAR pg 100 -101). The information base, the material and technical base and the methodological support are adequate for the implementation of the study programme and achievement of the learning outcomes of the AMSP "Biology", which confirms the possibility of ensuring a quality study process in the future. Students have access to fast wireless Internet, individual study rooms, access to the resources of the UL Library, resources and facilities of scientific institutes such as Latvian Biomedical Research and Study Centre, BIOR Institute, Institute of Biology, Latvian Institute of Aquatic Ecology and UL Institute of Microbiology and Biotechnology, connected with FB, training site Kolka for field work, botanical garden and laboratories of new building of FB. Although funding for the AMSP "Biology" needs to be increased, it is possible to provide quality studies (lectures, seminars) within the existing funding involving research money. Due to limited funding, it is not possible to carry out laboratory work to the desired extent, which is also reflected in student interviews. The current funding base does not cover the real costs of production of Master's Theses. However, a majority of the Master's Theses are developed within the framework of various Latvian and foreign funded

research projects. Given the high competition for science funding in Latvia, no research group can offer guaranteed, long-term funding for Master's Thesis development. Additionally, link with the research groups provides students with the access to common facilities of the National Research Centres located in various Latvian scientific institutions. The study provision, scientific provision, informative provision (including library), material and technical provision and financial provision comply with specific features and the conditions for the implementation of the MSB study programme, create prerequisites for the achievement of the learning outcomes and indicate the possibility to ensure a high-quality study process, still there is space for improvement. Laboratory equipment of FB should be improved to ensure high level research and teaching activities that require more funding from various resources. Brand new facilities should be equipped more to ensure the excellence oriented research in wich students are involved. and to create a support system and promote cooperation among researchers, UL structural units and external partners for the implementation of internationally competitive interdisciplinary research and teaching.

2.3.2. N/A

2.3.3. To provide the funding needed for the implementation of the AMSP "Biology", the UL uses the state budget subsidy from the Ministry of Education and Science, set at EUR 4646 for full-time studies for the academic year 2021/2022 and the tuition fee EUR 2400 per year (SAR pg 101). In view of the above-stated, the total study programme budget (including study fee 2400 EUR from 2 students) was approximately EUR 344 000 per year (SAR pg 102 Table 3.2.1). In order to estimate the amount of funds required for financial support, the UL calculates the cost price for study programmes according to a methodology developed by the UL. For calculating costs, the implementers of the master study programme "Biology" uses the data of the 75 students studying in the study programme full time in the academic year 2021/2022, the existing study programme plan and the existing structure of the academic staff involved in the study programme. According to the estimation of AMSP "Biology" cost per student (SAR pg 103, Fig. 3.2.1) the minimum number of students for StP sustainability is 65. In view of the information above, the estimated total cost of the study programme is EUR 321 150 per year: Teaching costs 47,9% of total, general staff 13,2%, infrastructure expenditures 11.3%, capital items and services 1.6%, indirect costs 26.6%. The proportion of general staff (administration?) cost seems to be high (28%) of teaching staff. The data shown in the SAR pg 103, Table 3.2.3 clearly prove that the UL has sufficient funds to implement the study programme and ensure its further development. In addition, the development of the study programme can be financed from the income received from lifelong learning, and other services, as well as from the financial resources accumulated by the structural unit. Although formally, a large number of teaching staff are elected (the faculty to student ratio 1.3:1), it should be taken into account that the majority of them teach only a small part of a study course. Therefore, the high faculty-to-student ratio does not have a negative impact on the programme funding. Financial resources should be improved in order to develop an innovative and research-based implementation of the programme and thesis excellence. FB offers a respected master study programme in biology in Latvia. Students have a large amount of practical work and a large amount of time spending in research-based study. These opportunities offer students the possibility to participate in research projects, which is highly encouraged, but also requires the financial resources to ensure sustainability and excellence. Diversification in funding and use of Alumni network in finding funding opportunities, like scholarships, investors and other possibilities, could be helpful. This programme implementation if fulfilling the goals of UL Strategy of having unique study offer and high competitiveness of graduates, and the implementation of the study programme is innovative and research-based study where involvement of students in research is crucial part of the implementation of the study (LU_strategija_buklets_2021.pdf, SAR pg 16). To achieve these goals it is necessary to have the sustainable financial resources that will strengthen scientific excellence in

strategic areas of specialization and research priorities and increase research capacity, including capacity in the fundamental sciences, which are as well UL Strategy goals. Increasing financial resources, especially at this level of the study is very important for achievement of UL Strategy goals and economic improvement based on the knowledge.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The material and technical base and the methodological support are adequate for the implementation of the study programme and achievement of the learning outcomes of the AMSP "Biology", which confirms the possibility of ensuring a quality study process in the future. The material and technical base and the methodological support are adequate for the implementation of the study programme and achievement of the learning outcomes of the AMSP "Biology", which confirms the possibility of ensuring a quality study process in the future. Students have access to fast wireless Internet, individual study rooms, access to the resources of the UL Library, resources and facilities of scientific institutes connected with FB such as Latvian Biomedical Research and Study Centre, BIOR Institute, Institute of Biology, Latvian Institute of Aquatic Ecology and UL Institute of Microbiology and Biotechnology, training center Kolka for field work, botanical garden, library and laboratories of new building of FB. At state subsidy EUR 4646 the existing study program and academic staff of the AMSP "Biology" is sustainable at current student numbers. The study provision, science provision, informative provision, material and technical provision and financial provision are adequate for the implementation of the study programme and ensuring the achievement of learning outcomes; still the funding should be improved to enable sustainability and excellence.

Strengths:
1) Students and staff have possibility to use FB infrastructure, library, botanical garden, field work facility of Kolka and resources of list of scientific institutes, that collaborate with FB, for the implementation of the study programme and ensuring the achievement of learning outcomes
2) Involvement of scientists, specialist in particular field of biology into teaching process

Weaknesses:
1) Funding should be improved to enable sustainability and excellence.

Assessment of the requirement [6]

1 R6 - Compliance of the study provision, science provision (if applicable), informative provision (including library), material and technical provision and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes

Assessment of compliance: Fully compliant

The study provision, science provision, informative provision, material and technical provision and financial provision are adequate for the implementation of the study programme and ensuring the achievement of learning outcomes.
SAR Annex 28-2-B, 30-2-B
25_2_B_compliance_standard_Biology_MSP.pdf
28_2_B_mapping_Biology_MSP.xlsx
26_2_B_Study_plan_Biology_MSP.pd
27_2_B_course_descriptions_Biology_MSP.pdf

2.4. Teaching Staff

Analysis

2.4.1. The AMSP “Biology” teaching staff fully complies with the requirements of the first part of Article 55 of the Law on Higher Education Institutions (SAR pg 104, Annex 9B, 10B, 13B, 14B, Annex 30-2-B). Highly qualified lecturers (Professors and Associate Professors) participate in the implementation of the AMSP "Biology"; in exceptional cases lecturers and assistant professors are engaged to teach certain topics. Only scientists of biology or related fields with a doctoral degree are involved in the supervision of Master's Theses, while involving doctoral students with a Master's degree and specialists in the field as consultants. The knowledge of the English language of the teaching staff involved in the implementation of the study programme makes it possible to teach study courses in English as well. The knowledge of the state language of the academic staff employed in the study programme complies with the regulations on the extent of knowledge of the state language and the procedure for testing the state language proficiency for the performance of professional and official duties and allows for teaching study courses in the state language. The teaching staff has scientific work experience both as authors of scientific publications and as participants in the implementation of scientific projects, related teaching staff as appropriate for achieving the aim of the study programme and attaining the objectives (SAR pg 105). For example, professor involved in course "Current topics in biology” is principal investigator in EEA-NOR Baltic Research Programme, research project “Improving adaptability and resilience of perennial ryegrass for safe and sustainable food systems through CRISPR-Cas9 technology - EditGrass4Food”, and has published scientific publications in ACS Med Chem Lett Journal. Another example is a professor of “Principles of developmental biology” who is involved in a project “Establishing an algorithm for the early diagnosis and follow-up of patients with pancreatic neuroendocrine tumors – NEXT”, and has publications in top scientific journals in Life Sciences - Nature.

2.4.2. The reporting period is marked by significant changes in the composition of the teaching staff. The lecturer renewal policy implemented by UL FB has promoted the involvement of new lecturers in the study process. Initially (2014-2018), this process was implemented within the framework of the development of the UL FB, using internal resources, but starting from 2018, within the SAM 8.2.2 project "Renewal and Competence Development of Academic Staff at the University of Latvia" (SAR p. 105).
Changes in the composition and number of lecturers in the implementation of the AMSP "Biology" in position 2014 → 2022: Professors 6 → 20; Associate Professors 9 → 12; Assistant Professors 14 → 14, Lecturers 10 → 5; Assistants and instructors 4 → 8.
During the reporting period, UL FB has significantly updated its teaching staff, both due to the change of generations, and by attracting new lecturers who were not employed by the UL until now. In this respect, the SAM 8.2.2 project funding was a major boost, as it enabled funding to be found for promising scientists with links to Latvia. It has been possible to strengthen the team of highly qualified lecturers by attracting excellent scientists from partner research institutes, as well as by fostering the growth of existing teachers, such as teacher in courses of Immunology, involved in research at Latvian Biomedical Research and Study Centre, or professor involved in course of Microbiology is involved in research at Institute of Microbiology & Biotechnology, University of Latvia. The change in the number of lecturers is also due to the fact that the AMSP "Biology", together with the Faculty of Computing, is organising courses for students who wish to specialise in bioinformatics (SAR pg 105).

2.4.3. N/A

2.4.4. The implementation of the AMSP “Biology” involves 20 Professors (10 from the FB), 12 Associate Professors (9 from the FB) and 14 Assistant Professors (11 from the FB), which

demonstrates high qualification of the lecturers. Leading experts in the field are involved in teaching individual courses "Game Biology and Management", "Microbial Ecology", "Physiology, Cytology and Conservation of Strains-Producers". The courses of lectures on current problems in biology involve FB lecturers, as well as other leading Latvian and foreign specialists, who talk about the latest theoretical and methodological developments in various subfields of biology. The seminars in “Current Problems in Biology” include analysis of scientific publications in the relevant subdiscipline under the guidance of a specialist in the field. The restricted elective (Part B) courses analyse recent scientific research specific to a particular sub-discipline of biology. The assessment of the Master's Theses takes into account the existence of scientific publications and conference abstracts. All lecturers at the AMSP “Biology” are actively engaged in scientific work as evidenced by their scientific publications and research projects (SAR p. 96).
The scientific potential of the faculty members involved in the implementation of the Field is also characterised by the fact that, in addition to their academic (lecturer) position at the UL, many of them have a scientific position at one of the scientific institutes, where they carry out active research activities and then integrate findings of their research into the study process. Examples include scientists from Latvian Biomedical Research and Study Centre, BIOR Institute, Institute of Biology, Latvian Institute of Aquatic Ecology and UL Institute of Microbiology and Biotechnology.
Research projects are carried out by the faculty members both at the UL and other scientific institutions. The FB faculty members have been or are currently involved in the following FB projects, for example: “Development of new therapeutic and prophylactic treatments against COVID-19 and coronaviruses” (NRP project), "Development and characterization of genome-edited blueberry (Vaccinium corymbosum L.) cultures for production of high-value secondary metabolites" (FARP project), "Impacts of habitat fragmentation on the physiological parameters of birds, obsolescence, microbiome and decreases in boreal forests" (FARP project), "Injectable in situ self crosslinking composite hydrogels for bone tissue regeneration (iBone)" (FARP project), "Molecular, physiological and ecological evaluation of Latvian genetic resources of valuable wild legume species, Trifolium fragiferum, in a context of sustainable agriculture" (FARP project), "Improving adaptation and resilience of perennial ryegrass for safe and sustainable food systems using CRISPR Cas9 technology - EditGrass4Food" (European Economic Area Financial Mechanism project), "European Network for Foodborne Parasites in Europe (EURO-FBP)" (COST project), etc.
In order to encourage faculty members to publish in high quality scientific journals, the UL has introduced the UL Excellence Programme, which provides material support to a corresponding author for Q1 level publications in journals indexed in the Web of Science database. Under the Research Support Scheme, UL academic staff may apply for financial support to attend scientific conferences and to cover part or all the costs of publishing in open access journals. Publications in open access journals are also supported from the FB base and performance funding.
Each member of the academic staff in the last six years has published in peer-reviewed editions, including international editions (SAR, Annex 30_2_B).

2.4.5. The AMSP “Biology” has a lower student ratio than the ABSP Biology, reflecting the priority given to individual and group work. This ensures a higher quality of studies, as lecturers are able to devote more time to preparation and working individually with students. In the academic year 2021/2022, 59 teaching staff were involved. There were 78 students studying the programme, giving a student to faculty ratio of 78:59 ≈ 1.3 students per teaching staff member. This ratio is due to the relatively high number of courses in the restricted elective part which are attended by a relatively small number of students. This certainly reduces the efficiency of the implementation of the study programme, but it provides ample opportunities for students to study interesting courses. In addition, many courses are taught by several lecturers in order to create a study environment as close to research as possible. Here, too, there is close collaboration between different lecturers, ensuring the acquisition of very specific topics, while at the same time maintaining a coherent

course theme (SAR pg 106).
The study course “Current Problems in Biology” is coordinated by the Director of the AMSP Biology, maintaining an equitable representation of different sub-fields of biology. The study plan is coordinated with the Heads of the FB Departments, including the involvement of distinguished visiting lecturers.
From the site visit, it was evident that the inner communication between teaching staff, management and students involved in AMSP study programme seems very well organised and efficient. Still, the mobility of teaching staff and students is very low and could be improved. Mobility of teaching staff and students and international teaching staff regarding study programme AMSP Biology should be improved. Activities of strengthening partnerships, collaborations, exchanging teaching staff and students, finding funding opportunities to support international mobility, and encouraging exchange programmes that give faculty members and students the chance to spend a semester or academic year abroad, as listed for study field, as other recommendations listed there, are also highly recommended for improvement. Given that the AMSP teaching staff participates in the activities at relevant scientific research institutes, this network of experts could be a useful resource for the creation of additional pathways for student and teaching staff mobility. There is a lot of room for the establishment of international projects that will encourage mobility and give students and faculty members the chance to gain international professional experience. Since the AMSP Biology offers students various disciplines of biology to study and be involved in research activities, both in the laboratories and field work, international experience could give them valuable professional experience that could help them find better positions at the job market. The fact that most of the students of AMSP were students of ABSP in biology, gives them basic knowledge recognised at other EU Universities, which should make mobility easier. Especially on the level of AMSP study programme in Biology, students should consider international mobility as it gives them a broader list of opportunities for career development. It's highly recommended to use ERASMUS exchange programme and other mobility programmes and possibilities. Teaching staff should better use the existing possibilities and expand new ones to raise their international mobility, but also invite international teaching staff to offer students different perspectives in subjects of the AMSP study. Alumni network is a valuable resource that should be better developed and used as a resource to network and promote mobility and career path of students of FB.

Conclusions on this set of criteria, by indicating strengths and weaknesses

The UL, FB takes precautions to make sure that changes in the composition of the teaching staff do not negatively impact the quality of the study programme's execution or the study programme's conformity to the regulatory enactments' requirements. Each member of the academic staff has required by the Law on Higher Education Institutions peer-reviewed publications published in the last six years, including international editions, which is accomplished. The achievement of the study programme's objectives and the linking of study courses within the study programme are made possible by constructing a mechanism for the teaching staff's reciprocal collaboration in the study programme. The scientific potential of the faculty members involved in the implementation of the study programme is also characterized by the fact that, in addition to their academic (lecturer) position at the UL, many of them have a scientific position at one of the scientific institutes, where they carry out research activities and then integrate findings of their research into the study process. Examples include scientists from the Latvian Biomedical Research and Study Centre, BIOR Institute, Institute of Biology, Latvian Institute of Aquatic Ecology, and UL Institute of Microbiology and Biotechnology. The cooperation of teachers for improving the AMSP "Biology" takes place from personal to Department/ Faculty/ University/ international level. Still, the mobility of both students and staff should be improved. During the reporting period, the UL FB has significantly updated its teaching staff, both due to the change of generations and by attracting new lecturers whom the UL

did not employ until now. The lecturer renewal policy implemented by UL FB has promoted the involvement of new lecturers in the study process. It has been possible to strengthen the team of highly qualified lecturers by attracting excellent scientists from cooperation partners - scientific institutes, as well as by promoting the growth of existing lecturers.

Strengths:
1) The teaching staff involved in the implementation of the AMSP also have a scientific position at one of the scientific institutes and integrate findings of their research into the study process, which enables the accomplishment of the study programme's objectives and the linkage of study courses within the study programme.
2) The teaching staff was involved in scientific work that resulted in many scientific publications published in international peer-reviewed scientific journals.

Weaknesses:
1) Low mobility of teaching staff.
2) International cooperation in scientific research has many opportunities for the mobility of teaching staff that should be used more.
3) Alumni network of graduates, is a resource that should be used more for networking and promoting the career paths of students of FB and other opportunities offered by FB.

Assessment of the requirement [7]

1 R7 - Compliance of the qualification of the academic staff and visiting professors, visiting associate professors, visiting docents, visiting lecturers and visiting assistants with the conditions for the implementation of the study programme and the requirements set out in the respective regulatory enactments.

Assessment of compliance: Fully compliant

UL has highly qualified teaching staff. Proof can be found in the Annexes:
9_B_Study_field_Teaching_staff.xlsx
10_B_Teaching_staff_CV.pdf
13_B_scientific_activity_data.pdf
14_B_list_of_publications.pdf

2.5. Assessment of the Compliance

Requirements

1 1 - The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard

Assessment of compliance: Fully compliant

The study programme “Biology” volume is 80 CP of which 24 CP are compulsory part, 34 CP are the elective compulsory part and 2 CP for free elective part. 20 CP are for Master’s thesis. The contents of the programme is in accordance with the regulations of the Cabinet of Ministers of the Republic of Latvia no. 240 "Rules on state academic education standards" requirements.
See SAR annex:
25_2_B_compliance_standard_Biology_MSP.

2 2 - The study programme complies with a valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided if the completion of the study programme leads to a professional qualification (if applicable)

Assessment of compliance: Not relevant

3 3 - The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 561 , Paragraph two and Section 562 , Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Fully compliant

Study course descriptions and study materials are prepared in Latvian and English languages, and they satisfy requirements set in Law on Higher Education Institutions.
See SAR annexes:
27_2_B_course_descriptions_Biology_MSP.

4 4 - The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure according to which state recognised documents of higher education are issued.

Assessment of compliance: Fully compliant

The diploma issued complies with the state legislature and “Procedures by which documents certifying higher Education recognised by the State shall be issued” (Cabinet of Ministers No.202).
See SAR annex:
20_2_B_Diploma_Biology_MSP.

5 5 - The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

Assessment of compliance: Fully compliant

The declaration that the academic staff of the academic study program meets the requirements set out in the third paragraph of the first part of Article 55 of the Law on Higher Education Institutions can be found in the SAR annex:
30_2_B_section_55_Biology_MSP.pdf.

6 6 - Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Not relevant

7 7 - At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts (if applicable).

Assessment of compliance: Not relevant

8 8 - The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

Assessment of compliance: Fully compliant

The academic staff has sufficient Latvian language knowledge for implementing study courses, see SAR annex: 11_1_2_B_latvian_language_Biology_Biotechnology_Natural_sciences.

9 9 - The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language (if applicable).

Assessment of compliance: Not relevant

10 10 - The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

Assessment of compliance: Fully compliant

Study agreements include all necessary parts set in legislation. See the SAR annex 7_B_Standard_samples_of_study_agreement.

11 11 - The higher education institution / college has provided confirmation that students will be provided with opportunities to continue their education in another study programme or another higher education institution or college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.

Assessment of compliance: Fully compliant

University has a record order as confirmation that in case the implementation of this study programme is terminated students will be able to continue studies in the Daugavpils university academic masters study programme “Biology”.
See SAR annex: 5_B_agreement_LU_DU.docx

12 12 - The higher education institution / college has provided confirmation that students are guaranteed compensation for losses if the study programme is not accredited or the study programme’s license is revoked due to the actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.

Assessment of compliance: Fully compliant

University has a rector's order that confirms it will compensate losses to students if the study programme is not accredited or loses its license and the student does not wish to continue studies in another study programme.
See SAR annex: 6_B_guarantees_compensations

13 13 - The joint study programmes comply with the requirements prescribed in Section 55.(1), Paragraphs one, two, and seven of the Law on Higher Education Institutions (if applicable)

Assessment of compliance: Not relevant

14 14 - Compliance with the requirements specified in other regulatory enactments that apply to the study programme being assessed (if applicable)

Assessment of compliance: Not relevant

Assessment of the requirement [8]

1 R8 - Compliance of the study programme with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments.

Assessment of compliance: Fully compliant

The requirement has been met and fulfilled, and all requirements set in different regulatory enactments are satisfied.

General conclusions about the study programme, indicating the most important strengths and weaknesses of the study programme

The program aims to provide students with high-quality theoretical knowledge and research skills in biology. Course composition aligns with program objectives and contributes to learning outcomes. Students gain expertise in specific subdisciplines and can specialize in various biology branches. Graduates with master's degrees find employment in major biology subfields; 92% work in their specialty. Additionally, 20-30% pursue doctoral studies in Latvia and abroad.
The AMSP program features up-to-date content that aligns with its goals, meets national regulations, and satisfies business, labor market, and scientific demands. Degree awarding is based on relevant accomplishments. Student-centered teaching principles are applied with suitable material and technical support. Adequate provisions and resources, including fast internet, individual study rooms, and library access, support learning outcomes. Students have access to fast wireless Internet, individual study rooms, access to the resources of the UL Library, resources and facilities of scientific institutes connected with FB, Kolka for field work, botanical garden and laboratories of the new building of FB. Current state subsidies confirm the program's sustainability at current student numbers.
The UL, FB ensures teaching staff changes don't harm program quality or compliance. Academic staff meet publication requirements, including international editions. Collaborative mechanisms support program objectives and course cohesion.
Faculty members have scientific roles at research institutes, integrating their findings into teaching. Collaboration among teachers spans personal, departmental, faculty, university, and international levels. However, enhancing student and staff mobility is advised. Faculty has updated significantly and attracted new lecturers, promoting involvement in teaching. This has strengthened the team with excellent scientists from partner institutes and supported the growth of existing lecturers. Examples include scientists from Latvian Biomedical Research and Study Centre, BIOR Institute, Institute of Biology, Latvian Institute of Aquatic Ecology and UL Institute of Microbiology and Biotechnology.
Enhancing mobility for students and staff is essential. The AMSP Biology program offers diverse biology disciplines for study and research in labs and the field. International experience can enhance their professional prospects. Most AMSP students previously studied ABSP biology, giving them recognized foundational knowledge at EU universities, facilitating mobility. Particularly at the AMSP Biology level, students should actively pursue international mobility for a wider range of career opportunities. Utilizing programs like ERASMUS and other mobility options is strongly encouraged.
Overall, the assessment of the AMSP Biology program is highly positive. Students hold a favorable view of the program and consider their time invested in studying as valuable. Employers highly value the knowledge and skills acquired at the program and actively seek to hire its graduates. There is a strong demand for professionals completing the program in both national and international job markets, as the skills and knowledge gained are internationally recognized and respected.

Strengths:
1) The AMSP Biology provides knowledge in a specific subdiscipline of biology, at the same time providing an overview of the development of the field as a whole.
2) 92% of the AMSP Biology graduates work in a field related to their speciality; 20-30% of the

graduates continue their doctoral studies both in Latvia and abroad.
3) The teaching staff's involved in the implementation of the AMSP have a scientific position at some of the relevant Latvian scientific institutes, where they carry out active research and then integrate findings of their research into the study process which enables the accomplishment of the study programme's objectives and the linkage of study courses within the study programme.
4) Teaching staff was involved in scientific work that resulted in a high number of scientific publications published in international peer reviewed scientific journals.
5) Students and staff have possibility to use brand new facilities of FB, library, botanical garden, field work facility of Kolka and resources of list of scientific institutes, that collaborate with FB, for the implementation of the study programme and ensuring the achievement of learning outcomes
6) Diverse representation of the subdisciplines of the study programme and high relevance of the students' final theses.
7) Broad spectrum of study methods that greatly contribute to the achievement of the aims of the study programme.

Weaknesses:

1) Funding should be improved to enable sustainability and excellence.
2) Laboratory equipment of FB should be improved to ensure high-level research and development activities
3) Low mobility of teaching staff, students and international teaching staff and students.
4) International cooperation in scientific research has many opportunities for the mobility of teaching staff that should be used more.
5) Alumni network of graduates is a resource that should be used more for networking and promoting the career paths of students of FB and other opportunities offered by FB.

Evaluation of the study programme "Biology"

Evaluation of the study programme:

Excellent

2.6. Recommendations for the Study Programme "Biology"

Short-term recommendations

N/A

Long-term recommendations

1) To ensure sustainability and excellence in the biology master's study program, it is recommended to actively diversify funding sources, including leveraging the Alumni network, for scholarships, investments, and other opportunities, with measurable success gauged by increased financial support and program improvements within the next accreditation period.
2) Identify FB laboratory equipment that would help to support higher level research and teaching activities. After identifying the resources, start their gradual acquisition.

3) To enhance the mobility of teaching staff and students in the AMSP Biology program, it is highly recommended to actively strengthen partnerships, promote collaborations, facilitate student and faculty exchanges, explore funding opportunities for international mobility, and prioritize the utilization of ERASMUS exchange and other mobility programs, with measurable success demonstrated through increased participation in international mobility initiatives within the next accreditation period.
4) To broaden students' perspectives on AMSP study subjects, actively inviting international teaching staff is highly recommended, with measurable success indicated by increased international faculty participation within the next accreditation period.
5) To maximize the potential of the Alumni network as a valuable resource for networking, promoting mobility, and facilitating student career paths within FB, it is recommended to actively develop and leverage the network, with measurable success indicated by increased alumni engagement and support within the next accreditation period.

II - "Natural sciences" ASSESSMENT

II - "Natural sciences" ASSESSMENT

2.1. Indicators Describing the Study Programme

Analysis

2.1.1. DSP Natural Sciences (51421) is included in the study field Wildlife Sciences. The DSP Natural Sciences was created (licensed from 13 October 2020) by consolidating several existing doctoral study programmes in the University of Latvia, all of which belong to the field group of Natural Sciences in accordance with the Cabinet Regulations No. 595 “Regulations on Latvian Scientific Field Groups, Fields and Subfields” (approved 27.09.2022.), but represent different sub-fields of science (Physics and Astronomy, Chemistry, Earth Sciences, Physical Geography and Environmental Sciences, Biology) (SAR, p. 166).
The name of the Doctoral study programme (Natural Sciences) complies with the Cabinet Regulations No. 322 “Regulations on the Classification of Education in Latvia”, Annex 2 (approved 13.06.2017.), where, according to the codes of thematic groups of education (third digit of the code) and thematic areas (third and fourth digits of the code), natural sciences is the thematic group of education (Natural sciences, mathematics and information technologies), which includes thematic areas: life sciences, environmental sciences, physical sciences, mathematics and statistics and computer science). In the Cabinet Regulations No. 595 “Regulations on Latvian Scientific Field Groups, Fields and Subfields” (approved 27.09.2022.) natural sciences is a group of scientific disciplines that includes the following disciplines: mathematics, computer science and information science, physics and astronomy, chemistry, earth sciences, physical geography and environmental sciences, biology and other natural sciences.
Taking into account the above-mentioned Cabinet regulations and the degrees to be awarded (Doctoral Degree of Science Doctor of Science (Ph.D.) in Natural Sciences, Doctoral Degree of Science Doctor of Science (Ph.D.) in Engineering and Technology, Doctoral Degree of Science Doctor of Science (Ph.D.) in Social Sciences (SAR, p. 165) we can conclude that the name of the DSP Natural Sciences corresponds to the content of the study programme.

2.1.2. The name of the study programme DSP “Natural Sciences” corresponds to the content of the programme and combining several existing doctoral study programmes of different sub-fields of science (Physics and Astronomy, Chemistry, Earth Sciences, Physical Geography and Environmental

Sciences, Biology) into one study programme of natural sciences is justified. The study programme provides the possibility to specialise in different subfields of science, but it takes place within the framework of a single study programme (without sub-programmes). The type of the structure of the DSP does not need changes and there is no need to redefine the specializations as sub-programmes. The specialisation and the degree to be obtained, as appropriate, is determined by the research subject selected by the doctoral student by which the doctoral student applies for studies in this programme (SAR, p. 166).
The code of the study programme (51421) does not correspond to the one currently valid according to the Cabinet Regulations No. 322 “Regulations on the Classification of Education in Latvia”, Annex 2 (approved 13.06.2017.). In the SAR (p. 166) the choice of the code 51421 is explained: DSP Natural Sciences: “As the existing legislation in Latvia does not allow the creation of study programme codes representing several fields and subfields at the same time, the DSP "Natural Sciences" has selected the most appropriate and relevant for the fields and programme codes of the study programmes to be consolidated ("Natural Sciences" and study programme code 51421), which is unifying and binding for all specialisations included in the DSP”.
Taking into account the fact that the DSP Natural Sciences in the University of Latvia was created using the experience of doctoral study programmes of the European Union countries in the implementation of studies in natural sciences (biology, physics, geography, geology, physics, environmental science), it is possible that changes are to be made in the legislation.
The aim of the DSP Natural Sciences (to train scientists and academics, as well as professionals in applied research, economic or public management work, whose knowledge, skills, and competence are compliant with the requirements of the international market, taking into account the needs of the Latvian labour market) SAR, p. 166) is very general and does not show the specifics of the DSP Natural Sciences, which consolidated the previous doctoral study programmes "Biology", "Physics, Astronomy and Mechanics", "Geography", "Geology", "Chemistry" and "Environmental Science", and an interdisciplinary approach in the implementation of the study programme, which provides wider opportunities for the improvement and development of the DSP Natural Sciences.
The DSP Nature Sciences is a doctoral study programme and its amount is 144 Latvian credits (CP). The languages of instruction – Latvian and English. The DSP Natural Sciences is implemented in twelve ways (six in latvian (three - full time, three - part time) and six in english (three - full time, three - part time)). Admission requirements and degree to obtain are separate for each specialization:
Specialising in the Natural sciences field Natural Sciences:

1) Degree to be acquired - Doctoral Degree of Science Doctor of Science (Ph.D.) in Natural Sciences
- Previous education in the Natural sciences field Biology: Master's degree in biology, chemistry, forestry, agriculture, as well as medical doctor professional degree or higher education equivalent to those degrees, and entrance examination
- Previous education in the Natural sciences field Physics and astronomy: Master's degree in physics, optometry, chemistry, engineering or referred to degrees equated to higher education, and entrance examination
- Previous education in the Natural sciences field Earth sciences, physical geography and environmental sciences: Master's degree in Natural science, engineering, agricultural sciences, forest sciences or social sciences, or higher education equivalent to those degrees, and entrance examination
- Previous education in the Natural sciences field Chemistry: Master's degree in physics, chemistry, engineering or referred to degrees equated to higher education, and entrance examination
2) Specialising in the Engineering and technology science field Material science:
Master's degree in physics, chemistry, engineering or referred to degrees equated to higher education, and entrance examination.

Degree to be acquired - Doctoral Degree of Science Doctor of Science (Ph.D.) in Engineering and Technology
3) Specialising in the Social Sciences field Social and Economic Geography:
Master's degree in Natural science, social sciences or higher education assimilated to those degrees, and entrance examination.
Degree to be acquired - Doctoral Degree of Science Doctor of Science (Ph.D.) in Social Sciences

The admission requirements to the DSP Natural Sciences in English are the same as in Latvian, but English language skills at least at level B2 are still required.
Admission in doctoral studies takes place centrally. The applicant must submit the topic of the doctoral thesis and supervisor should be agreed upon. The applicant's eligibility is assessed by the doctoral council of the branch of science. The requirements of previous education (master's degree or corresponding higher education) depend on the direction of the DSP “Natural Sciences” in which the applicant intends to specialise (SAR, p. 27).
The objectives of the DSP Natural Science, learning outcomes, and admission requirements are interrelated and meet the requirements of the regulatory enactments of the Republic of Latvia.

2.1.3. The study programme was licensed on 13 October 2020; since licensing the reduction of the learning outcomes is performed and they have been revised to foreground only the main outcomes to be achieved during the study programme and to avoid their fragmentation (SAR p.165).
In accordance with the changes to the Law on Scientific Activities, changes have been introduced to the degrees to be awarded, further granting: Doctoral Degree of Science Doctor of Science (Ph.D.) in Natural Sciences, Doctoral Degree of Science Doctor of Science (Ph.D.) in Engineering and Technology and Doctoral Degree of Science Doctor of Science (Ph.D.) in Social Sciences (SAR p. 165 - 167).
The corrections introduced in the parameters of the DSP Natural Sciences (the degree to be awarded and results of the study programme) are justified and would be supported.

2.1.4. The existence and development of the DSP "Natural Sciences" is very promising from the point of view of the development of the Republic of Latvia, as it is a higher-level study programme that ensures the preparation of specialists in several branches of natural sciences (biology, physics, geography, geology, chemistry, environmental science), contributing to the implementation of the strategy of sustainable development of Latvia (SAR pg 167).
The implementation of the DSP Natural Sciences was started in the autumn semester of 2021, when 54 students were enrolled in the study programme, in 2022, 40 students were enrolled in the study programme (SAR, Annex 24-4-B. Student statistics).
During the expert evaluation visit, the DSP Natural Sciences heads of the study fields were asked to name at least three strong points that resulted from the consolidation of several doctoral study programmes (Physics and Astronomy, Chemistry, Earth Sciences, Physical Geography and Environmental Sciences, Biology) into one study programme Natural Sciences. The following benefits were indicated: development of student skills; increase in cooperation; scientific advisor from another speciality; joint interdisciplinary seminars for students; increase in cooperation; problem approach; provision of interdisciplinary cooperation (SAR pg 168).
The development and implementation of the DSP Natural Sciences is justified and ensures the training of specialists in several branches of natural sciences (biology, physics, geography, geology, chemistry, environmental science), thus contributing to the implementation of Latvia's sustainable development strategy.

2.1.5. N/A

Conclusions on this set of criteria, by specifying strengths and weaknesses

The name of the DSP Natural Sciences, its objectives, learning outcomes, and admission requirements are interrelated and meet the requirements of the regulatory enactments of the Republic of Latvia. Taking into account the fact that the DSP Natural Sciences in the University of Latvia was created using the experience of doctoral study programmes of the European Union countries in the implementation of studies in natural sciences (biology, physics, geography, geology, physics, environmental science), it is possible that changes are to be introduced in the legislation. The study programme provides the possibility to specialise in different subfields of science, but it takes place within the framework of a single study programme (without sub-programmes). The specialisation and the degree to be obtained, as appropriate, is determined by the research subject selected by the doctoral student by which the doctoral student applies for studies in this programme. The main idea and essence of the DSP Natural Sciences is to ensure a unified, interdisciplinary approach to the training of young specialists, the advancement of cooperation between individual research areas, as well as the efficient use of resources. The development and implementation of the DSP Natural Sciences is justified and ensures the training of specialists in several branches of natural sciences, thus contributing to the implementation of Latvia's sustainable development strategy.

Strengths:
1) The study programme provides the possibility to specialise in different subfields of nature science.
2) The development and implementation of the DSP Natural Sciences is justified and ensures the training of specialists in several branches of natural sciences, thus contributing to the implementation of Latvia's sustainable development strategy.

Weakness: not identified

2.2. The Content of Studies and Implementation Thereof

Analysis

2.2.1. The content of the DSP “Natural Sciences” is developed in accordance with the objectives defined in the project “Design of Internationally Competitive Study Programmes Promoting the Development of the National Economy of Latvia at the University of Latvia” of specific support Objective 8.2.1 of the Operational Programme "Growth and Employment" and based on the following external and internal laws and regulations (SAR pg 169, Annex 26_4_B):
- Law on Higher Education Institutions of the Republic of Latvia; (Augstskolu likums (likumi.lv) SAR Annex 25_4_B);
- Cabinet of Ministers Regulation No.595 of 27.09.2022 “Regulations on Latvian Scientific field groups, Scientific Fields and Sub-fields” Noteikumi par Latvijas zinātnes nozaru grupām, zinātnes nozarēm un apakšnozarēm (likumi.lv);
- UL Regulations on Study Programmes and Continuing Education Programmes (UL Senate Decision No. 102 as of 04.2017);
- Regulations on Doctoral Councils and Doctoral Dissertations at the University of Latvia (Order No.1/95 of 12.04.2006.) (SAR pg 169).

According to the Regulations on Latvian Scientific field groups, Scientific Fields and Subfields, Natural Sciences comprises all fields of the consolidated PhD study programmes, namely: Physics and Astronomy, Chemistry, Earth Sciences, Physical Geography and Environmental Science, and Biology.

The study programme highly contributes to several goals of UL Strategy, especially:
1) Internationally recognized research university - the aim of the University of Latvia is to strengthen scientific excellence, as well as promote interdisciplinary, and international research. The UL will expand research in the areas of strategic specialization and priority research directions, participate in the international academic community and increase the proportion of young researchers. The UL will enhance cooperation among researchers, UL structural units and external partners for the implementation of interdisciplinary research. The UL will become an international center for scientific cooperation and development.
2) A unique study offer and high competitiveness of graduates - the aim of the University of Latvia is to develop studies based on science and practice, as well as to significantly expand the offer of international and interdisciplinary studies, using a student-centered and inclusive approach. To promote the excellence of doctoral theses in the branches of science implemented by the University of Latvia is one of the main goals.

This gives the rationale for the importance of implementation of this study programme.
According to the UL Regulations on Study Programmes and Continuing Education Programmes, the DSP "Natural Sciences" is 144 CP. In full-time studies, students acquire 24 CP in each of the six semesters. The part-time studies last eight semesters, each of which provides students with around 18 CP. The Regulations stipulate that the compulsory part of the doctoral study programme consists of studies and the development of a thesis (literature analysis, research, conferences, preparation of publications), a general skills module, doctoral examinations, as well as participation in UL doctoral schools or obtaining equivalent experience in foreign universities (SAR, p. 170).
The compulsory part of the DSP “Natural Sciences” is 120 CP, and it comprises of:
- development of the doctoral thesis (84 CP), presentation of results at conferences (4 CP), and preparation of scientific publications (8 CP);
- three doctoral examinations - an examination in science (4 CP), an examination in the specialty (4 CP), and an examination in English (4 CP);
- participation in doctoral schools (6 CP), assisting in courses (4 CP), and supervising and reviewing student research papers (2 CP).

The volume of the restricted elective part of the DSP “Natural Sciences” is 20 CP, and it includes:
general skills courses - courses in science ethics, science communication, university didactics, cognitive science, publication preparation, project preparation;
a course in scientific English and a course in Latvian (for the programme in English);
Statistics in Natural Sciences (SAR pg 170).
The DSP "Natural Sciences" includes an elective part of 4 CP, as well as additional courses "Civil Protection" and "Environmental Protection" for students who have not completed these specific study courses at the previous stages of education.
The DSP "Natural Sciences" covers the courses required to help doctorate students gain the expertise, knowledge, and abilities required for productive research. The restricted optional courses and the necessary courses are intended to promote interdisciplinarity and give doctorate students general skills that are useful in the workplace. Due to the fact that each student is working on a highly unique research issue, the study programme does not include study courses that are specific to the subfields of science (SAR pg 170).
If the courses and the supporting documentation (certificates, attestations) for them have been approved by the relevant field's Doctoral Study Council, then both required and restricted elective courses may be equivalent to courses at the same level of programmes of study that doctoral candidates have taken or passed at other universities (SAR pg 170).
The field's Doctoral Study Council will decide the focus and length of the doctoral examination. It is required that doctoral candidates take a doctoral examination in a foreign language since it

demonstrates their proficiency in writing scientific articles in that language and giving oral presentations of their research at conferences around the world. The field's Doctoral Study Council may consent, at a doctoral candidate's request, to the conduct of all doctoral examinations in a foreign language. Each PhD applicant must create their own customized study plan in accordance with this programme, which must be authorized by both the field's doctoral study council and the thesis supervisor (SAR pg 170).
The study programme's mapping of the study courses (SAR pg 170, Annex 27_4_B) validates and demonstrates how each study course contributes to the study programme's learning objectives being met. The study courses were created to avoid repetition of material and to guarantee continuity. All study programme outcomes are met in the study courses of the DSP "Natural Sciences," according to the mapping of learning outcomes.
Therefore, it can be said that upon graduation, the PhD student will have fulfilled all of the learning objectives set forth in the study programme. The study courses must be updated at least every three years, taking into consideration student input on the course's content and the most recent scientific findings (SAR pg 170, Annex 26_4_B, 27_4_B) .
The content of the study programme, its courses and modules is interconnected and complementary, corresponds to the objectives of the programme and ensures the achievement of learning outcomes, as well as meets the needs of the industry, labor market and scientific trends. Students have the opportunity to acquire the knowledge, skills, and competence indispensable for successful research in relevant fields. The study program complies with national regulations and state education standard.

2.2.2. The DSP "Natural Sciences" is a consolidation of the six doctoral programmes with long-standing traditions in their respective fields. The study programme covers a number of priority research directions previously identified by the UL and involving doctoral students of the consolidated doctoral programmes, as well as research and theses of the new PhD students related to: (1) Atomophysics, Optical Technologies and Medical Physics; (2) Nano and Quantum Technologies, Innovative materials; (3) Biomedicine, Pharmacy; (4) Climate Change and Sustainable Use of Natural Resources; (5) Ecology and Biodiversity. The research areas are also related to the two areas of strategic specialisation identified in the UL Strategy - (1) Natural Sciences and (2) Medical and Health Sciences (SAR pg 171).
The study programme's influence on research is shown by the fact that, similar to consolidated study programmes, each doctoral student is required to publish academic papers in internationally recognized journals listed in the Web of Science or Scopus databases and to take part in academic conferences in order to successfully defend their thesis. By doing so, they help advance science in a particular field of study. Doctoral students' involvement in teaching, aiding in lessons, and monitoring coursework and undergraduate projects by students in their subject has an impact on other levels of education (SAR pg 171).
In addition to actively publishing, attending conferences, and carrying out studies in all of the aforementioned subjects, the faculty members working on the study programme also involve doctoral students in their publications and projects. See subsections 1.4. and 5.4 for a list of current projects and recent scientific publications by the teaching faculty (SAR pg 171, Annex 9B, 10B, 13B, 14B).
Students have the opportunity to acquire the scientific knowledge, skills, and competence while working with researchers and on the projects implemented by FB, or excellent scientists involved as teaching staff at FB, as well as as researchers at the relevant scientific institutes of Latvia. Gaining research skills and knowledge is crucial for developing a research career. Students have the opportunity to use all the resources available at FB, and relevant scientific institutes of Latvia. The diploma awarded is based on original achievements and findings of the relevant field of science.

2.2.3. The courses and exams use a combination of written, oral, and integrated teaching and assessment approaches. Knowledge is acquired and retained via a range of techniques, including introductory lectures, interactive lectures, summative lectures, and problem-focused lectures. To encourage the integration of theory and practice, specialists from various institutions are asked to speak in certain courses. The utilization of practical exercises, seminars, one-on-one, two-on-two, and group work, discussions, project development, and study trips to businesses in the sector is common. Employers participate in the design and implementation of the study programme by being invited to deliver individual seminars, which are frequently planned as exchange visits to businesses, etc (SAR pg 172).
Students have the chance to examine and thoroughly research problems of interest in the subject in subsequent courses, which helps to support the development of students' research skills. Senior students take part in peer teaching and learning activities. The courses' seminars help students improve their communication, presenting, and conversation abilities (SAR pg 172).
Student-centered concepts guide the learning process so as to attain the learning outcomes, which include acquiring and consolidating knowledge, skills, and developing competence. When carrying out study assignments, resolving actual problems in the field, or simulating scenarios, the learning process employs techniques that encourage students' communication.
The actual setting for learning is also steadily changing, with classrooms being adaptable for group or individual work and students having access to digital tools. The majority of the techniques that lecturers employ urge students to actively participate, think critically, and reflect. The learning process and independent study are supported by the e-learning environment. Students have access to lesson materials, assignment descriptions, study materials linked to the course themes, as well as study tasks to be completed (tests, forums, seminars, conferences, etc.) through an e-learning environment (Moodle) established for each study course. All graded assessments from midterm and final exams are recorded and made available to students in the e-learning environment, along with the explanations for the mark (SAR pg 172).
The student-centered approach is used when updating study programmes and their study courses, paying special attention to the relevant formulation of learning outcomes in order to foster communication between lecturers and students on the subject matter, organizational structures, and teaching strategies.
Learning outcomes that have been properly established encourage students to understand and take responsibility for their own learning, as well as to self-evaluate and comprehend the evaluation they have received. The methods, test formats, and assessment standards used by lecturers during the study process are appropriate for the study goal and the anticipated learning outcomes (SAR pg 172).
Students receive support and feedback from lecturers during the study process. The evaluation standards are made available in advance. Students get the chance to demonstrate their level of achievement of the anticipated learning outcomes through assessment. The tenets of student-centered learning promote student mobility (recognition of learning outcomes), encourage students to participate in research and community-based social activities that are organized by academic staff, and help them gain valuable experience in translating what they have learned in the classroom into the real world. Study programmes are organized in such a way that students are encouraged to actively engage in the development of the study process as part of the internal quality assurance policy. There are policies and procedures in place for resolving complaints and suggestions from students. Student survey responses are assessed and taken into account as the development of the study process. When speaking with lecturers and program directors, students voluntarily provide their thoughts for enhancing the learning process and programmes. (SAR p. 172).

2.2.4. N/A

2.2.5. Each of the fields of science that the DSP "Natural Sciences" brings together has a Doctoral Council - the Doctoral Council of Biology, the Doctoral Council of Physics and Astronomy, the Doctoral Council of Geography, the Doctoral Council of Geology, the Doctoral Council of Chemistry, and the Doctoral Council of Environmental Science. According to the Cabinet of Ministers Regulation No. 1000 "Regulations on the Delegation of the Right to Grant Doctoral Degrees (Promotion) to Higher Education Institutions" (Noteikumi par doktora zinātniskā grāda piešķiršanas (promocijas) tiesību deleģēšanu augstskolām (likumi.lv), the UL has the right to grant degrees in Biology, Physics and Astronomy, Chemistry, Earth Sciences, Physical Geography and Environmental Sciences, Social and Economic Geography. The study programme's teaching staff, thesis supervisors and the UL academic and scientific staff have a sufficient number of Latvian Council of Science (LCS) experts to ensure the work of the Doctoral Councils (SAR p. 173).
The promotion procedure is carried out following the student's successful completion of the study programme (obtained the necessary number of CP, passed the three exams), preparation of a dissertation (a monograph or a collection of articles), and examination (preliminary defense) of the dissertation by the relevant department. The preparation of the documentation, support from the UL Academic Department for the Doctoral Councils in this regard, a report on the dissertation by the author, reports from three reviewers, the author's responses to the reviews, and audience questions make up the promotion process. The Doctoral Council then votes on whether to grant the degree in the concerned scientific discipline (SAR p. 173).

2.2.6. No Doctoral Thesis defense has yet taken place in the DSP "Natural Sciences", as the study programme only started in the academic year 2021/2022. The six PhD study programmes that were consolidated to form the DSP "Natural Sciences" have a total of 187 theses defended in the period 2013-2021 (between 5 and 39 theses in a single year). Of these, 50 theses have been defended in the DSP “Biology”, 42 in the DSP “Chemistry”, 60 in the DSP “Physics, Astronomy and Mechanics”, 10 in the DSP “Geography”, 5 in the DSP “Geology”, and 20 in the DSP “Environmental Science”.
Taking the example of 2021, the thesis in the consolidated study programmes have been developed on topical and practical topics such as: the new concept of structural health monitoring (SHM) of composite part; sapropel for the development of biocomposite materials: properties and application possibilities; to develop sensitive procedures for mass spectrometric determination of glyphosate and its metabolites in different plant and animal origin products, as well in biological and environmental objects; studies contributing to the advancement of non-target mass spectrometry and the development of enzymatic bioassays; identify taxonomic and functional gut microbiome biomarkers as well as epigenetic signatures of the host for metformin pharmacodynamics, therapy efficacy and tolerance.
Some examples of final thesis relevant to the field are “The immunoprotective and diagnostic potential of influenza virus haemagglutinin stalk domain for development of novel vaccine prototypes”, where PhD student was working on a topic published as scientific work in international scientific journal Vaccines. Another example is thesis “Bioloģisko indikatororganismu un pasīvo paraugu ņemšanas iekārtu pielietojums ķīmisko piesārņotāju noteikšanai ar augstas izšķirtspējas masspektrometrijas metodēm”. (lu.lv), where a student was working on a topic published as scientific work in the international scientific journal “Journal of Pharmaceutical and Biomedical Analysis”. Both mentioned journals can be found and are cited by database Scopus.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The DS study programme's content is concurrent, the study courses' and modules' content is connected to one another and complementary, it aligns with the study programme's goals, ensures the achievement of learning objectives, and it satisfies the demands of business, the labor market, and scientific trends. respects national laws (state education standards). The goals of the project

"Design of Internationally Competitive Study Programmes Promoting the Development of the National Economy of Latvia at the University of Latvia" of specific support Objective 8.2.1 of the Operational Programme "Growth and Employment" guided the development of the content of the DSP "Natural Sciences." Degrees are conferred in accordance with the accomplishments and discoveries made in the pertinent areas of science. The study programme contributes to UL Strategy goal achievement, and special attention should be payed in implementation of this study. The study implementation strategies aid in achieving the objectives and learning objectives of the study programme and study courses. Principles of student-centered teaching and learning are taken into account. Students have the chance to examine and thoroughly research problems of interest in the subject in subsequent courses, which helps to support the development of students' research skills.

Strengths:
1) Students have the opportunity to acquire scientific knowledge, skills, and competence while working with researchers and on the projects implemented by FB, or excellent scientists involved as teaching staff at FB, as well as as researchers at the relevant scientific institutes of Latvia.
2) Topics of final theses are relevant to the field and correspond to the study programme and demonstrate their level of achievement by publishing scientific articles in international peer-reviewed scientific journals relevant in the field.

Weaknesses:
1) It would be necessary to revise the name of the study field, because in the current version the name of the DSP Natural Sciences includes a broader concept than the name of study field Wildlife Sciences.

Assessment of the requirement [5] (applicable only to master's or doctoral study programmes)

1 R5 - The study programme for obtaining a master's or doctoral degree is based on the achievements and findings of the respective field of science or field of artistic creation.

Assessment of compliance: Fully compliant

The DS study programme's content is concurrent, the study courses' and modules' content is connected and complementary, it aligns with the study programme's goals, ensures the achievement of learning objectives, and it satisfies the demands of business, the labor market, and scientific trends. respects national laws (state education standards). All criteria are met. The basis of getting the master’s and doctoral degrees is evident. Proof can be found in the Annexes:
9_B_Study_field_Teaching_staff.xlsx
10_B_Teaching_staff_CV.pdf
13_B_scientific_activity_data.pdf
14_B_list_of_publications.pdf
27_4_B_course_descriptions_Natural_sciences_DSP.pdf
A2 – LU disertācijas / Doctoral theses UL

2.3. Resources and Provision of the Study Programme

Analysis

2.3.1. All the resources available at the UL and FB are available for the implementation of the DSP "Natural Sciences". Financial provision is analysed in point 5.3.3 of this report. Unified computer plagiarism system is in place (SAR pg 33 and 34, Annex Par_plagiata_kontroli.pdf). The faculties implementing the DSP "Natural Sciences", as well as the scientific institutes associated with the

field, have at their disposal modern equipment in all fields of natural sciences, which in many cases is unique not only at the national level, but also in the Baltics or a wider region (SAR pg 174). Examples of the most valuable equipment include a closed-loop, liquid cryogen-free device for measuring physical properties; an X-ray diffractometry system; an inductively coupled plasma triple quadrupole mass spectrometer ICP-QQQ; a single frequency titanium-sapphire laser system with frequency doubling, variable wavelength, high power solid state laser; liquid chromatograph with TOF detector; a CELL IQ v2 SLF System for live cell research, visualization and functional characterisation; an isotope ratio mass spectrometer for elemental analysis; a frequency comb, material testing system MTS 5T and MTS 809.40; a probe scanning microscope; a Nikon C2 PLUSS confocal microscope system with a Ti-E fluorescence microscope; TEM 2100A tritium and noble gas monitors; a Tri-Carb 2900TR liquid scintillator spectrometer; a Hositrad MGT 6-300 thermal desorption multi-gas analyser with 1-300 amu and 1-6 amu mass spectrographs, etc. Special collections for research are also available, and they are a biological agent collection, an entomological collection, a herbarium, a microorganism culture collection, the collections of the UL Botanical Garden. Additionally, for research the access to common facilities of the National Research Centres located in various Latvian scientific institutions is provided. The UL provides access to the necessary scientific databases, including SpringerLink, ScienceDirect, Scopus and Web of Science. The library provides the Primo Discovery database search tool, which allows searching for literature by subject in all available databases (SAR pg 174 -175).
The teaching staff collaborated on the design of the new study programme and the courses to be included in it. Any changes in the programme plan, courses and their content will be subject to consultation of the teaching staff involved in the implementation of the programme, the Directors of the consolidated doctoral programmes, as well as to review by the SF LS Council. This will ensure that there is no overlap between the content of the courses, and that the principles of student-centered education are respected in the design of the courses. The study programme has one study programme director, but since the study programme covers six fields, each field currently has its own Doctoral Study Council. The programme director is responsible for working with the Doctoral Study Councils as well as secretaries of the councils. (SAR pg 184) The academic staff implementing the doctoral programme participate in both local and international research projects. There is a list of projects implemented at the UL with the programme's faculty members as project leaders or principal investigators in the period 2020-2021 (SAR pg 183). For the individual involvement of each faculty member in research projects, see the CVs of the faculty members (Annex 10B).
According to the site visit interviews they have necessary resources at site and are supported financially by supervising institutions. Thus, the information base, the material and technical base and the methodological and scientific support by supervisors enable for the implementation of the study programme. However there is space for improvement necessary to maintain the excellence in research. Laboratory equipment of FB should be improved to ensure high-level research and teaching activities that require more funding from various resources. Brand new facilities should be equipped more to ensure the excellence-oriented research in which students are involved and to create a support system and promote cooperation among researchers, UL structural units and external partners for the implementation of internationally competitive interdisciplinary research and teaching. This is especially important at this level of studying, where students need to develop original, innovative research that will contribute to the economy based on knowledge. Studying at DPS level is research-based in the field of Natural Sciences. Alumni network of graduates, is a resource that should be used more for networking and promoting the career paths of students.

2.3.2. The UL provides access to the necessary scientific databases, including SpringerLink, ScienceDirect, Scopus and Web of Science. The library provides the Primo Discovery database search tool, which allows searching for literature by subject in all available databases. In addition, doctoral students have access to the study and scientific resources of the research institutes where

their theses are being developed (SAR pg 175). In addition, doctoral students have access to the study and scientific resources of the research institutes where their theses are being developed (SAR pg 175). Among the institutes where doctoral theses are developed are the following UL research institutes: the UL Institute of Astronomy, the UL Institute of Atomic Physics and Spectroscopy, the UL Institute of Biology, the UL Institute of Geodesy and Geoinformatics, the UL Institute of Physics, the UL Institute of Chemical Physics, the UL Institute for Mechanics of Materials, the UL Institute of Microbiology and Biotechnology; the UL Institute of Solid State Physics. Dissertations (with appropriate access to resources) are also developed in the following scientific institutes: the Latvian Institute of Organic Synthesis, the Biomedical Research and Study Centre, the Scientific Institute of Food Safety, Animal Health and Environment "BIOR", the Latvian State Forest Research Institute "Silava". Even though the cooperation of the FB and relevant Latvian scientific institutes is evident, both staff and students should use more of the options of international collaboration. PhD Studies are an important step in the development of a scientific career. It is highly recommended to have international professional experience at this level; thus, FB is encouraged to offer students opportunities for national and international collaboration using all the resources available: current collaborations, strengthened partnerships, actively seeking to establish and enhance partnerships with international educational institutions and scientific institutes, development of joint research projects, promote the exchange of teaching staff and students, seeking for grants, scholarships, or sponsorships dedicated explicitly to supporting teaching staff and student exchanges. Any topic in natural sciences requires collaboration with the international scientific community; therefore, international cooperation is strongly encouraged at this level of the DSP study. It should also be used for broadening the perspective for career development and alumni network as a valuable resource that should be better developed and used to network and promote the career path of students of FB.

2.3.3. To provide the funding needed for the implementation of the DSP "Natural Sciences", the UL uses the state budget subsidy from the Ministry of Education and Science, set at EUR 9292 for full-time studies for the academic year 2021/2022 and the tuition fees full-time studies - EUR 2134 per year; for foreigners, full-time studies - EUR 6500 and part-time studies - EUR 5000 (SAR pg 175).
In order to estimate the number of funds required for financial support, the UL calculates the cost price for study programmes according to a methodology developed by the UL. For calculating costs, the implementers of the DSP “Natural Sciences” use the data of the 57 students studying in the programme full time in the academic year 2021/2022, the existing programme plan and the existing structure of the academic staff involved in the study programme. Given the information above, the estimated full-time cost of the study programme per student is EUR 8654 per year, and the total cost of the study programme is EUR 493 278 per year (SAR pg 176).
Teaching staff costs 30,7% and general staff 8.4% of total. The data shown in the SAR pg 129, Table 3.3.3 prove that the UL has sufficient funds to implement the study programme and further its development. In addition, the development of the study programme can be financed from the income received from lifelong learning and other services, as well as from the financial resources accumulated by the structural unit. Faculties also receive financial support for programme development from the UL Study Quality Improvement Fund.
However, based on the offered materials the costs of the study programme are not transparent. It is unclear how much money is shared for PhD students as grants and if students can efficiently work and deliver excellent results and maintain research activities. The state subsidiary 9292*(100-30.7-8.4)/100/12 supports research and survival only by 470 EUR/month as a maximum. That indicates that PhD studies should largely be financed by research money that, due to the competition, makes a volatile source. The main goal of DSP studies is to develop highly skilled professionals who will create innovative, competitive research results that can be published in international peer-reviewed journals, create innovative products and methods, and contribute to

economic growth. In this context, it is essential to mention the cooperation of teaching staff with international colleagues. PhD Studies are an essential step in developing the scientific career of DPS students. Financial resources should be improved to assure sustainability and excellence. Diversification in funding and using the Alumni network to find funding opportunities, like scholarships, investors, and other possibilities, could be helpful. This programme implementation fulfills the goals of UL Strategy of having a unique study offer and high competitiveness of graduates, and the implementation of the study programme is an innovative and research-based study where the involvement of students in research is a crucial part of the implementation of the study (LU_strategija_buklets_2021.pdf, p. 16). To achieve these goals, and primarily to ensure the excellence of doctoral theses in the branches of science implemented by the University of Latvia, it is necessary to have sustainable financial resources that will strengthen scientific excellence in strategic areas of specialization and research priorities and increase research capacity, including capacity in the fundamental sciences, which are as well UL Strategy goals. Growing financial resources, especially at this level of the study, is very important for achieving UL Strategy goals and economic improvement based on the knowledge. Funding resources distribution should be transparent and sustainable and promote excellence in research. Studying at the DPS level is research-based in the field of Natural Sciences. This requires funding resources that will ensure finishing the Ph.D. thesis and the creation of innovative products. It is unclear how financial resources provide research activities, participation in international projects, publication of scientific articles, preparation of international project applications, organization of scientific events, implementation of research development projects, and long-term commitments.

Conclusions on this set of criteria, by specifying strengths and weaknesses

The study provision, scientific provision, informative provision, material and technical provision, and financial provision comply with the requirements for implementing the study programme, sets up the conditions for achieving the learning outcomes, and suggest the possibility of ensuring a high-quality learning experience. Even though the infrastructural facilities are new, laboratory equipment should be improved to enable excellence in research and sustainability of the programme. The DSP "Natural Sciences" can be implemented using all of the resources offered by the UL and FB. However, the scientific institutes connected to the DSP "Natural Sciences" and the faculties implementing it have access to cutting-edge technology in every area of the natural sciences, which is frequently unmatched not just nationally but even within the Baltic States or a larger geographic area. This is a valuable resource for DSP. The study programme has a minimum of students required to ensure the profitability of the study programme (by separately indicating the different implementation options of the study programme). Funding available to the study programme are not transparent; funding sources should be higher to ensure sustainability and excellence. It is unclear how much money is shared for PhD students as grants, and whether students can efficiently work, deliver excellent results, and maintain research activities.

Strengths:
1) Large number of well-equipped scientific institutions the students carry out their PhD research and have access to cutting-edge technology in every area of the natural sciences, which is frequently unmatched nationally and even within the Baltic States or a larger geographic area.

Weaknesses:
1) The laboratory equipment of FB should be improved to ensure high-level research and development activities.
2) The costs of the study programme are not transparent. Funding opportunities seem low, and financial support to PhD students is unclear.

3) Low mobility of students and teaching staff.
4) Alumni network of graduates, is a resource that should be used more for networking and promoting the career paths of students

Assessment of the requirement [6]

1 R6 - Compliance of the study provision, science provision (if applicable), informative provision (including library), material and technical provision and financial provision with the conditions for the implementation of the study programme and ensuring the achievement of learning outcomes

Assessment of compliance: Partially compliant

Financial support for Ph.D. students is not transparent, and does not ensure their sustainability and excellence in long term commitment of PhD studies.

2.4. Teaching Staff

Analysis

2.4.1. The compliance of the teaching staff is checked with the requirements for the implementation of the study programme and regulatory enactments and it fully complies.
Detailed information of the compliance can be found in the document “Biographies of Teaching Staff though 22 academic staff members are involved in the implementation of the doctoral study programme (DSP) "Natural Sciences". Of all the staff involved in the study programme, 13 are Professors, five Associate Professors, two senior researchers and one Docent. All academic staff members involved in the implementation of the DSP "Natural Sciences" have a doctoral degree in: Biology (4), Philology (1), Philosophy (1), Physics (3), Geography (4), Geology (3), Chemistry (3), Pedagogy (2), and Sociolinguistics (1). 20 members of academic staff have a current status of expert in the LCS (SAR p. 178).
The English language skills of the academic staff involved in the implementation of the study programme allow them to teach courses also in English. The knowledge of the state language of the academic staff employed in the study programme complies with the regulations on the scope of knowledge of the state language and the procedure for testing the knowledge of the state language for the performance of professional and official duties, and allows for teaching study courses in the state language (SAR pg 178).
As it is shown in the document “Biographies of Teaching staff” they have experience of scientific work both as authors of national and international scientific publications and as participants in the implementation of research projects, like “LIFE Integrated projects”, “Latvian Science Council projects” and others. This generally confirms the qualifications of the teaching staff involved in the study process to be highly appropriate for achieving the aim and objectives of the study programme (SAR p. 178).

2.4.2. As it is indicated in the document “Head of the study field declaration” since the licensing of the study programme, one professor has been added to the teaching staff due to the inclusion of a new study course “Project management in research and development” in the study programme. This professor's scientific (Latvian Council of Science expert in three fields, about 120 publications indexed in the Scopus database) and pedagogical experience is in line with the requirements of the doctoral study programme and greatly benefits it (SAR pg 179).
The study programme is therefore positively affected.

2.4.3. 22 Doctors participate in the implementation of the study programme, 20 of whom are LCS experts. In 2020 and 2021, the faculty members of the study programme co-authored 209 scientific

publications indexed in Scopus (SAR pg 179).
For example:
- Alves F., Leal Filho W., Casaleiro P., Nagy G.J., Diaz H., Al-Amin A.Q., de Andrade Guerra J.B.S.O., Hurlbert M., Farooq H., Klavins M., Saroar M., Lorencova E.K., Suresh J., Soares A., Morgado F., O'Hare P., Wolf F., Azeiteiro U.M., 2020. Climate change policies and agendas: Facing implementation challenges and guiding responses. Environmental Science and Policy: 104. DOI:10.1016/j.envsci.2019.12.001
- Krisans O., Matisons R., Rust S., Burnevica N., Bruna L., Elferts D., Kalvane L., Jansons A., 2020. Presence of root rot reduces stability of Norway spruce (Picea abies): Results of static pulling tests in Latvia. Forests: 11. DOI:10.3390/F11040416
- Rendenieks Z., Nita M.D., Nikodemus O., Radeloff V.C., 2020. Half a century of forest cover change along the Latvian-Russian border captured by object-based image analysis of Corona and Landsat TM/OLI data. Remote Sensing of Environment: 249. DOI:10.1016/j.rse.2020.112010

All publications including above mentioned can be considered to be contributing to the implementation of a high quality doctoral study programme.
The academic staff implementing the doctoral programme participate in both local and international research projects. The number and volume of scientific project applications and funding has increased with the expansion of national science-funding competitions. Most research projects are interdisciplinary and involve researchers from both the UL and other higher education institutions and research institutes in Latvia. The number and volume of contract research projects in cooperation with Latvian high-tech companies is increasing (SAR pg 21). The table at page 183 of SAR, shows the most important projects implemented at the UL with the programme's faculty members as project leaders or principal investigators in the period 2020-2021. The list has 17 different projects and 12 researchers involved in the projects. New projects represent an excellent opportunity to involve PhD students in research activities and contribute to the learning outcomes of DPS study programme in Natural Sciences. The main goal of DSP studies is to develop highly skilled professionals who will create innovative, competitive, research results, possible to publish in international peer-review journals and creation of innovative products and methods and contribute to the economy growth. Involvement in research- related projects of the academic staff involved in the implementation of the doctoral study programmes contribute to the implementation of a doctoral study programme. For the individual involvement of each faculty member in research projects, see the CVs of the faculty members (SAR 183, Annex 9-B, 10-B, 13-B, 14-B).

2.4.4. By the analysis of the document “List of publications of Study field teaching staff” and check of SCOPUS database it was verified that each member of the academic staff has at least one publication in peer-reviewed edition, including international editions as it is required by the law. In fact most of them have a significantly bigger count of publications which is a great indicator of a good will for excellence and contribution to achieving the learning outcomes by students of DSP Natural Sciences. The quality of research work is reflected in the growing number of scientific publications, as well as in the increase in bibliometric indicators (H-index, number of citations, etc.) of lecturers. Students are often involved in the preparation of publications (SAR pg 21).

2.4.5. During the interviews with the study programme director and the teaching staff it was concluded that the teaching staff is going to collaborate on the design of the new study programme and the courses to be included in it. Regular meetings will be held to discuss the courses to be included and their content. Any changes in the study programme plan, courses and their content will be subject to consultation of the teaching staff involved in the implementation of the study programme, the directors of the consolidated doctoral programmes, as well as to review by the SF WLS Council. This will ensure that there is no overlap between the content of the courses, and that

the principles of student-centered education are respected in the design of the courses (SAR pg 184).
The study programme has one study programme director, but since the study programme covers six fields, each field currently has its own Doctoral Study Council. The study programme director is responsible for working with the Doctoral Study Councils as well as secretaries of the councils.
The main goal of DSP studies is to develop highly skilled professionals who will create innovative, competitive, research results, possible to publish in international peer-review journals and creation of innovative products and methods and contribute to the economy growth. In this context it is important to mention the cooperation of teaching staff with international colleagues. PhD Studies are an important step in development of the scientific career of DPS students. International professional experience at this level is important for diversification of knowledge and skills, and attainment of talents and professional interests of PhD students. The mobility using all the resources available: current collaborations, strengthen partnerships, actively seek to establish and enhance partnerships with international educational institutions and scientific institutes, development of joint research projects, promote exchange of teaching staff and students, seeking for grants, scholarships, or sponsorships specifically dedicated to supporting teaching staff and student exchanges, develop exchange programmes that provide faculty members and students with opportunities to spend a semester or academic year abroad, as mentioned already in recommendation for study field. Any topic in natural sciences requires collaboration with the international scientific community, therefore international mobility is strongly encouraged on this level of the DSP study. All forms of communication channels should be used to disseminate information about opportunities for mobility. Mobility should also be used for broadening the perspective for career development and attraction of international students and staff.

Conclusions on this set of criteria, by indicating strengths and weaknesses

The qualifications of the teaching staff members involved in the implementation of the study programme comply with the requirements for implementation of the study programme and the requirements set out in the regulatory enactments, and they enable the achievement of the aims and learning outcomes of the study programme and the relevant study courses. The UL takes precautions to ensure that changes in the composition of the teaching staff do not adversely influence the quality of the study programme's execution or the study programme's adherence to the regulations outlined in enactments of regulatory bodies. The academic staff implementing the doctoral programme participate in both local and international research projects. The number and volume of scientific project applications and funding has increased with the expansion of national science-funding competitions. The list has 17 different projects and 12 researchers involved in the projects. New projects represent an excellent opportunity to involve PhD students in research activities and contribute to the learning outcomes of DPS study programme in Natural Sciences. The new study programme's design and the courses included in it were developed in collaboration with the teaching staff. The main goal of DSP studies is to develop highly skilled professionals who will create innovative, competitive research results, possible to publish in international peer-reviewed journals and create innovative products and methods and contribute to the economic growth based on knowledge. It is essential to mention the cooperation of teaching staff with international colleagues. PhD Studies are an important step in developing the scientific career of DPS students. International professional experience at this level is important for the diversification of knowledge and skills, and the attainment of talents and professional interests of PhD students is highly recommended.

Strengths:
1) Large contribution of the teaching staff to the scientific publications.

2) New scientific projects at FB in which Ph.D. students can be involved in research activities
3) Designing programme the planned changes in the structure of the administrative structure of UL are taken into account

Weaknesses:
1) Low mobility of teaching staff

Assessment of the requirement [7]

1 R7 - Compliance of the qualification of the academic staff and visiting professors, visiting associate professors, visiting docents, visiting lecturers and visiting assistants with the conditions for the implementation of the study programme and the requirements set out in the respective regulatory enactments.

Assessment of compliance: Fully compliant

All criteria are met. Proof can be found in the Annexes:
10-A. Biographies of Teaching staff. 29_B_number_doctors_Natural_sciences_DSP.pdf
30_4_B_section_55_Natural_sciences_DSP.pdf

2.5. Assessment of the Compliance

Requirements

1 1 - The study programme complies with the State Academic Education Standard or the Professional Higher Education Standard

Assessment of compliance: Not relevant

2 2 - The study programme complies with a valid professional standard or the requirements for the professional qualification (if there is no professional standard required for the relevant occupation) provided if the completion of the study programme leads to a professional qualification (if applicable)

Assessment of compliance: Not relevant

3 3 - The descriptions of the study courses and the study materials have been prepared in all languages in which the study programme is implemented, and they comply with the requirements set forth in Section 561 , Paragraph two and Section 562 , Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Fully compliant

Study course descriptions and study materials are prepared in Latvian and English languages, and they satisfy requirements set in Law on Higher Education Institutions.
See SAR annex:
27_4_B_course_descriptions_Natural_sciences_DSP.

4 4 - The sample of the diploma to be issued for the acquisition of the study programme complies with the procedure according to which state recognised documents of higher education are issued.

Assessment of compliance: Fully compliant

The diploma issued complies with the state legislature and “Procedures by which documents certifying higher Education recognised by the State shall be issued” (Cabinet of Ministers No.202).
See SAR annex: 20_4_B_diploma_Natural_Sciences_DSP.

5 5 - The academic staff of the academic study programme complies with the requirements set forth in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions.

Assessment of compliance: Fully compliant

The declaration that the academic staff of the academic study program meets the requirements set out in the third paragraph of the first part of Article 55 of the Law on Higher Education Institutions can be found in the SAR annex:
30_4_B_section_55_Natural_sciences_DSP.

6 6 - Academic study programmes provided for less than 250 full-time students may be implemented and less than five professors and associated professors of the higher education institution may be involved in the implementation of the mandatory and limited elective part of these study programmes provided that the relevant opinion of the Council for Higher Education has been received in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions.

Assessment of compliance: Not relevant

7 7 - At least five teaching staff members with a doctoral degree are among the academic staff of an academic doctoral study programme, at least three of which are experts approved by the Latvian Science Council in the respective field of science. At least five teaching staff members with a doctoral degree are among the academic staff of a professional doctoral study programme in arts (if applicable).

Assessment of compliance: Fully compliant

The academic staff of the doctoral study programme “Natural sciences” complies with the provisions set out in Section 55, Paragraph one, Clause three of the Law on Higher Education Institutions because more than five persons with a doctoral degree are involved in the implementation of this academic doctoral study programme and among them 20 experts are approved by the Latvian Council of Science.
See SAR annex: 29_B_number_doctors_Natural_sciences_DSP.

8 8 - The teaching staff members involved in the implementation of the study programme are proficient in the official language in accordance with the regulations on the level of the official language knowledge and the procedures for testing official language proficiency for performing professional duties and office duties.

Assessment of compliance: Fully compliant

The academic staff has sufficient Latvian language knowledge for implementing study courses, see SAR annex: 11_1_2_B_latvian_language_Biology_Biotechnology_Natural_sciences.

9 9 - The teaching staff members to be involved in the implementation of the study programme have at least B2-level knowledge of a related foreign language, if the study programme or any part thereof is to be implemented in a foreign language (if applicable).

Assessment of compliance: Fully compliant

The academic staff has sufficient foreign language knowledge for implementing study courses.
See SAR annex: 12_1_2_B_english_Biology_Biotechnology_Natural_sciences.

10 10 - The sample of the study agreement complies with the mandatory provisions to be included in the study agreement.

Assessment of compliance: Fully compliant

Study agreements include all necessary parts set in legislation.

See the SAR annex:
7_B_Standard_samples_of_study_agreement.

11 11 - The higher education institution / college has provided confirmation that students will be provided with opportunities to continue their education in another study programme or another higher education institution or college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.

Assessment of compliance: Fully compliant

University has a record order as confirmation that in case the implementation of this study programme is terminated, doctoral study programme Natural sciences (51421) will be discontinued, but students will be able to continue studies in the Daugavpils university doctoral study programme “Biology”.
See SAR annex: 5_B_agreement_LU_DU.docx

12 12 - The higher education institution / college has provided confirmation that students are guaranteed compensation for losses if the study programme is not accredited or the study programme’s license is revoked due to the actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.

Assessment of compliance: Fully compliant

University has a rector's order that confirms it will compensate losses to students if the study programme is not accredited or loses its license and the student does not wish to continue studies in another study programme.
See SAR annex: 6_B_guarantees_compensations.

13 13 - The joint study programmes comply with the requirements prescribed in Section 55.(1), Paragraphs one, two, and seven of the Law on Higher Education Institutions (if applicable)

Assessment of compliance: Not relevant

14 14 - Compliance with the requirements specified in other regulatory enactments that apply to the study programme being assessed (if applicable)

Assessment of compliance: Fully compliant

The study program complies with the specific regulatory framework of the relevant study field, see SAR annex: Annex 25-4-B (Correspondence of the study programme to the normative regulation, in case of doctoral study programme)

Assessment of the requirement [8]

1 R8 - Compliance of the study programme with the requirements set forth in the Law on Higher Education Institutions and other regulatory enactments.

Assessment of compliance: Fully compliant

The requirement has been met and fulfilled, and all requirements set in different regulatory enactments are satisfied.

General conclusions about the study programme, indicating the most important strengths and weaknesses of the study programme

The DSP Natural Sciences aligns its name, objectives, learning outcomes, and admission requirements with Latvian regulations. Considering its development based on EU doctoral programs

in natural sciences (biology, physics, geography, geology, environmental science), legislative adjustments may be needed. The program offers specialization in various science subfields without sub-programs.

The choice of specialization and the degree obtained depend on the research subject chosen by the doctoral student when applying for this program. Course descriptions and materials are available in both English and Latvian, complying with legal requirements. Graduates of the program are awarded a Ph.D. in Natural Sciences, Engineering and Technology, or Social Sciences upon completion. The DSP Natural Sciences aims to promote interdisciplinary training, enhance collaboration across research areas, and optimize resource utilization. Its development supports the training of specialists in various natural science fields, aligning with Latvia's sustainable development strategy.

The DSP content is up-to-date, with interconnected and complementary study courses and modules that align with program goals, ensuring learning objectives are met. It also meets business, labor market, and scientific trends while adhering to national laws. Degrees are awarded based on achievements in relevant scientific areas, and implementation strategies support program objectives and student-centered learning principles. Students have opportunities for in-depth research in subsequent courses, enhancing their research skills.

The academic staff meets legal requirements and language proficiency standards. The study program aligns with Field criteria and regulations. Changes in staff are carefully managed to maintain program quality and regulatory compliance. The program and courses were developed collaboratively with the teaching staff.

Students are actively engaged in numerous of research projects and research teams, but there is need for improvement of the FB laboratory equipment to ensure excellence in the research. Faculty staff involved in the doctoral program contribute to both local and international research projects, The number and volume of scientific project applications and funding has increased with the expansion of national science-funding competitions. The program was designed collaboratively with faculty, emphasizing the value of international cooperation.

PhD Studies are an essential step in developing the scientific career of DPS students. It is important for Ph.D. students to have an international professional experience at this level, enhancement of their scientific career, and attainment of talents and professional interests.
Collaboration with Latvian institutes and EU grants offers international exposure, which should be further utilized. Students underutilize these opportunities. Scientific, professional, and generic competencies of teachers ensure the implementation of the study programme to the highest standards, with the curriculum based on relevant scientific knowledge. Funding opportunities are not transparent and it is unclear if they contribute to the excellence in research. So far, they seem low, and financial support to PhD students is unclear.

Strengths:
1) Students can acquire scientific knowledge, skills, and competence while working with researchers and on the projects implemented by FB, or excellent scientists involved as teaching staff at FB, as well as as researchers at the relevant scientific institutes of Latvia.
2) Topics of final theses are relevant to the field and correspond to the study programme and demonstrate their level of achievement by publishing scientific articles in international peer-reviewed scientific journals relevant in the field. Large contribution of the teaching staff to the scientific publications.
3) Designing the study programme probable changes in the administrative structure of UL are taken

into account.
4) The study programme provides the possibility to specialize in different subfields of nature science.
New scientific projects at FB in which PhD students can be involved in research activities.
5) The development and implementation of the DSP Natural Sciences is justified and ensures the training of specialists in several branches of natural sciences, thus contributing to the implementation of Latvia's sustainable development strategy.

Weaknesses:
1) It would be necessary to revise the name of the study field because in the current version the name of the DSP Natural Sciences includes a broader concept than the name of the study field Wildlife Sciences.
2) The laboratory equipment of FB should be improved to ensure high-level research and development activities.
3) The costs of the study programme are not transparent. Funding opportunities seem low, and financial support to PhD students is unclear.
4) Low mobility of students and teaching staff.
5) Alumni network of graduates is a resource that should be used more for networking and promoting the career paths of students

Evaluation of the study programme "Natural sciences"

Evaluation of the study programme:

Good

2.6. Recommendations for the Study Programme "Natural sciences"

Short-term recommendations

1) To align the study field name with its content and ensure clarity, it is recommended to initiate a revision process for the study field name "Wildlife Sciences" to accurately reflect the broader concept encompassed by the DSP Natural Sciences name, with measurable success determined by the implementation of a revised study field name within the next 2 years.

Long-term recommendations

1) To ensure transparency, sustainability, and excellence in research-based DSP studies in Natural Sciences, it is recommended to establish clear financial resource allocation mechanisms, providing ample funding to support research activities, international projects, publications, project applications, scientific events, research development projects, and long-term commitments, with measurable success demonstrated through a transparent and sustainable financial framework implemented within the next accreditation period.
2)To enhance research infrastructure, capacity, and collaboration in the field of Natural Sciences, it is recommended to develop a comprehensive range of collaborative opportunities for business and professional organizations, with measurable success determined by increased research projects and capacity, to be achieved within the next accreditation period.

3) To significantly enhance the mobility of students and teaching staff in DSP Natural Sciences, it is recommended that FB actively utilize existing collaborations, strengthen partnerships, seek grants and scholarships, develop exchange programs, and employ various communication channels to promote and facilitate international mobility opportunities, with measurable success indicated by increased participation and engagement within the next accreditation period.
4) To fully harness the potential of the Alumni network as a valuable resource for networking and supporting students' career paths within FB, it is recommended to actively develop and leverage this network, with measurable success indicated by increased alumni engagement and support within the next accreditation period.

III - Assessment of the Requirements for the Study Field and the Relevant Study Programmes

III - Assessment of the Requirements for the Study Field and the Relevant Study Programmes

Assessment of the Requirements for the Study Field

Requirements	Requirement Evaluation			Comment
R1 - Pursuant to Section 5, Paragraph 2.1 of the Law on Higher Education Institutions, the higher education institution/ college shall ensure continuous improvement, development, and efficient performance of the study field whilst implementing its internal quality assurance system:	Fully compliant			UL ensures improvement, development and operational efficiency of the study field (https://www.lu.lv/en/)
R2 - Compliance of scientific research and artistic creation with the level of development of scientific research and artistic creation (if applicable)	Fully compliant			UL teaching staff actively participate in scientific research. Proof can be found in the Annex13_B_scientific_activity_data.pdf and Annex 14 B 14_B_list_of_publications.pdf

Requirements	Requirement Evaluation		Comment
R3 - The cooperation implemented within the study field with various Latvian and foreign organizations ensures the achievement of the aims of the study field.		Partially compliant	The current lack of mobility and motivation among students and teaching staff highlights an opportunity for the study field to strengthen its collaboration efforts with various organizations, both within Latvia and abroad, to better align with its aim and provide a more enriching educational experience. A large proportion of FB students participate in research and prepare a final thesis in other institutes of LU and academic institutions of Latvia. Proof can be found in the Annexes: 15_B_list_of_agreements.pdf16_B_foreign_students_teaching_staff.pd 17_B_student_mobility.pdf 18_B_teaching_staff_mobility.pdf
R4 - Elimination of deficiencies and shortcomings identified in the previous assessment of the study field, if any, or implementation of the recommendations provided.		Partially compliant	Majority of recommendations from the previous reaccreditation were taken into account there still is a low number of incoming and outgoing teachers, and international students. It is important to allocate significantly more resources and focus on improving mobility for both teaching staff and students to enhance integration with the global academic community, thereby boosting competitiveness and avoiding the negative consequences of limited mobility. Proof can be found in Annex 19_B_Report impementation_recommendations.pdf

Assessment of the Requirements for the Relevant Study Programmes of the Study Field

No.	Study programme	R5	R6	R7	R8	Evaluation of the study programme (excellent, good, average, poor)
1	Biology (43421)	Not relevant	Fully compliant	Fully compliant	Fully compliant	Excellent
2	Biotechnology and Bioengineering (43421)	Not relevant	Fully compliant	Not relevant	Fully compliant	Good
3	Biology (45421)	Fully compliant	Fully compliant	Fully compliant	Fully compliant	Excellent
4	Natural sciences (51421)	Fully compliant	Partially compliant	Fully compliant	Fully compliant	Good

The Dissenting Opinions of the Experts

N/A