APPLICATION

Study field "Wildlife Sciences" for assessment

Study field	Wildlife Sciences
Title of the higher education institution	Rīgas Stradiņa universitāte
Registration code	3341702042
Legal address	DZIRCIEMA IELA 16, KURZEMES RAJONS, RĪGA, LV-1007
Phone number	67409230
E-mail	RSU@rsu.lv

Self-evaluation report

Study field "Wildlife Sciences"

Rīga Stradiņš University

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1. Information on the Higher Education Institution/College

1.1. Basic information on the higher education institution/ college and its strategic development fields,.

Rīga Stradiņš University (RSU, information in Latvian, English) is a state-established higher education and research institution under the supervision of the Ministry of Health of the Republic of Latvia and has been closely integrated into the national healthcare system already since 1950. On 15 April 2002, RSU was registered with the Register of Higher Education Institutions, registration No. 3341702042. It was accredited on 13 December 2001. RSU is the third largest university in Latvia with a pronounced international orientation – about 25% of all RSU students are international students. RSU's registered office is Dzirciema iela 16, Riga, but RSU study programmes are implemented also at other addresses. For example, RSU has one branch at Riņķu iela24/26, Liepāja, which is fully suitable for the work of the university. Lecture auditoriums and rooms are equipped with modern equipment, ensuring high-quality study process, including online lectures.

RSU is one of the best higher education institutions in Latvia, as evidenced, for example, by various international university rankings. RSU is the highest of all Latvian higher education institutions in the Times Higher Education (THE) World University Rankings (501-600). RSU's health studies are ranked high in THE Clinical and Health ranking, which places RSU 401th-500th. RSU scored the most in international outlook (80.2) making it the leader in this category among all the universities of Baltic countries included in this ranking. In QS World Universities 2022, RSU is 801th-1000th in the world. It is the second best indicator among Latvian higher education institutions. In the U-Multirank World University Rankings 2022, RSU obtained 12 "very good" (A) assessments, and nine (B) assessments, while in the U-Multirank World University Ranking 2021-2022 by Subject – medicine, RSU obtained nine (A) assessments, as well as was nominated in the Innovative forms of assessment and was ranked 25th among the best universities of the world. RSU was also ranked high in the world in the *SCImago Institutions Rankings 2022,* an international ranking of academic and research institutions, where it is the 1st in Latvia and 641st in the world (35 places up compared to 2021).

For six years, RSU has been recognised as the highest-quality university with the best reputation in Latvia in the higher education reputation survey by *Kantar TNS.* The value of the RSU diploma is consistently valued among the population of Latvia, and in 2022 the assessment of the ability of the institution of higher education to provide students with the necessary knowledge and skills in the labour market and the scientific activity of the university has increased.

The RSU **vision** is to be a leading science university in Europe, where talent is concentrated and where excellent research- and practice-based education and experience are provided. The RSU **mission** is to ensure the creation, accumulation and transfer of knowledge valued by the international scientific community and to offer excellent, inclusive and sustainable educational opportunities in the health, life and social sciences to realise the potential of everyone throughout their lives.

RSU implements 10 study directions (StD) (data of 18 January 2023):

- "Health Care" (33 study programmes (StP));
- "Life Sciences" (2 StP);
- "Information and Communication Sciences" (9 StP);
- "Education, Pedagogy and Sport" (3 StP);

- "Social Welfare" (3 StP);
- "Sociology, Political Science, Anthropology" (12 StP);
- "Law" (4 StP);
- "Management, Administration and Management of Real Estate" (7 StP);
- "Psychology" (3 StP)
- "Internal Security and Civil Protection" (2 StP).

From 2017 to 2019, the StP Development and Consolidation Plan was developed at RSU (approved by RSU Presidium on 4 January 2019, minutes No. 3-1/2/2019, approved by the Evaluation Commission for StP Development and Consolidation Plans established by the Ministry of Education and Science (MoES), MoES letter No. 4-6e/2018/3795), which is implemented with the support of the project "Reducing study programme fragmentation and promoting study internationalisation at Rīga Stradiņš University" (information in Latvian, English). During the development of the project, it is planned to consolidate 19 existing study programmes by 30.11.2023, as well as to develop and start to implement 6 study programmes. Currently, the project is being implemented; the new programmes are already licensed, but the programme consolidation is still in progress.

The approach to StP management implemented by RSU has promoted the provision of StP offer that is of high quality and relevant to the sectors as shown by the growing number of applicants and students in the StDs implemented by RSU (see Table 1, Figure 1 and Figure 2), especially considering the circumstances of the demographic crisis and the decrease in the total number of applicants in Latvia. On 1 October 2022, the total number of RSU students was 10,436.

Table 1. **Number of students in the study directions implemented by RSU over the last eight academic years**

Study direction	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021	2021/ 2022	2022/ 2023
Health Care	5,285	5,652	6,043	6,222	6,306	6,707	7,316	7,708
Law	1,139	1,105	1,084	993	847	704	778	718
Management, Administration and Real Estate Management	207	225	226	243	218	261	334	366
Education, Pedagogy and Sport	236	232	228	235	266	285	273	226
Sociology, Politics and Anthropology	234	227	230	252	285	311	338	291
Social Welfare	138	146	126	143	150	125	120	100
Information and Communication Sciences	428	396	369	397	365	425	420	395

Psychology	66	111	121	143	167	279	391	461
Life Sciences	6	6	6	6	6	5	10	9
Internal Security and Civil Protection	0	0	45	82	101	146	157	162
Total	**7,739**	**8,100**	**8,478**	**8,716**	**8,711**	**9,248**	**10,137**	**10,436**
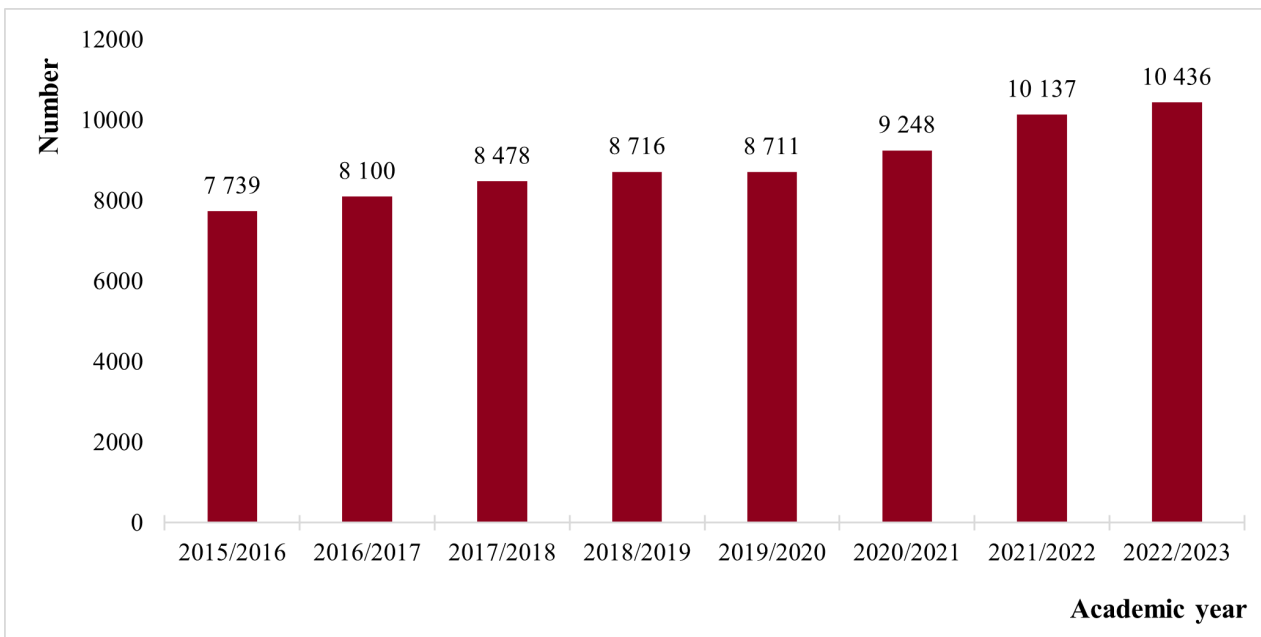
Figure 1. **Total number of students in the study directions implemented by RSU over the last eight academic years**
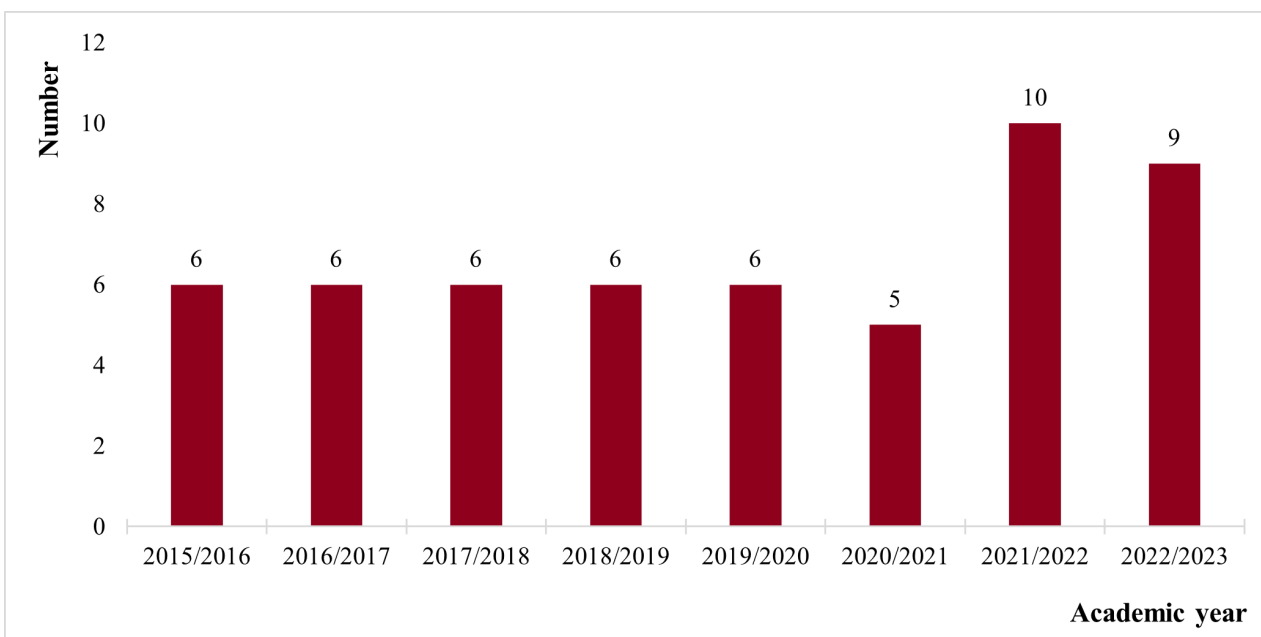
Figure 2. **Dynamics of the number of students in the study direction "Life Sciences" over the last eight academic years.**

RSU Development Strategy 2022-2027 is available on RSU website in Latvian and English. The main development goals of RSU are innovative studies in a modern environment and research into

health, life and human sciences, including social responsibility for sustainable development of the university and society, twinning for integration in the labour market and internationalisation and reputation for international recognition.

The main development goals of RSU are:

- creation of locally and internationally significant research results;
- the implementation of education relevant to societal and individual needs to enhance overall human capital capacity.

The priority goals for sustainable development set by RSU and the contribution to their implementation are described on the website (information in Latvian, English).

RSU strategy provides for progress towards a modern education system compliant with the requirements of the future labour market.

The development of RSU StPs is based on the following basic principles:

- integrity of research and placement;
- modernisation of the study process (digitisation, introduction of innovations, simulation-based learning approach, etc.) for effective achievement of learning outcomes;
- promotion of academic integrity;
- cooperation and sharing of resources with local and foreign higher education institutions;
- development of interdisciplinary cooperation of industries with professional organisations;
- compliance of StPs with the development of the national economy and industries;
- promotion of the export capability of higher education and science;
- cooperation between higher education institutions in the implementation of StPs, combining resources for extending the study, research and innovation potential;
- monitoring of the quality of studies and activities for targeted improvement.

In line with the RSU mission and vision, as well as the main development goals set out in the RSU Strategy 2022-2027, the RSU Development Plan has been developed, consisting of six action lines:

1. Science;
2. Education;
3. Cooperation;
4. Digital transformation;
5. Governance;
6. Internationality.

Each action line has its own sub-goal, key objectives and actions to be taken, as well as key impact indicators and target values to monitor the progress of the Strategy.

For the awards obtained by RSU, cooperation with schools and marketing activities, see Annex 13.

1.2. Description of the management structure of the higher education institution/ college, the main institutions involved in the decision-making process, their composition (percentage depending on the position, for instance, the academic staff, administrative staff members, students), and the powers of these institutions.

Activity of RSU is regulated by the Law on Higher Education Institutions, as well as other external and internal laws and regulations. The said laws and regulations define the powers and duties of

each institution. RSU decision-making is ensured by the Constitutional Assembly, Council, Senate, Rector and Academic Arbitration Court (information on RSU website in Latvian, English).

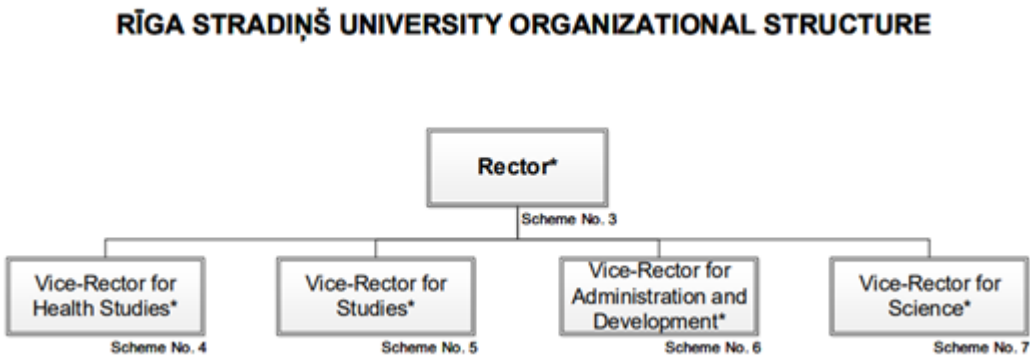## RĪGA STRADIŅŠ UNIVERSITY ADMINISTRATION

Constitutional Assembly	Senate	Rector	Council	Academic Arbitration Court

Figure 3. **Rīga Stradiņš University Administration**

The current RSU Senate was elected at the meeting of the Constitutional Assembly on 23 September 2021. The composition complies with the regulations of RSU Senate: The Senate is composed of 31 senators, including the Rector *ex officio* and 30 elected senators, including 23 academic staff representatives (15 professors and associate professors and 8 other academic staff representatives), 6 student representatives and one RSU general staff representative.

Efficient management and supervision of operational tasks at RSU are carried out by four Vice-Rectors: Vice-Rector for Health Studies, Vice-Rector for Studies, Vice-Rector for Administration and Development, Vice-Rector for Science, and their subordinate structural units of studies, science, administration and management.

RĪGA STRADIŅŠ UNIVERSITY ORGANIZATIONAL STRUCTURE

* In RSU information systems Rector and Vice-Rectors alongside with structural units and staff under their authority have been classified under administrative body of relevant field.

Figure 4. **Organisational chart of Rīga Stradiņš University**

Participation of external partners in decision-making

External partners participate in the meetings of RSU Convent of Councillors, Alumni Association, Study Quality Councils and the meetings of faculties and departments.

Foreign and local specialists of various industries take part in RSU Convent of Councillors as external partners. The Convent of Councillors advises the Senate and the Rector on the matters of RSU development strategy in order to promote development of RSU by determining strategic directions of its activity in accordance with the needs of the national economy. The Convent of Councillors meets approximately four times a year and deals with current issues of RSU. Current issues for consideration may be raised by any member of the Convent during the meetings. For example, the plans for the development and improvement of RSU social direction StPs were considered during the meeting, emphasising the improvement of interdisciplinary studies and research. During the meeting, the views of faculty leaders on the research potential of StPs were presented, as well as the views and recommendations of the participants of the Convent of Councillors on the improvement and adaptation of StPs were discussed.

The Study Quality Council is composed of both the management of the StD/StP, lecturers and student representatives, as well as representatives of employers. The Council evaluates the compliance of the content of the StP with the requirements of the legislation of Latvia and the EU, public interests and the requirements of the labour market, as well as the long-term development of the respective study direction. (See Section 1.4 for more information on the activities of this Council)

Employers are involved in Faculty Councils. The composition of the Faculty Council is approved by the Senate on the basis of the proposal from the Dean of the Faculty.

The Alumni Association (information in Latvian, English) unites former graduates of various generations of Rīga Medical Institute, Medical Academy of Latvia and RSU. The Alumni Association is a contact point between graduates, students, academic staff and industry representatives. Mutual cooperation of the involved parties is essential for the improvement of study quality and research, development of the sector and purposeful guidance of students' professional activity. The Association promotes the involvement of RSU graduates in lifelong learning activities.

Participation of students in the management process

The Student Union (SU) (information in Latvian, English) represents the interests of students in the Constitutional Assembly, Academic Arbitration Court, Senate, Faculty Councils, Ethics Committee, Loan Granting Committee, Scholarship Awarding Committee, Library Council, Museum Council, Rectorate, Dean's Council, Study Quality Council and the Committee for Recognition of Learning Outcomes Achieved in Prior Learning or Professional Experience. Student representatives have the right of veto in Faculty Councils; the right of suspended veto in matters affecting students' interests in the Senate.

Interests of international students at RSU are represented by the International Students' Association (information in Latvian, English).

The Student Union cooperates with the International Students' Association, ensuring that interests of both the Latvian and international students are represented in the management process.

RSU Student Union was founded in 1993, and it has been operating in order to represent the interests of students in the matters of academic, material and cultural life at the University and other government institutions; it represents the students of the higher education institution in Latvia and abroad and lays down the procedure for students to be elected in collegial institutions of the higher education institution.

The Student Union is financed from the University budget in the amount of not less than one two

hundredth part of the annual budget of the University (in accordance with Section 53, Paragraph 4 of the Law on Higher Education Institutions of the Republic of Latvia (available in Latvian, English). At the end of each calendar year, RSU Student Union presents the use of the budget of the current year and the budget estimate for the following calendar year to RSU management, and it is accepted by the Rector. See Annex No. 5 for more information on the content of the SU activity.

Participation of structural units in decision-making

Based on the developed medium-term strategy, the management of RSU annually delegates specific aims to the structural units. In order to achieve these aims, each RSU structural unit has to plan its own resources during the annual budget planning session, requesting the funds needed to achieve the delegated aims. Along with the development of a detailed budget, responsibilities are clearly separated because the structural units have to operate within the framework of the approved budgets. Working groups, discussions, and brainstorming sessions are being set up to implement new projects, processes, and innovations, thus maximizing the involvement of employees and immediate managers in decision-making.

(See Annex No.1 List of internal laws and regulations in accordance with the basic activity processes of RSU, which also includes links to documents).

(See Annex No.3 RSU organisational chart (available also on the website in Latvian and English).

See Annex No.23 "Compliance of the study programme with the 1st part of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)"

The governance structure of the study direction and its relevant StPs is oriented towards the development of the study direction (see Section 2.1 Governance of the study direction, Paragraph 4.1 "Development plan for the study direction" and Paragraph 4.2 "Governance structure of the study direction"), decision-making is efficient, administrative and technical staff support all the needs of the StPs corresponding to the study direction.

Information about the structural units involved in the implementation of the study programmes and support staff

StD "Life Sciences" StP Biomedicine is implemented by 11 RSU departments: Department of Morphology, Department of Human Physiology and Biochemistry, Department of Biology and Microbiology, Department of Physics, Department of Pharmacology, Department of Public Health and Epidemiology, Department of Pathology, Department of Humanities, Department of Health Psychology and Pedagogy, Department of Occupational and Environmental Medicine, Department of Clinical Skills and Medical Technologies, as well as individual academic structural units, for example, Statistics Unit. The staff of the department consist of permanent lecturers, invited lecturers (visiting lecturers) and support staff.

Heads of departments, in cooperation with the Director of StP, propose heads of courses for StP courses and they are responsible for providing study resources, including material-technical base. On the other hand, heads of courses, in association with the head of the department, are responsible for the implementation of study courses (according to the course description) and, if necessary, involve other academic staff (lecturers) and support staff (e.g. laboratory assistants) in the course implementation process. Office managers of the departments and organisers of the training process also provide support for the implementation of courses.

To ensure the quality of academic activities and studies, training support staff is employed in academic structural units, which provides support to students and academic staff, as well as ensures circulation of documentation. Depending on type of the structural unit and the study courses taught, training support personnel posts for the study courses are planned by the head of

the structural unit, but the general principles at RSU are developed and maintained by the Human Resources Department. Responsibility areas of the support personnel in accordance to the respective position are support to study process and methodological work, support to research and clinical work, support to the department office work etc., as needed.

The support provided by the administrative and technical staff of the University within the study direction is appropriate. The most advanced new generation information technology facilities are technically available. From the first day of study, the student knows where to turn if questions arise.

Systems technical issues are addressed by the Information Technology Department, the matters of the study process are supported by the Academic Affairs Department, Student Services and the Faculty Office, which also provide feedback in communication with students.

1.3. Description of the mechanism for the implementation of the quality policy and the procedures for the assurance of the quality of higher education. Description of the stakeholders involved in the development and improvement of the quality assurance system and their role in these processes.

Quality policy of Rīga Stradiņš University is based on the university strategy and values, and it includes three basic principles: student-centred approach, partnership and quality.

The quality Policy is available on RSU website in Latvian and English; it will be updated in 2023. Both the staff and students of RSU are involved in the implementation of the Quality Policy. In general, study quality assurance is a multi-level system (see Figure 4).

The duty of RSU senior management is to set strategic and quality goals and quality policy, to decide on quality approach, to manage resources, and determine the internal procedures. One of the indicators of study quality at the University level is the public attitude and opinion, as well as the popularity of RSU. Evaluating the satisfaction level and engagement of RSU staff as well as the results of the university reputation survey, guidelines are set to improve the image of RSU.

At the study programme level, the duty of the Head of the study programme is to ensure compliance of the content of the study programme with internal and external laws and regulations, requirements of the labour market, sectoral development trends and needs of students, to analyse data that might provide information about factors affecting learning outcomes and quality of the study programmes and to implement necessary improvements to the study programmes. Quality indicators of study programmes that are directly linked to the remuneration of the Heads of the study programmes are measured annually. This aspect promotes taking responsibility and motivates the Heads of the study programmes to achieve higher quality standards defined.
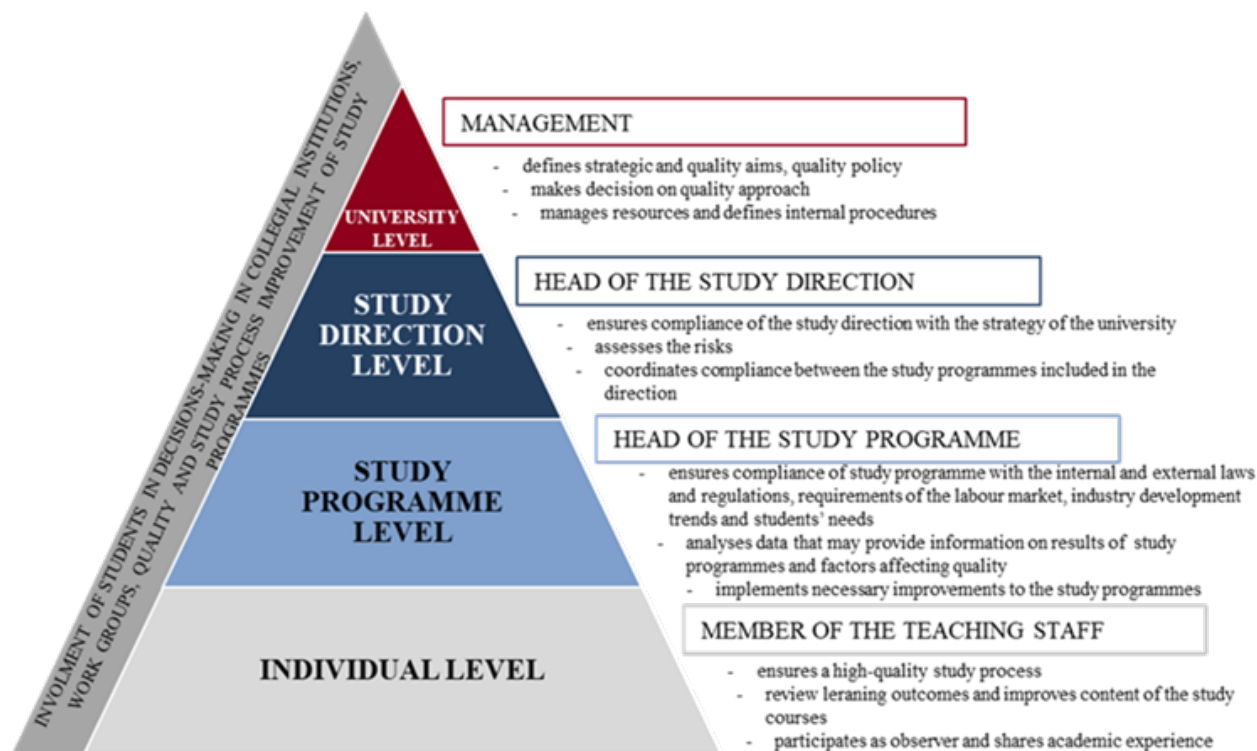
Figure 4 **Quality assurance of RSU study process and outcomes**

Supervision of the system introduced at RSU is provided by both the internal system and quality auditors and independent external experts.

External and internal laws and regulations (available in Latvian, in English) governing the achievements of students and the assessment of learning outcomes:

- Law on Higher Education Institutions;
- Education Law;
- Academic Regulations I - Regulations for undergraduate studies and Master's studies (available in Latvian, in English);
- Academic Regulations III – Regulations for Doctoral Studies (available in Latvian, in English);
- Regulations on the development and presentation of the qualification paper, student's research paper, Bachelor's thesis and Master's thesis (available in Latvian, in English);
- Process Description No. 6 "Assessment and Submission of Learning Outcomes" etc. (available in Latvian and English);
- Analysis of student academic performance that is carried out twice per academic year after the end of the study semester. As a result of monitoring academic success, risks to successful study process and reasons for exclusion are identified, on the basis of which it is possible to take preventive actions.

In 2016, an international external assessment of the implementation of student-centred learning approach at RSU was done by a group of assessment experts of the project *Peer Assessment of Student-Centred Learning (PASCL).* Report of *PASCL* experts on the implementation of student-centred approach at RSU is available both in Latvian and English. It was an EU-level project promoted by the European Students' Union in cooperation with other European higher education organisations, whereas the visit of experts in Riga was initiated by RSU Student Union. RSU is one of the few higher education institutions in Europe that took an institutional decision to get involved and was chosen within the framework of the *PASCL* project.

The expert opinion described RSU as a student-centred higher education institution that actively

involves students in the improvement of the study process. The report also contained recommendations on how to further promote student engagement in the study process and improve the understanding and implementation of the student-centred approach at all levels at institutional level, which RSU has used to improve the handling of student feedback on learning, improve the e-studies environment, update assessment approaches and enhance the effectiveness of internal communication. Since RSU's participation in the PASCL project, various aspects of student-centred learning have been regularly put forward as guiding principles in the planning of the work of the Study administration, aligning the projects to be implemented with the aspects of student-centred learning to be improved.

The procedure for assessing the achievements of students and the learning outcomes is incorporated in the description of each study course. The course leader is the one who decides on the assessment system in their course. The most common criteria for completing a course are successful completion of final and intermediate examinations, active participation in seminars and discussions, independent work, demonstration of acquired clinical skills, etc. Prior to the start of the course, students are informed about the planned learning outcomes of the course, the examinations that will confirm the achievement of the learning outcomes and the assessment criteria for these examinations. Operating in RSU e-studies environment, the support staff of the faculty office prepare assessment sheets for examinations that are issued to lecturers in the final part of the study course. After the examination, permanent lecturers personally in the e-studies environment, or invited lecturers with the help of the faculty office staff enter final assessments in the e-studies environment, which is linked to students' personal accounts. Each student sees information related to studies and their assessments in their personal account.

1.4. Fill in the table on the compliance of the internal quality assurance system of the higher education institution/ college with the provisions of Section 5, Paragraph 2(1) of the Law on Higher Education Institutions by providing a justification for the given statement. In addition, it is also possible to refer to the respective chapter of the Self-Assessment Report, where the provided information serves as justification.

1.	The higher education institution/ college has established a policy and procedures for assuring the quality of higher education.	RSU has an established policy and procedures for quality assurance of higher education, as defined by the internal regulatory documents described in Paragraphs 1.3, 2.1.1, 2.2.1 and 2.2.2 of Self-assessment Report and Paragraph 1.1 of Annex 23 (Compliance of RSU study programmes with Part 1 of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)). They define the quality mechanisms of the study process at RSU and which apply to all study programmes.

2.	A mechanism for the creation 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.	RSU has developed a mechanism for the development, internal approval, monitoring and periodic review of the University's STPs, which is described in paragraphs 2.2.1, 2.2.2 and 2.2.3 of the Self-assessment Report and paragraphs 1.2, 1.7 and 1.9 of Annex 23 (Compliance of RSU study programmes with Part 1 of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)) and applies to absolutely all STPs. It is supervised by the Centre for Educational Growth (PIC), and at the same time it also conducts improvements of the system, provides support to the directors of the study programmes and directions in this process taking into consideration its experience within the framework of its competence. An example of this is the StPs developed under the Specific Support Objective, which are described in Latvian and English. Upgrading and development of the study programmes have been implemented upon drafting the development plan for the StD. The actual process is discussed at the meetings of the Study Direction Quality Council, the meetings of the departments and the meetings of the Council of the Faculty of Medicine. The process of the development of study programmes has been constantly monitored by analysing students' academic performance, number of students, drop-out rate, technical facilities, assessment, work quality of the academic staff and other essential indicators.
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 made public.	For the criteria, conditions and procedures for assessing students' achievements to ensure that the intended learning outcomes have been achieved, see Paragraph 2.1.5 and Annex 17.1 (Study programme compliance with the national education standard (for each study programme) and Annex 23 (Compliance of the study programme with the 1st part of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG).
4.	Internal procedures and mechanisms for assuring the qualifications of the academic staff and the work quality have been developed.	Internal procedures and mechanisms for quality assurance of academic staff qualifications and performance are described in Paragraphs 2.3.5, 2.3.6, 2.3.7 and Paragraph 1.5 of Annex 23 (Compliance of the study programme with the 1st part of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)). Each year compliance assessment is conducted, and the mechanisms are reviewed.

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.	☐ For the information on student academic performance, see Section 2.1.5. ☐ For the information on graduate employment, see Section 3.1.3 (for each study programme). ☐ For the information on graduate feedback mechanisms, see Paragraphs 1.2 and 2.2.4. ☐ For the information on student and graduate satisfaction with the study programme, see Section 2.2.3 and the following annexes: 21.1 Results of the questionnaire survey on the evaluation of the study programme and study courses, 21.2 Results of the questionnaire survey on graduates and 23. Compliance of the study programme with the 1st part of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG), Paragraphs 1.7 and 1.9. ☐ For the information on the efficiency of the academic staff, see Sections 2.3.7 and 2.4.4, 3.4 (for each study programme) and Annexes 6.1. Basic information about the teaching staff involved in the implementation of the study direction "Life Sciences", 6.2. Biographies of the teaching staff, 6.3. collection of statistical data on the incoming and outgoing mobility of the teaching staff during the reporting period and 6.4. List of publications of the teaching staff for the reporting period and 24.7 Analysis of the composition of the teaching staff (for each study programme). ☐ For the information on the available study funds and their costs see Sections 2.3.1, 2.3.2, 2.3.3, 2.3.4 and 2.3.8 and Paragraph 1.6 of Annex 23 (Compliance of the study programme with the 1st part of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)) and the following annexes: 23.1 Assessment of the informative and methodological provision regarding library resources for the implementation of the study direction "Life Sciences" in accordance with the requirements of the guidelines and 23.2 Assessment of the information and methodological base on IT resources. ☐ For the information on the essential performance indicators of the institution of higher education see Sections 1.1, 1.2, 1.3 and RSU website in Latvian and https://www.rsu.lv/par-rsu/strategija-dokumenti English.

| 6. | The higher education institution/ college shall ensure continuous improvement, development, and efficient performance of the study field whilst implementing their quality assurance systems. | The higher education institution shall ensure continuous improvement, development, and efficient performance of the study direction whilst implementing their quality assurance systems. This is described in Paragraphs 1.3, 2.1.1, 2.1.2, 2.1.3, 2.2.1, 2.2.2 and Paragraphs 1.9 and 1.10 of Annex 23 (Compliance of the study programme with the 1st part of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)). See Annex 4.1 for the development plan of the study direction, Annex 4.2 for the management organisation chart of the study direction, and Annex 11 for the recommendation implementation plan. |

2.1. Management of the Study Field

2.1.1. Aims of the study field and their compliance with the scope of activities of the higher education institution/ college, the strategic development fields, as well as the development needs of the society and the national economy. The assessment of the interrelation of the study field and the study programmes included in it.

The RSU Strategy 2022 – 2027 (available in Latvian, in English) defines RSU vision and mission, as well as Sustainable Development Goals and Key Development Goals until 2027, including Research Platforms and Directions. The vision of RSU and one of its main goals is to provide research-based, high-quality and exportable higher education in Europe and in the world. RSU provides a solid foundation for academic and professional education and research work. One of RSU's research platforms is medicine. It pools RSU resources at an interdisciplinary level to conduct world-class research and develop methods for diagnosing and treating the most common diseases in the EU. RSU is constantly modernising its study process, which provides young specialists with more opportunities for growth.

The aim of the study direction, as well as the activities for the implementation and achievement of the aim are fully coordinated with the activity area of RSU, RSU strategic documents and the needs and trends of the development of the society and national economy. The aim of the study direction is to implement research-based, high-quality and exportable higher education in Europe and worldwide, providing a solid foundation for academic and professional education, as well as research work in the fields of biomedicine and biostatistics.

The StD is represented by two academic Master's StPs: "Biomedicine" and "Biostatistics". Biomedicine is a branch of medicine that includes natural sciences (physics, chemistry) but, in particular, a broad spectrum of life sciences and their branches (physiology, biochemistry, molecular biology, genetics, etc.) that are applied in the understanding, treatment and prevention of diseases. Whereas, biostatistics is the development and application of statistical methods in various branches of life sciences, including biomedicine. Biostatistics includes the collection, analysis and interpretation of data relating to human biology, health and medicine.[1] The two STPs are thus closely interlinked.

The StPs implemented within the study direction "Life Sciences" en taught at Rīga Stradiņš University that has obtained the international Quality Management System ISO-9001 standard certificate (See RSU Quality Policy (information in Latvian, in English). The standard of RSU quality management system includes the ENQA *(European Association for Quality Assurance in Higher Education)* internal quality assurance standards for studies and guidelines for quality evaluation in the European Higher Education Area, as well as the requirements of the Law on Higher Education Institutions of the Republic of Latvia. The quality management for the study programme is maintained in accordance with the higher education institution management process defined by the ISO standard.

[1] https://www.merriam-webster.com/dictionary/biostatistics

2.1.2. SWOT analysis of the study field with regard to the set aims by providing explanations on how the higher education institution/ college expects to eliminate/ improve weaknesses, prevent threats, and avail themselves of the given opportunities, etc. The assessment of the plan for the development of the study field for the next six years and the procedure of the elaboration thereof. In case there is no development plan elaborated or the aims/ objectives are set for a shorter period of time, information on the elaboration of the plan for the development of the study field for the next assessment period shall be provided.

Internal factors

Strengths	Weaknesses

I. Provision of work for StP graduates both now and in the future, in relation to the development of biomedical and biostatistical sectors (fields) in Latvia and the world.

II. Availability of state funding for implementation of StP "Biomedicine" (albeit to a very limited extent).

III. The originality and interdisciplinary nature of StP "Biomedicine," including a specialised degree to be acquired (Mg. biomed.) that justifies itself by attracting more applicants.

IV. The originality and interdisciplinary nature of StP "Biostatistics", including the programme's international nature, invited visiting teachers and the possibility to develop a new direction also in Latvia.

V. Professional lecturers – not only with experience of pedagogical work, but also with high practical work experience in research (scientific work) in the biomedical and biostatistical sectors.

VI. Involvement of representatives of the biomedical and biostatistical industry in the study process and evaluation of the final outcomes of studies.

VII. Development of interdisciplinary thinking and understanding required for research in biomedical and biostatistical students.

1. Varying degrees of knowledge in biology and chemistry among enrolled students (Bachelor) of StP "Biomedicine". Varying degree of mathematical knowledge and different previous education of potential students of StP "Biostatistics".

2. Laboratory opportunities for StP "Biomedicine" for practical classes (although they have been expanded, more opportunities are still needed).

3. Laboratory opportunities for drafting of Master's theses in StP "Biomedicine" (although fully provided, even more opportunities are desirable).

4. Participation of students of StP "Biomedicine" in scientific conferences (around half of students currently participate).

5. Lack of public funding for the implementation of the StP "Biostatistics".

External Factors

Opportunities

Threats

1. Improvement of content and implementation of StP "Biomedicine" and StP "Biostatistics" according to national priorities (Smart Specialisation Strategy, see p. 3.1.3 Description of StP) and the needs of employers.
2. Greater involvement of lecturers and students in exchange programmes, e.g., *Erasmus +* mobility programme.
3. Attraction of foreign visiting lecturers (e.g., from EU countries) and extension of cooperation with foreign universities.
4. Further involvement of biomedical scientists and practitioners (industry professionals) in the implementation of study courses.
5. Extension of cooperation with professional organisations and employers in the biomedical and biostatistical industries.
6. Development of research activities carried out by the academic staff and students.
7. Further development and use of the e-studies environment in the implementation of the programme.
8. Development of marketing and advertising activities for popularisation of the study programmes.
9. The demand for statistical specialists of StP "Biostatistics" demand of in the labour market in Latvia and EU countries.

· The further activities of graduates of StP "Biomedicine" in the field of scientific research are limited, because Latvia has (compared with other EU countries) a low share of scientific projects in biomedicine, for example, the National Research Programme "Biomedicine" was suspended in 2018. This reduces job opportunities for graduates of the StP.

· The further professional activity of graduates of StP "Biomedicine" is limited, as it depends largely on the biomedical industry (sectors), which could be more developed in Latvia. This would contribute not only to job growth for graduates of the programme, but also to pay increases.

· High costs of StP "Biomedicine", which are objectively related to the implementation of practical classes of StP study courses in laboratories, therefore the paid study places are not widely used.

· Low motivation of potential students of both programmes to learn exact subjects.

· Potential shortage of lecturers of StP "Biostatistics" due to lack of statistical specialists in the labour market.

After evaluating SWOT analysis, **to maintain strengths** in the implementation of the StP of the study direction the university has to continue to ensure high outcomes of StP and study courses and to improve implementation of StP, including involving highly qualified lecturers in the implementation of the programme, as well as to try to get budget funded places in the programmes for at least 10 students.

To mitigate the weaknesses of StP "Biomedicine", the university has to continue to practise ongoing preparatory courses with a view to equalising knowledge of enrolled students in biology and chemistry; to continue to seek solutions to the development of practical, laboratory classes (related to laboratory resources, including laboratory staff), which will also facilitate the scientific activities of students, to discuss with the Ministry of Health and the Ministry of Education and Science the possibilities of granting budget funded places to students of StP "Biostatistics".

These opportunities are already being used and will be used, for example, cooperation with representatives of the biomedical industry is being developed, including cooperation with the Latvian Association of Laboratory Specialists, there was cooperation with Coventry University in the implementation of StP "Biomedicine"; visiting lecturers are involved in the programme and other activities are being implemented. To start modern education of specialists in demand in the world in biostatistics, extensive percussion measures are being taken, which need to be further

developed to reach the target audience who can take advantage of the unique opportunity to study in this programme.

To mitigate the impact of external threats the university has to further implement StP "Biomedicine" and to further develop StP "Biostatistics" to enrol new students, in line with the RSU Strategy and development goals. External threats may be mitigated to some extent by the RSU's financial capacity and contribution to science, including in the context of biomedicine, resulting from the attraction of programme graduates to RSU (significant progress has been made in this area). In order to reduce the potential shortage of lecturers, contacts with foreign universities are established to attract visiting lecturers, as well as links with higher education institutions of other metropolitan cities of Latvia are strengthened in order to invite teachers from other cities of Latvia.

The development plan of StD "Life Sciences" consists of a development plan for each individual StP (see Annex 4.1). The plan of StP "Biomedicine" is developed in coordination of lecturers of study courses and is approved annually in a joint working group with participants of the Study Quality Council, when performing the annual assessment of the quality of StP and preparing a report. Before the accreditation, the SWOT analysis and the StD Development Plan were compiled and evaluated annually, were reviewed and updated. A key part of the programme development plan is also the implementation plan of recommendations made by previous accreditation experts, which can be found in Annex 11.

The development plan of StP "Biostatistics" (see Annex 4.1) and the implementation plan of recommendations made by licensing experts (see Annex 11) have also been developed and their implementation monitored on an annual basis.

2.1.3. The structure of the management of the study field and the relevant study programmes, and the analysis and assessment of the efficiency thereof, including the assessment of the role of the head of the study field and the heads of the study programmes, their responsibilities, and the cooperation with other heads of the study programmes, as well as the assessment of the support by the administrative and technical staff of the higher education institution/ college provided within the study field.

Study direction management (governance) structure, its effectiveness

The study direction and relevant programmes are managed in accordance with the process description No. "Planning and Administration of the Study Process".

The governance structure consists of several levels:

- academic department - Faculty of Medicine (FM), FM Council
- Study Quality Council - quality councils of study programmes "Biomedicine" and "Biostatistics" of the study direction "Life Sciences".
- Head of the study direction "Life Sciences" (prof. Pēteris Tretjakovs) and directors of StP "Biomedicine" and "Biostatistics" (prof. Pēteris Tretjakovs and assoc. prof. Andrejs Ivanovs), in cooperation with heads of RSU departments and heads of study courses, incl. lecturers involved in the courses.

The effectiveness of the governance structure can be stated in context with the RSU Quality Policy (available in Latvian, in English), using certain quality criteria[1] and the achievement of the aims of the study direction and the relevant study programmes.

RSU quality indicators include institutional level, content level, individual level (students, lecturers) and employer outlook – a total of 14 criteria.

Student satisfaction with studies, success indicators, participation of students in StP development, as well as employment of graduates in the sector and feedback from employers regarding the work of students during training placement or the competence of graduates indicate the effectiveness of the management structure and process in achieving the aims set.

Role of the head of direction and directors of study programmes

The StP Director is both the programme developer, organiser and coordinator of the study process, as well as a support provider for study course lecturers involved in the implementation of the StP and an encourager for students.

The StP Director is responsible for developing/updating the content of the StP, planning the mastering of the StP and preparing a plan for coordination before the Deans' Council. The StP Director is responsible for ensuring the examination of knowledge, skills and competences and their conformity with the learning outcomes, responsible for the organisation of training placement, cooperates with lecturers and students of study courses, cooperates with employers to ascertain the satisfaction of employers with the competences of graduates.

The head of the study direction, in close cooperation with StP directors compile and analyse the outcomes of StP, prepare reports, develop a plan for development of the study direction, organise the work of the Quality Council of the study direction, cooperate with external partners, for example, representatives of the biomedical industry.

The management structure and process of the study direction a corresponding StPs specified in the process description ensure regular and coordinated work of the study direction "Life Sciences" in the common process of RSU.

See Annex 4.2 Study direction governance structure.

[1] Quality indicators of RSU study programmes. Approved by the Rector's Decree No. 2-3/166, 2016.

2.1.4. Description and assessment of the requirements and the system for the admission of students by specifying, inter alia, the regulatory framework of the admission procedures and requirements. The assessment of options for the students to have their study period, professional experience, and the previously acquired formal and non-formal education recognised within the study field by providing specific examples of the application of these procedures.

Admission to RSU takes place based on admission requirements of the respective study level approved by RSU Senate as defined for the particular academic year in accordance with the requirement of the Law on Higher Education Institutions. RSU has admission regulations for each level of studies. The admission regulations are available on RSU website in Latvian and English, as well as in Annex No.1. **See Annex 23, Paragraph 1.4 for more information: Student matriculation, progress of studies, recognition and certification of qualifications.**

The requirements set for the admission of students to the academic master's study programmes "Biomedicine" and "Biostatistics" are closely relevant to the goal that students have appropriate background to further study the study courses of the above mentioned programmes. Regarding the period of reference, we conclude that these requirements are well thought out and have justified themselves. RSU student admission system and its procedures have also been well tested in practice, and they are clear and effective. There are cases where it is possible for a student enrolled in a study programme to validate a course previously completed, for example, if the enrolled student has a master's degree in biology or chemistry, the course "Cell Biology" or "Biochemistry I" in the study programme "Biomedicine" may be validated, respectively.

Annexed:

Annex 23.1. (Section 1.4. Student admission, progression, recognition and certification)

Annex 24.2. A statement that the higher education institution will provide opportunities for students to continue their studies in another StP or at another higher education institution (a contract with another accredited higher education institution or college) if the implementation of the StP is terminated.

Annex 24.3. A document attesting that the institution of higher education guarantees the compensation for losses to students if the study programme is not accredited or the licence for the StP is withdrawn due to the action of the institution of higher education or college and the student does not want to continue studies in another StP.

Annex 24.8. Study contract sample

2.1.5. Assessment of the methods and procedures for the evaluation of students' achievements, as well as the principles of their selection and the analysis of the compliance of the evaluation methods and procedures with the aims of the study programmes and the needs of the students.

Students may familiarise themselves with the criteria, conditions and binding procedures for the assessment of students' academic performance in the Academic Regulations I (documents are available in Latvian and English under the section "studies"). Requirements for defining and evaluating learning outcomes – knowledge, skills, competence – are included in the Process Description No. 6 "Evaluation and Submission of Learning Outcomes" (links to documents are available in Annex 1).

Methods of assessment of student performance and achieved learning outcomes, as well as assessment criteria for completion of study courses, are defined in the description of each study course and are available to all students prior to the start of the study course. The academic freedom of each lecturer is respected in the implementation of the study courses, including the development and implementation of study examinations, at the same time providing that the teaching and examination methods must be chosen in accordance with the learning outcomes to be achieved in the study course. In order to ensure that student performance assessment methods, procedures and principles are consistent with the attainment of the aims of the study programme and the needs of students, regular monitoring of the quality of study courses is carried out within the StD, involving both the teaching staff and the Heads of StP and RSU study process support department, in this case, in particular the quality experts of RSU Centre for Educational Growth, who examine and approve study course descriptions, as well as representatives of employers and

students, including in the Study Quality Council. Within the framework of this cooperation and information exchange, both the observation of teaching and the experience-sharing workshops for the teaching staff and Heads of StP are organised and the mapping of study programmes is done during which particular attention is paid to close links between the learning outcomes of study courses and the learning outcomes of the StP. The assessment methods used in study courses are discussed between the teaching staff and students, evaluating the relevance of the methods to the aims of the StP. During the annual updating of study courses, best practices are taken over and used further. At the same time, the assessment methods used in the study courses are reviewed taking into consideration the results of the course evaluation questionnaires, in which a special section is devoted to assessment methods.

Both summative and formative assessment are combined in the study process to enhance students' individual performance and assess the level of learning outcomes achieved. In the context of learning outcomes, both study course-specific and transversal knowledge, skills, and attitudes are important, therefore, students' active involvement and participation, initiative, and taking responsibility are additionally evaluated. Individual assessment of interim and final examinations of study courses are available to each student on their student profile in RSU e-studies environment.

Creative, research, practical and self-reflective works are assessed in accordance with the aims of each study course and the evaluation criteria of the course with which the lecturer introduces to the students at the beginning of the course. Criteria for research papers are available in the methodological guidelines for research papers, which were improved and updated in 2020 for students of Master's study programmes (information in Latvian, in English).

2.1.6. Description and assessment of the academic integrity principles, the mechanisms for compliance with these principles, and the way in which the stakeholders are informed. Specify the plagiarism detection tools used by providing examples of the use of these tools and mechanisms.

RSU has developed RSU Code of Ethics and established the Ethics Committee that considers violations and cases of disputes on the basis of applications. RSU has developed and approved the document "methodological Guidelines for citing References and Compiling Bibliography" (available only in Latvian), which explains to students the principles of using the works of other authors and making correct references. In order to promote compliance with academic integrity and make it easier for teaching staff to check student work, RSU has implemented and uses the Unified Computerised Plagiarism Control System of Latvian higher education institutions to check the originality of the content of final theses, and RSU has purchased a license for the plagiarism checking tool "Turnitin" for wider use. For easier use, the tool is integrated into RSU e-learning website. Example of application: all the coursework envisaged, as well as all final papers and individual course reports must be submitted in e-studies at the relevant study course where it is requested to upload papers to *Turnitin.* After the papers are uploaded, the results on the plagiarism (matching) of the papers are available on e-studies, which show both the overall percentage of similarity and visually demonstrate matching places in the paper itself, identifying also the sources used that match some part of the text. Supervisors of coursework assess the results of similarity, taking into account also the *Turnitin* User Guide (the document is available only in Latvian) for academic staff developed by RSU, which sets out the principles for the interpretation of the results (instructions on page 7) Taking into consideration these results, the supervisor of the respective work evaluates whether the work submitted complies with the principles of academic integrity and

makes an assessment accordingly or informs the student if the work needs to be corrected. The evaluation of *Turnitin* results takes into account that a relatively high (above 20%) similarity with other sources may not mean that the submitted work shows signs of plagiarism, but indicate a lack of contribution from the author, namely the author has used other sources of information and correctly referred to them, but the work lacks the author's analysis, argumentation and interpretation, which the supervisor also points out to the student when giving the assessment or returning the work for correction.

In order to improve the lecturers' knowledge of the possibilities of this tool and to develop the skills for using it, RSU Information Technology Department and the Centre for Educational Growth regularly organises practical trainings for lecturers and support staff on the benefits and use of this tool for checking, correcting students' independent work and providing feedback in the study courses, as well as for checking the final papers (Master's thesis).

Implementation of academic integrity in the programmes of the study direction "Life Sciences":

- students acquire basic principles of academic integrity already in the first study programme course (for example, in the course "Cell Biology"), and these principles should be followed in all other study programme courses.
- it is the responsibility of the Heads of the study programmes to inform about the principles of academic integrity and the prevention procedures at RSU (consideration of plagiarism cases in department meetings, maintenance of a plagiarism register, recording each case; risk of exclusion in cases of repeated plagiarism);
- all Master's theses are uploaded to the e-studies site and checked with the help of the *Turnitin* tool;
- much of the coursework in study courses (for example, students' independent work) is also checked with the help of the mentioned tool;
- regular consultations with RSU Student Union on issues of academic integrity take place.

In order to promote the implementation of a uniform approach to definition, detection, consideration of violations of academic integrity and application of punishment throughout the university, RSU has developed a plan for the development and implementation of the framework for adhering to the culture of academic integrity and its principles. This initiative is included in the draft project application of the Ministry of Education and Science Specific Support Objective 8.2.3. "To ensure better governance in higher education institutions".

Within the framework of the development of a support system, the main planned activities are:

- promoting prevention. Preventive promotion of compliance with principles of ethics and academic integrity is envisaged by developing online study courses in e-studies, regular studies, and discussions at the university, educational self-learning materials, self-assessment tests. Three main target groups have been specified for the activity of the action: students, academic staff, and scientific staff; in addition, promotion of competence of the administration on principles of ethics and academic integrity is envisaged;
- improvement of the internal system. It is intended to develop and improve internal regulations of RSU that will allow aligning the definition and implementation of unified principles of ethics and the management of academic integrity for students, academic staff, and research staff. Internal regulations shall define types of violations, develop processes and procedure for consideration of violations, as well as determine the applicable sanctions in accordance with the type of violation and the situation, thus promoting transparency and consistency in decision-making. Plans have been made to establish a new centralised committee that would participate in the alignment of the internal system by developing and approving procedures and regulatory framework so that it is adapted for consideration of

violations of academic integrity by all students of the university and the unified committee is able to make a decision appropriate for each situation according to unified approach and system for students of all faculties, thus ensuring proportionality of decisions, compliance thereof with the internal regulatory framework and consistency. Involvement of a change agent has been envisaged for the implementation and application of this activity.

Involvement of a competent and experienced external expert for the implementation of a high-quality system of ethics and academic integrity has been planned in order to consult regarding defining of unified principles and alignment of regulatory framework, as well as the implementation of prevention mechanisms

In order to promote alignment of basic principles of ethics and academic integrity and compliance with these principles in Latvia, cooperation with several Latvian higher education institutions has been intended, providing for intellectual cooperation in the establishment of principles and development of materials, sharing of the developed resources with other higher education institutions (e-study courses, training materials), as well as further cooperation to promote ethics and academic integrity and to solve problematic issues at the national level. At present, RSU has signed a strategic partnership statement with RSU Red Cross Medical College, the University of Latvia and Riga Technical University. So far, other higher education institutions have also agreed to cooperate to harmonise ethical and academic integrity principles; to develop teaching materials on the sharing of the academic integrity module; to exchange experience to introduce best practices in ensuring academic integrity; and raise the issue of academic integrity at national level.

Additional information on RSU involvement in matters related to academic integrity:

- Article of 05.03.20219 "Godīgums ir akadēmiskuma neatņemama daļa" *("Academic integrity is an integral part of academiness")* (available in Latvian, in English),
- Article of 15.11.2019 "Aizritējis seminārs "Akadēmiskais godīgums un ētika augstākajā izglītībā"" *("Seminar "Academic integrity and Ethics in higher Education" was held")* (available only in Latvian),
- RSU Academic Integrity Policy (available in Latvian, in English).

2.2. Efficiency of the Internal Quality Assurance System

2.2.1. Assessment of the efficiency of the internal quality assurance system within the study field by specifying the measures undertaken to achieve the aims and outcomes of the study programmes and to ensure continuous improvement, development, and efficient performance of the study field and the relevant study programmes.

Deming cycle is used for the implementation and application of the internal quality system: Plan – Do – Check – Act (See Figure 5).

QUALITY POLICY
ENERGY MANAGEMENT POLICY

NEEDS OF STUDENTS AND OTHER STAKEHOLDERS

RSU OPERATIONAL RESULTS

DO
Implement study process, research, ensure activity of the University

PLAN
Define aims, plan personnel, financial, time, etc. resources

LEADERSHIP

CHECK
Control and implement performance supervision measures (e.g., analysis of Strategy implementation results, internal audit, etc.)

ACT
Initiate changes to internal laws and regulations, improve processes and activities (e.g., Action plan for improvement of study processes)

15 strategic aims

More than 300 internal laws and regulations

More than 10 supervision measures

Continuous improvement and development of processes and activities

Figure 5. **Implementation and application scheme of the internal quality system**

In general, supervision of RSU activities is ensured by carrying out activities that are integrated into everyday activities, such as assessment of work quality, distribution of duties and responsibilities, coordination of documents. At the same time, targeted control measures have been introduced, which are implemented at different periods throughout the year.

Requirements for planning, supervision, and quality control of the study process at RSU are set by Process Description No. 35 "Planning and Administration of the Study Process". Requirements for defining and evaluating learning outcomes – knowledge, skills, competence – are included in the Process Description No. 6 "Evaluation and Submission of Learning Outcomes" and Academic Regulations I.

In order to ensure supervision of the quality of studies, once a year an evaluation of study directions is carried out, a study programme review and a development plan/review of the study direction are drawn up, as well as a plan/review for implementation of recommendations put forward by external evaluation experts. The programme review should include an analysis of the StP quality indicators (approved in 2016). Heads of the study programmes summarise and evaluate the quality indicators of the StPs each year in accordance with the document "Procedure for assessment of the quality indicators of the StPs" (available only in Latvian) and integrate the results into the reports of the study programmes. Data analysis related to studies, including analysis of the academic performance, analysis of the results of study course surveys, analysis of class observation results, and other measures are also performed.

In order to ensure supervision of processes taking place at the university, analysis of quality criteria performance of processes is performed once a year. For example, one of the criteria in Process Description No. 6 "Evaluation and Submission of Learning Outcomes" is: "The entry of assessment

for interim examinations and end-of-course examinations in e-studies is ensured in the following time periods:

- within one working day for oral examinations;
- not later than within six working days (or until the beginning of the examination period, if the period before the examination period is shorter - in the study system of regular classes) for written interim examinations;
- not later than within six working days for written end-of-course examinations".

Results are reported at the management meeting – Rectorate, where decisions are made regarding future activities.

The existing system ensures comprehensive supervision of study quality with control measures throughout the year.
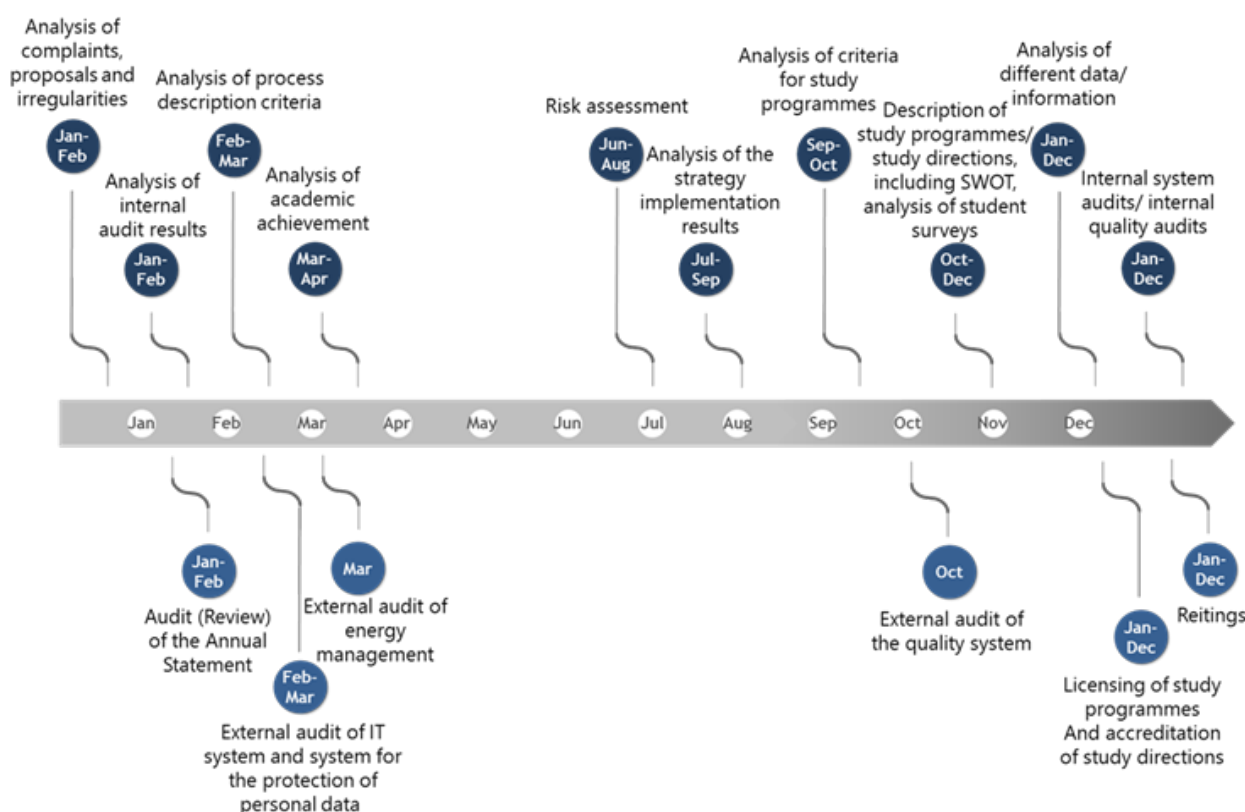
6. **Measures of internal quality control**

In accordance with the results of the quality control measures performed, quality of studies is reviewed, and measures are taken to improve the quality.

Additionally, see Section 3.2.3 in the description of the StP regarding the evaluation of the implementation of the StP.

Some of the examples that show how the aforementioned RSU processes and tools ensure the efficiency of the Internal Quality Assurance System in the study programme "Biomedicine": **1)** the aims and learning outcomes to be achieved within the study programme have been specified and the mapping of study courses has been carried out, so that the courses correspond to the aims and learning outcomes of the study programme; **2)** the implementation of courses is closely followed in accordance with RSU Process Description No. 35; **3)** learning outcomes achieved during the courses are assessed, moreover, not only the academic performance, but also the student survey results; **4)** the problems identified in studies are analysed at the level of departments, Study Quality Council and Dean's Council, and decisions on improvement of the programme are taken. Some

measures taken during the reporting period: a) modernisation of practical classes, capacity building (increased funding for the purchase of chemical reagents to allow students to make greater use of existing equipment to test biological samples) - **this implementation resulted from the student survey and the employer survey results and was implemented in cooperation with the heads of departments involved in the courses**; b) the online environment (E-Studies) of study courses has been improved by expanding the range of methodological materials for classes, as well as by including video recordings produced by teaching staff in Panopto system for classes, etc. - **this implementation resulted from the development plan of the study direction in cooperation with the Study Quality Council of the study programme**; c) optimization of knowledge assessment timelines to facilitate students' preparation – **it was implemented in reference to the feedback given in the student surveys**.

2.2.2. Analysis and assessment of the system and the procedures for the development and review of the study programmes by providing specific examples of the review of the study programmes, the aims, and regularity, as well as the stakeholders and their responsibilities. If, during the reporting period, new study programmes have been developed within the study field, describe the procedures of their development (including the process of the approval of study programmes).

The standards set out in the Part 1 of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) described in Annex 23 are followed in the implementation of studies at RSU.

RSU has established the procedure for development and internal approval of StPs, supervision of their operation and periodical inspection. These requirements are determined in the Regulations for Development and Approval of New StP at Rīga Stradiņš University and in detail – in Process Description No. 34 "Updating and Development of Study Courses, Study Programmes, Study Directions" (a link is available in Annex 1) in accordance with the requirements of external laws and regulations. Necessity, usefulness, and compliance of a new StP to the set aims are evaluated by the Centre for Educational Growth and the Vice-Rector for Studies, whereas the licensing documents of the developed StP, as well as accreditation documents and documents for implementation of changes are coordinated by several RSU structural units and collegial institutions, including the Study Quality Council, Faculty Council, Dean's Council, Rectorate, and Senate. Supervision over the implementation of a StP and its quality is ensured by the director of the StP by evaluating the study process, learning outcomes, analysing the results of student surveys, changes to the trends in the labour market, and current events in the sector and world. Several administrative departments are also involved in monitoring the quality of studies, including the Centre for Educational Growth (information in Latvian, English), the Academic Affairs Department (information in Latvian, English), Human Resources Department (information in Latvian, English), the Quality Assurance and Internal Audit Department (information in Latvian, English).

Development and approval of the StP prior to submission to the Quality Agency for higher Education (AIKA) include certain consecutive activities carried out by the developer of the StP (usually also the Director of the StP) in cooperation with the Study Development Project Manager and Coordinator of the Centre for Educational Growth, who carry out informative, monitoring, coordinating and organisational functions, provide the necessary support during the development of the programme, as well as the functions of content creation and content expertise listed in

Paragraph 1.2 "Development and approval of programmes" of Annex No. 23 (Compliance of RSU study programmes with Part 1 of the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG)), information in Latvian, English).

Annual revision process of StPs and study directions is regulated by the Rector's decree or the instructions by the Board of Studies, and its goal is to prepare a summary of the annual study process quality monitoring. See Annex 23, Paragraph 1.9 "Programme monitoring and regular inspection" for more information.

The annual report of the study direction is drawn up in accordance with the aforementioned procedure for the annual review process of the StP and the study directions. Programme directors and members of the Quality Council of the direction shall participate in the preparation of the report on the study direction. The report includes an analysis of the significant development indicators of the StP and the learning outcomes to be achieved, as well as the development plan for the study direction.

Taking into account that since the previous accreditation of the study direction a new study programme "Biostatistics" has been licensed within the study direction, its development should be mentioned as an example of the procedure described above. The initiative to create the study programme was launched in 2017, but since 2019 it has been developed with the support of the project Reducing study programme fragmentation and promoting study internationalisation at Rīga Stradiņš University (project No. 8.2.1.0/18/A/014) (articles on the study programme: in Latvian, in English; information on the project in Latvian, in English; additional information on the study programme in Latvian, in English).

The study programme was developed in cooperation with other higher education institutions in Latvia, Sweden and Estonia. It is the only biostatistics master's degree study programme in the Baltics.

Experience exchange events, working groups and discussions as well as the attraction and mobility of foreign experts were implemented during the development of the study program together with lecturers and industry experts, representatives of interested organisations from the State Agency of Medicines, AS Olainfarm, SIA Silvanols, the Latvian Statistical Association, among others. Students' suggestions were also heard during the development process.

Ziad Taib, a representative of international employers and the Global Product Statistician at AstraZeneca and an Adjunct Professor at Chalmers University of Technology in Gothenburg, appreciated the contents of the programme and recognised the job opportunities the programme's graduates would have abroad.

After the development of the programme involving the teaching staff, students and representatives of the field, in accordance with the internal procedure described, the licensing documentation prepared was approved at the meeting of the Statistics Unit, the Study Quality Council, the Faculty of Medicine Council and RSU Dean's Council. The estimate for the study programme developed by the Finance Department was discussed and approved at the Rectorate.

Upon completion of the work on the study programme licensing documentation in August 2020, the study programme was submitted for evaluation to the independent expert, the Head of the Latvian Association of Statisticians, the professor Biruta Sloka of the University of Latvia, who conducted an in-depth study of documents, made an assessment and recommendations for supplementation, and as a result recommended that the study programme be submitted for licensing, submitting the opinion of the independent expert-examination. The study programme was approved by RSU Senate on 15 September 2020. At the end, the last specified clarifications were made and the documents were compiled and the documents were submitted for licensing, later after the

evaluation and receiving the license for the study programme.

2.2.3. Description of the procedures and/or systems according to which the students are expected to submit complaints and proposals (except for the surveys to be conducted among the students). Specify whether and how the students have access to the information on the possibilities to submit complaints and proposals and how the outcomes of the examination of the complaints and proposals and the improvements of the study field and the relevant study programmes are communicated by providing the respective examples.

Procedure for submission and review of student complaints and proposals is defined in Process Description No. 31 "Management of Complaints, Appeals, Non-Conformities and Proposals". Additional requirements for submission and consideration of appeals are set out in the Academic Regulations I. In accordance with the internal procedure, students may submit complaints to the Student Services, Student Union and Quality Assurance and Internal Audit Department. These structural units ensure registration of complaints and proposals and transfer them for consideration to the responsible structural unit. After evaluation of the complaint/ proposal and performance of corrective actions, the submitter of the complaint is informed in writing regarding results of the review and actions taken. Once a year, the information on all received complaints/proposals is summarised, and the results are included in the document "Report on the Quality Management System". The information is taken into consideration when carrying out RSU risk assessment. Information on possibilities to submit complaints or proposals is available the on RSU website in Latvian and English and on the Student Portal.
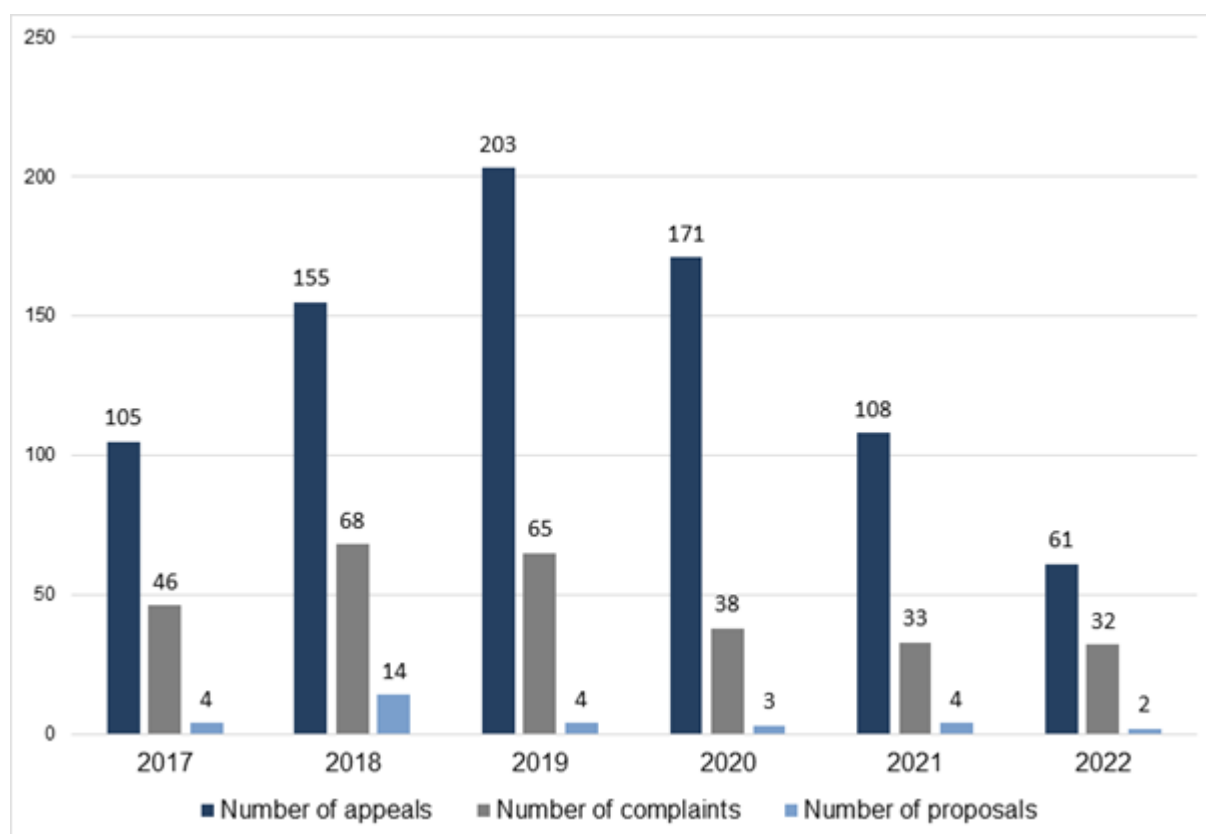
Figure 7. **Total number of appeals, complaints and proposals registered at RSU from 2017 to 2022**

In 2022, 32 complaints 61 appeals and two proposals were registered in the departments. Compared to the previous year, there were no significant changes in the number of complaints and proposals. Evaluating the content of these total RSU complaints, it was found that most complaints were related to the implementation/quality of the study process (16 complaints), knowledge assessment process (6 complaints) and technical provision to auditoriums (3 complaints). Although most complaints concern the implementation of the study process compared to the previous year, their number has decreased by 7 complaints (there were 23 in 2021).

In 2022, the number of appeals fell 47 units compared to 2021. In the reporting year, there were changing trends in the structural units where appeals were registered. The largest number of appeals was registered in the Faculty of Medicine (17 appeals) and the Faculty of Dentistry (12 appeals) and the Department of Biology and Microbiology (12 appeals). There are several departments where no appeals were lodged in 2022, such as the Department of Morphology, the Department of Pathology, etc. No direct relationship with the StD StP "Biomedicine" has been observed.

In order to improve cooperation with students in the study direction, the following mechanisms have been introduced:

(1) At the beginning of each study course of the StP, during the first practical class, the teaching staff shall explain to students the procedure for the implementation of the course, including rules regarding both the acquisition of the course, for example, the implementation of practical classes; both in terms of knowledge testing and knowledge assessment. Information on the implementation of the study process is available to students also on the e-studies site of the course. The practice shows that this information significantly reduces the submission of complaints. **It should be noted that during the reporting period there have been no complaints submitted to the StP "Biomedicine"**.

(2) Students are invited (in addition to e-surveys per semester) to make proposals to both the course teaching staff and the Director of the study programme by telephone or e-mail. The Director of the programme communicates directly with students both when starting studies and during studies, for example, in relation to the commencement of the development of the Master's thesis and other issues. As the total number of students is small, this communication with students is efficient and students use this communication. Moreover, in this communication students have the opportunity to put forward their proposals, which the Director of the programme may further introduce into practice. For example, in mid-reporting period, the need to increase the opportunities for laboratory experiments during practical classes was raised by students due to the increased possibilities to purchase reactive equipment for this purpose.

2.2.4. Provide information on the mechanism for collecting the statistical data, as developed by the higher education institution/ college. Specify the type of data to be collected, the regularity of collection, and the way the information is used to improve the study field. Describe the mechanism for obtaining and providing feedback, including with regard to the work with the students, graduates, and employers.

RSU has developed a system for centralised collection and analysis of key data related to the study process. The system has a clear division of responsibilities for data analysis at various levels (RSU institutional level, study direction and programme levels, faculty and academic structural unit levels and study course level), drawing conclusions and providing feedback on the changes planned and

implemented in the study process as a result of the analysis. In order to ensure data integration, data from different RSU information systems are periodically automatically backed up in data storage rooms, where information can be analysed in different sections integrating data from different sectors. RSU collects data on general statistical indicators characterising the higher education institution, such as the number of students, student success rate, drop-out rates and its causes, as well as admission results. Key performance indicators have been developed, which are periodically measured and monitored, and an in-depth analysis of key indicators is carried out.

Every month, RSU collects the most up-to-date data on the number of students, including student status (active, inactive), type of tuition financing (state-funded studies, studies for tuition fee). Information about the reasons for student drop-out is collected, compiled, and analysed, which is used to identify necessary improvements in the StP.

Data on admission results – the number of individuals enrolled in a particular StP and the total number of applications is collected, keeping track of the demand for the StP. The number of students admitted to the StP is also summarised.

Data on the use of the e-studies environment are collected on a regular basis to monitor the content and quality of e-courses, to identify shortcomings and to provide support to teaching staff in improving the e-studies environment.

The obtained statistical data are used to improve the StD, for example, in the following ways:

- The number of applications for studies, including by programmes, is used to assess the awareness of the StD and its StP. In case of a reduced number of applications, possible causes are analysed and changes to the study programme are made and/or publicity activities for the study programme are strengthened.
- Statistics on study application priorities are used to identify interdisciplinary opportunities in the offer of the StPs.
- Study applications by regions and secondary schools are used to improve publicity activities in certain regions and secondary schools in the next period.
- Statistics on the number of study contracts concluded/students enrolled are used both for a more objective assessment of the number of applications in the future periods and, of course, for the analysis of student dynamics, which affect many other indicators (drop-outs, the number of graduates, the number of state-funded places, publicity activities).
- Statistics on academic achievement are used to analyse both the dynamics of the level of knowledge and skills of students and the relevance of study courses to the needs of students in order to identify possible changes in the study course assessment system and the structure of content and learning outcomes, and possibly in teaching the course in general.
- Dropout statistics are analysed especially in the 1st year of studies, as well as during the whole period of the programme. Dropout statistics together with the reasons for dropping out are used to identify possible differences in the demand and supply of higher education, to analyse the gap in students' expectations and to facilitate the communication of the teaching staff, directors of the StPs and support departments with students about the reasons for dropping out (for example, various options for paying tuition fees, possibilities of having individual tutorials during studies, etc.). The dropout statistics are also analysed during the overall programme period along with the graduate statistics, which are used both in the publicity activities of the programme and in the overall assessment of the complexity and relevance of the programme.
- Statistics on the number of graduates are analysed together with the statistics on dropouts of the overall period of the programme and are used in the publicity activities of the programme and in the assessment of the overall quality and relevance of the programme.

- Statistics on the types of tuition fee payment (loans, sponsorships, grants, own finances) are taken into account to a large extent together with the analysis of dropout and its causes, used in communication with students to reduce dropout risks and in publicity activities of programmes, as well as in cooperation with support departments in the management of programmes, for example by setting payment schedules, possible discounts, tuition fees.
- Status of study course descriptions – information about the status of study course descriptions is analysed to ensure regular updating of study courses, including updating of the literature given in the study course description and other sources.
- Results of study course evaluation questionnaires are used for the review of study courses and for evaluation and updating of the management and mastering of study courses every semester.
- Statistics on the causes of leaving studies are analysed together with dropout statistics to minimise the dropout risks, eliminating the reasons for leaving studies as much as possible. For example, the most common risks occurring in the course of the study process are academic and related to the study plan (motivation, combining with work, content complex, etc.), as well as financial, related to the difficulties of paying tuition fees.
- Statistics on the number and qualification of the teaching staff are used to assess the compliance of programmes with regulatory requirements, publicity activities, identification of the quality of programmes and strengthening of lecturers' qualifications, financial calculations of the study process, etc.
- Distribution of types of teaching staff work – information on types of teaching staff work is analysed in order to plan the development of the staff of academic departments and to balance the pedagogical, research and methodological work of the teaching staff.
- Completion of E-studies – the completion of the E-studies environment (study materials and activities available to students, content usage activity, etc.) is analysed in order to identify and close loopholes in the availability of digital teaching materials and activities and to provide support to teaching staff.

Mechanism of obtaining and providing feedback in work with students and graduates

Student surveys in the higher education institution are organised in a centralised way twice in the academic year. Students complete an anonymous electronic questionnaire for each study course mastered during the semester, in which the content, outcomes, organisation of the study course are evaluated, as well as the work of the lecturers involved in the implementation of the study course are evaluated. The survey results for all lecturers, as well as heads of structural units and programme directors, are available in aggregated form on the RSU academic portal (available only in Latvian). It is the duty of the head of each study course to become acquainted with the results of the course survey and to provide structured feedback to students regarding the identified strengths and weaknesses of the course, as well as planned improvements in the improvement of the study course, if such are necessary. Feedback is submitted by the head of course at the RSU Academic Portal and is automatically published on the Student Portal in MyRSU and the E-studies course, where it is available to both students who learned the course and students who start the course in the next academic year. Thus, when starting the study course, students have access to the results of the evaluation of the previous course, as well as feedback provided by the head of the course regarding the planned improvement of the study course.

Once a year, students of the last year of studies complete the evaluation questionnaire of the study programme, in which feedback regarding the content and outcomes of the study programme are provided. This questionnaire is also anonymous and is organised electronically and its results are automatically collected and published on the RSU Academic Portal, where they are available to study programme directors, heads of study directions and faculty deans.

The information obtained in the surveys is analysed at all relevant levels (at the level of the University, study direction and study programmes, departments and study courses), evaluated and discussed in collegial institutions (faculty councils, department meetings, study quality councils and Dean's Council), in which the experience obtained is summarised and decisions regarding necessary changes in the implementation of the study course or programme are taken.

Mechanism of obtaining and providing feedback from / to employers

Employers' opinions on the study programme are obtained using several approaches. During the period from 30.07.2019 to 31.03.2020, a research commissioned by RSU "Investigation of the competitiveness of Rīga Stradiņš University and RSU Red Cross Medical College Study Programmes and Compliance with Medium- and Long-Term Development Trends of the Labour Market and Industry" was conducted, as a result opinions and recommendation of employers, including with regard to Life Sciences are obtained. In addition to this approach, a different form of direct communication with employers is used, as the number of students is small, for example, **a) the director of the study programme communicates with the main employers directly (by telephone, by e-mail, in various meetings), as experience has shown that such communication is more effective both in providing information about the study programme and in order to identify employers' views and their wishes**; **b)** employers are contacted during the development of the Master's thesis, as supervisors of these papers, as well as employers are involved in the assessment of Master's theses both as reviewers and as heads and members of the assessment commission. **The aforementioned communication with employers takes place every two years, but cooperation with employers (heads of scientific institutes and heads of laboratories), who are involved in the Study Programme Quality Council, is ongoing throughout every academic year**. Thus, the communication provides information from employers on the quality of the study programme and conformity with the labour market, as well as their proposals for improvement of the programme.

2.2.5. Specify the websites (e.g., the homepage) on which the information on the study field and the relevant study programmes is published (in all languages in which the study programmes are implemented) by indicating the persons responsible for the compliance of the information available on the website with the information published in the official registers (State Education Information System (VIIS), E-platform).

Table 2. **The websites on which the information on the study direction and the relevant study programmes.**

Study Programme / Study direction	Sections of RSU website, where the information on the[1] study direction and the relevant study programmes is published:
Academic Master's study programme "BIOMEDICINE"	· Information about the programme in Latvian · Information about the programme in English (Person responsible: Director of the StP Prof. Pēteris Tretjakovs)

Study Programme / Study direction	Sections of RSU website, where the information on the[1] study direction and the relevant study programmes is published:
Academic Master's study programme "BIOSTATISTICS"	· Information about the programme in Latvian · Information about the programme in English (Person responsible: Director of the StP Associate Professor Andrejs Ivanovs)

[1] RSU website is maintained by the Communication Department (information is available in Latvian and English).

RSU employs a wide range of modern marketing communication tools that provide information about the higher education institution, which is a modern, open university and offers high-quality education. RSU ensures presence of the university and high-quality content in traditional and digital media, such as a website that was reconstructed in 2017; strategic work is carried out with the audience on social media, and innovative solutions for communication with young people in social media are implemented. The StP brochure has been updated with the augmented reality app *Overly*. Digital media dominate in advertising campaigns, and the effectiveness of the selected advertising channels is monitored Advertising materials and channels are tailored to the respective audience.

In the long term, relations are established with secondary schools all over Latvia, as well as secondary school students are offered direct contact with RSU, developing RSU messenger programme, possibility to attend programme lectures they are interested in, organising open days, tours etc.

RSU participates in industry events (exhibition "School", etc.), works with the database and e-mail marketing, develops various activities and events also for the target groups of Master's and doctoral StPs.

The information published on the website of the university regarding the StPs corresponding to the study direction corresponds to the information available in official registers, provides basic information to applicants and students, and is published in all languages of the StP.

2.3. Resources and Provision of the Study Field

2.3.1. Provide information on the system developed by the higher education institution/ college for determining and redistribution of the financial resources required for the implementation of the study field and the relevant study programmes. Provide data on the available funding for the scientific research and/or artistic creation activities, its sources and its use for the development of the study field.

Revenues from the study programmes within the study direction are used for staff remuneration, taxes, maintenance of IT infrastructure, purchase of equipment and facilities and placement

expenses. In addition to the direct costs of delivering lectures and conducting classes, the study programme has to cover infrastructure maintenance costs (premises, IT solutions) and costs of other RSU common resources used in the StP (Student Services, library, organisation of the study process, grant for the Student Union and other support and administrative functions).

The expenses related to the remuneration of the academic staff constitute the highest costs for the implementation of the study programmes. The remuneration rates for the academic staff is determined in accordance with the regulations on types and record keeping of work done by the academic staff developed by RSU. The amount of remuneration for the academic staff is determined by taking into account the academic position of the staff, the department and the amount of pedagogical work carried out during the academic year. The amount of pedagogical work is determined on the basis of the planned number of pedagogical work units in the study courses implemented by the department in the relevant academic year. Pedagogical work units according to the types of pedagogical work are planned, calculated and listed in accordance with the regulations developed by RSU.

Funding for the implementation of the study direction is provided from:

- state budget grants for studies and social payments;

- revenues from tuition fees and fee-based courses;

- funding for science (state budget and EU structural funds, international project funding, revenues from contract work, etc.);

- revenues from other services, for example, student halls, rental of premises and equipment, etc.

During the annual RSU budget planning process, each department plans its own department budget, which is necessary for the implementation of study programmes, research and provision of infrastructure expenditure. When planning the budget, the director of each study programme discusses the provision necessary for the study programme with the head of the department, whereas the departments submit budget applications, which are further evaluated by deans, persons responsible for the procurement, vice-rectors and the Rectorate. The budget submitted shall be agreed by the Senate and approved by the Council.

The budget allocated to the department depends on a number of factors, such as the planned number of students, the planned amount of pedagogical work, the necessary infrastructure investments, the necessary investment in the development of study programmes, maintenance costs of the departments, revenue trends in the particular faculty, scientific activities, etc. Financial results of the particular academic year of each study programme are also taken into account in the planning of the budget. A detailed budget is approved for each structural unit, i.e. specific costs for a specific purpose are approved. Within the budget year, it is possible for departments to request additional funding, if there have been changes in a factor, for example, a larger number of students applies for a specific programme, as planned in the preparation of the budget application (revenues have also increased accordingly).

A wide range of RSU facilities is available for the implementation of study courses, which allows to reserve study rooms and computer rooms in the common system. It should be noted that RSU activities are a diverse and modern base for laboratory equipment and equipment, therefore the related courses (their departments) provide funding for the purchase of chemical reagents, materials, specific software, e.g. reactive applications are used so that students can test biological samples during practical classes. This has contributed to the development of the study programme "Biomedicine".

External funding and internal funding are used for research, e.g. although the funding for the study

programme "Biomedicine" is intended solely for academic activity (provision for the implementation of study courses), but taking into account that students develop their master's theses at RSU research institutes, funding for scientific activity (research) is also used.

External financing is provided by participation in various EU and national programmes and initiatives – the biggest EU research and innovation programmes Horizon 2020 and Horizon Europe – and funding opportunities such as Joint programming initiatives, International Cooperation programmes, EU Structural Funds and other programmes are also used. From local funding initiatives: National Research Programme and Fundamental and Applied Research Programme. External financing also consists of revenues from cooperation with the private sector (contract research, commercialisation projects).

The assets are used in RSU internal programmes, which are funded from RSU resources. The funding for internal research projects is allocated during the planning of RSU annual budget. Several internal funding programmes exist: grants for doctoral students, RSU internal grants, inter-university cooperation grants, aid to certain projects from RSU Alumni Association, cooperation with the Boris and Inara Teterev Foundation.

Artistic creative activities (dance group and choir) are funded from:

- RSU own funds;
- Riga City Council co-financing.

In order to promote research and help researchers at the initial stage of their careers, RSU has established incentive schemes and practices:

- RSU internal grant system (approximately 400 thousand euro per year);
- joint RSU and Riga Technical University (RTU) grant programme for multidisciplinary research;
- grants for post-doctoral students and researchers at the initial stage of their careers (European Social Fund);
- grants for doctoral students;
- co-financing for international cooperation networks and mobility (*Erasmus+*).

2.3.2. Provide information on the infrastructure and the material and technical provisions required for the implementation of the study field and the relevant study programmes. Specify whether the required provision is available to the higher education institution/ college, available to the students, and the teaching staff.

IT support and Technical provision for Rīga Stradiņš University students and teaching staff

IT Service Centre

In order to ensure continuous availability of IT resources for the study process, an IT Service Centre was established: IT support for students, administrative staff and teaching staff providing answers to questions related to RSU IT systems. The applicant may ask questions using the IT User support system - for help.rsu.lv, by e-mail: it@rsu.lv or call phone number 67061515. Opening hours are from 7.30 to 20.00 on weekdays and from 9.00 to 16.00 on Saturdays.

WiFi

RSU staff and students have the possibility to use the *Eduroam* WiFi network free of charge. *Eduroam* has a free service that allows you to connect to the WiFi network in more than 6,000 locations in over 100 countries around the world: universities, research centres, educational institutions, schools and other research and educational facilities. Students may connect to the *Eduroam* wireless network using their username and password. RSU students may also use open access computers with provided access to student IT systems and Internet resources.

Infrastructure

Multimedia projectors, most of which are high-resolution interactive projectors connected to a sound system, are available in 193 lecture rooms for the use of audiovisual materials for studies. A centralised management system of the multimedia equipment in lecture rooms has also been set up. Ten computer rooms with more than 200 workstations are also available for the study process, both for specific courses and for electronic examinations and other types of knowledge tests:

1. 28 hybrid lecture rooms with automatic following the conducting of hybrid lectures and classes.
2. 8 lecture rooms for more than 100 students, equipped with the possibility of conducting online lectures and classes.
3. Other auditoria are equipped with standardised equipment, which includes interactive projectors or interactive TV screens and centralised management of multimedia equipment.
4. Recording room for recording high-quality audio and video content for lectures and online events, as well as for recording podcasts or audio soundtracks.
5. There is a specially equipped studio for creating interactive content. Various technological solutions are available in the studio: Green screen, Interactive display and the first transparent whiteboard (learning glass) in the Baltics, which can be used to prepare more engaging and enjoyable video lectures and classes.

The physical IT infrastructure of RSU consists of:

- RSU computer network located in twenty-three buildings, connections thereof, with a total of 4,418 network connection ports, 323 wireless network access points, including provision of a wireless network at the Halls of residence;
- RSU uses the infrastructure and resources of the Latvian Academic Network Data Centre, that is supplemented with a secondary data centre located at RSU, consisting of 48 physical servers, four dedicated disk arrays, *VMware* virtual server infrastructure with more than 200 virtual servers, backup power systems, cooling, data backup copy infrastructure;
- IT hardware and system monitoring system *Nagios, HP IMC, MS SCCM* with more than 2000 monitored devices and services;
- Communication platforms: *MS Teams* and *Zoom* are available to all staff and students; *Zoom* is used as the main remote learning platform, with more than 74,900 lectures and classes held in 2022.
- Panopto: a video lecture recording system with more than 31,000 video recordings; an average of 30 new video learning materials are added per day and a total of more than 300,000 lessons viewed per year.
- e-mail systems for staff: *Exchange* for staff ensuring management of the calendar and contacts; cloud service *Office 365* for students;
- *MS Active* directory-based electronic identity management infrastructure maintenance (one username and password for all centrally maintained IT systems);
- maintenance of the file server;
- maintenance of computerised workstations and computer rooms (2,144 computers, 456 printing equipment units, scanners and other equipment;

- maintenance of classroom equipment - 193 permanently equipped classrooms;
- self - service copying / printing / scanning systems.

RSU lecturers and employees have the opportunity to use the room booking system Booker, which is linked to the lecture and lesson planning system *Timetable*. The room booking system *Booker* allows you to find all the rooms RSU offers for the study process, view the room occupancy, including lectures and classes, as well as make room and table bookings.

The lecture and lesson planning system "Timetabler" is a cloud-based service that provides an opportunity to schedule academic events for students and lecturers in a fast and efficient way.

The system provides the following functionalities:

1. Checking rooms, lecturers and students to avoid event clashing;
2. An automatic event scheduling solution *Autosheduler;*
3. Drawing up detailed reports;
4. Integration with the O365 calendar solution.

The infrastructure and technical facilities established by RSU are equally available for all RSU StPs. Detailed information on infrastructure and material and technical provision is available in the Annex 23.2 "Assessment of the information and methodological base for IT infrastructure and available resources".

2.3.3. Provide information on the system and procedures for the improvement and purchase of the methodological and informative provision. Description and assessment of the availability of the library and the databases to the students (including in digital environment) and their compliance with the needs of the study field by specifying whether the opening times of the library are appropriate for the students, as well as the number/ area of the premises, their suitability for individual studies and research work, the services provided by the library, the available literature for the implementation of the study field, the databases available for the students in the respective field, the statistical data on their use, the procedures for the replenishment of the library stock, as well as the procedures and possibilities for the subscription to the databases.

General information

The total area of the library premises is 2044 m^2, including reading rooms of 1318 m^2 (places for 290 readers, 81 computer sites, wireless internet). The open-access subscription library has well-equipped premises, the possibility of taking books home using self-service machines; there are reading rooms for group and individual work. To ensure accessibility for disabled visitors, the Library has a lift from one floor to another in the main building. The Library is located in the main RSU building (Dzirciema iela 16, Riga), and it has three branches:

- in Riga - at RSU Red Cross Medical College Information Centre for Latvian Healthcare Specialists (J.Asara iela 5) and in the Medical Education Technology Centre, METC (Anniņmuižas bulvāris 26a);
- RSU Liepāja branch library (Riņķu iela 24/26).

Services of the Library: a wide range of information resources, advice on searching for

information, including searching by thematic requests. Specialists of the Library conduct information literacy classes, which are included in study programmes and offer support to researchers (information in Latvian, in English).

Students can communicate remotely with the Library on various issues by phone or using the system **help.rsu.lv.** Information resources that are not available in RSU Library collection can be ordered from other libraries using the **Interlibrary Loan (ILL) or the International Interlibrary Loan (IILL).**

Each year, the Library environment is gradually improved and upgraded; new technologies and services are introduced (self-service facilities with possibilities for users to issue the books to themselves, return the books, extend the period of use, view their user account, as well as print, copy and scan by using multifunctional equipment). Self-return facilities allowing to return the library books also outside the Library opening hours are located at the entrance of RSU building at Dzirciema iela 16, and J.Asara iela 5.

Information resources

The collection consists of ~ 566,700 physical units, including ~ 254,200 books. The subscribed databases contain ~ **464,700 items of subscribed electronic resources** (including ~90 % of e-books).

Funding for purchasing resources is increasing. Funding per one user of the library was 31 EUR in 2021. Approximately 89 % of the budget intended for acquisitions of the collection is spent on subscription and purchase of electronic resources.

Year	2017	2018	2019	2020	2021	November 2022
Allocated funding (EUR)	**350,400**	**442,360**	**475,460**	**503,480**	**507,234**	**602,910**
including subscribed resources	274,000	301,870	317,532	337,500	339,360	427,872
including training platform		53,542	76,230	81,675	87,428	90,925

Databases

Access to 27 online e-resources is provided. Students and lecturers can access the subscribed databases remotely using the username and password assigned by RSU.

Statistics on the use of database is high. It is evaluated once half a year. Statistic indicators on the use remain high and tend to increase.

Procedure for replenishing the Library collection and subscribing to databases

RSU has introduced and the Library has implemented the support process, which defines how to provide RSU study programmes and research activities with the necessary information sources and services in the Library. The Process Description defines the following: 1) planning, evaluating and replenishing the acquisition of information sources and 2) determining the level of user satisfaction.

Subscription to the databases takes place after trial periods and analysis of the statistics on the use, the user feedback, and costs.

In order to improve the relevance of the Library collection to the needs of students, work is carried out on the bibliography of study courses, cooperation with the teaching staff to inform them about the provision of literature for study courses. Lecturers and students can also send their orders/suggestions for additions to the collection electronically to help.rsu.lv.

Availability of the Library data in the digital environment of the University

The *Primo* unified search engine *is* used to manage e-resources, providing fast and streamlined search for e-resources. Information on databases is available also from RSU Student Portal *MyRSU*.

RSU students have the opportunity to access students' final papers and other RSU publications in **the Institutional Repository** on the *dSpace* platform.

Since 2020, publications of RSU academic and research staff are entered into the new **Scientific activity information system (ZDIS)** *Pure* (a unique tool in which it is possible to search for research in the fields of RSU research).

Current events of the Library can be tracked on the *Facebook* profile "Rīga Stradiņs University Library".

RSU Library - an accredited library of national importance. Re-accreditation was granted in November 2021. The library resources and services are assessed as very good, meeting the demand of students and teaching staff to ensure successful completion of the relevant study course. Simple procedures have been introduced to suggest additions to the collection or to contact the Library about services. Both student and teaching staff surveys confirm good and very good assessment of the Library. In recent years, the Library has received both the Annual Award of the Student Union (as a testimony to students' satisfaction with the quality of resources and services) and the Annual Award of RSU Administration as the best department of RSU. Like other universities in the world today, e-resources are a priority for RSU Library.

Detailed information on infrastructure and material and technical provision is available in the Annex No. 23.1 "Assessment of the information and methodological base of the Library resources for the implementation of the study direction "Life Sciences" in accordance with the requirements of the guidelines".

2.3.4. Provide a description and assessment of information and communication technology solutions used in the study process (e.g., MOODLE). If the study programmes within the study field are implemented in distance learning, the tools specially adapted for this form of study must also be indicated.

Students and employees of Rīga Stradiņš University (hereinafter - RSU) are provided with a developed IT infrastructure and IT services that are constantly developing taking into account the growing demands on IT from students and employees.

E-learning environment

One of the main sites used by RSU students is the e-learning environment. The e-learning environment provides access to all study courses implemented in all study plans, so e-studies can be used by any RSU lecturer, and students have access to e-study courses that the student is

learning or has previously learned. The e-learning environment is used as a tool for organising the study process in each study course - for uploading various materials, completing tests and homework, checking plagiarism and posting assessment. In addition, the e-learning environment provides a calendar of upcoming events, the latest RSU news and discussion forums, study materials and all the latest information on what the course lecturer wants to share with students - various assignments, sample test papers, useful supplementary materials, etc. In the e-learning environment, students can access not only the courses of the current semester, but also the courses learned in previous semesters and the content of the previously completed courses, as they are for students in the current semester. RSU e-studies are available 24 hours a day, 7 days a week from any location with Internet access, including mobile devices. Student portal MyRSU is linked to the e-learning environment.

Student Portal MyRSU

RSU students have access to the student portal *MyRSU,* which combines the opportunity to view the necessary information about studies and use e-services necessary for the study process in one place. *MyRSU* is available both as a browser and as a mobile app, which enables faster and more convenient access to all the necessary university information, such as e-studies and final grades in study courses, lecture and class schedule, invoices, application for Part B courses, acquired skills, study course and study programme evaluation questionnaires and feedback, key contacts, access to *Office 365* applications, self-service print management (printing, scanning, copying). Using *MyRSU*, students can extend the loan periods for books and access RSU subscribed databases. In the statements and submissions section, the student may request various statements, which will be signed with a secure electronic signature and sent to the student's e-mail address.

Remote lectures and final examinations

In the context of the global pandemic, the e-learning environment became the basis for interaction between the university and students. In addition, e-learning environment also offers the possibility to host online conferences where the lecturer and students can meet virtually. These online virtual classroom meetings can also be watched later as a recording in the e-learning course. In some courses in the e-learning environment, students also have access to electronic tests for successful completion of the study course, which not only allow a quick and qualitative assessment of the students' knowledge, but can also be used as a tool that allows the student to master the course material with the help of the self-testing method. In each e-learning course, the lecturer can electronically record student attendance at lectures and classes, and the attendance data is automatically displayed in the e-grades section, thus providing a more convenient overview of the student's performance in the course. The e-learning environment is also used as a tool to register remotely for placements, tutorials, examination dates and times and other events.

Remote lectures and classes are mostly delivered via Zoom; video recordings are available using the Panopto service (RSU lecturers were provided with appropriate licences). Under these conditions, RSU lecturers demonstrate great IT skills. Not only the study courses, but also the process of developing, pre-defence and defence of the Master's theses takes place entirely online. This experience leaves no room for doubt about the possibilities of implementing the new study programmes in the form of distance learning. The e-learning environment is already being used as a tool to organise the study process in each study course and provides appropriate opportunities for the implementation of study programmes in the form of distance learning. In order to enhance the export capacity of the study programme, it is planned to implement the study programmes also by distance learning (currently the Bachelor's study programme "Law" is already being implemented by distance learning).

RSU has provided an opportunity for students to submit their final theses in video format using the

Panopto service. Online examination service is provided in a secure environment using the *LockDown Browser.* The *LockDown Browser* is integrated into e-learning (*Moodle*) and designed to increase security during online examinations. When students use the *LockDown Browser*, it is not possible to perform actions such as copying, visiting other Internet links or apps, closing the test before it is submitted for assessment; the test cannot be minimised or the test window resized; key combinations and the right-click menu of the mouse are disabled, operating system menu bars are disabled, and messaging and screen-sharing links are disabled.

RSU academic staff can make video recordings of lectures and presentations. Links to ready-made video recordings can be posted in RSU e-learning environment as well as on other sites. The service is provided by the *Panopto* service. RSU academic staff can make live broadcasts of lectures and presentations. The service includes the possibility to create a link to the specific live broadcast in advance, which may be placed in RSU e-learning environment as well as on other sites.

Panopto enables parallel recording of multiple cameras and screens. The possibility to search for phrases in slides, the possibility to add subtitles or tests, as well as user view reports.

Content originality checking tools

RSU academic staff and students have the possibility to use the *Turnitin* tool. Turnitin is the world's leading editing and anti-plagiarism tool. Turnitin is fully integrated into RSU e-learning environment and provides a complete service for submission, correction, plagiarism detection and return of submitted work.

All student papers are submitted to the lecturer-created *Turnitin* task, which not only facilitates the collection of papers, but the system automatically checks the originality of the paper, providing a full report on plagiarism in the content. The tool has the option of creating rubrics and comment templates, as well as for students to submit and evaluate each other. Checking for plagiarism is possible by comparing the paper with the work of other students (both at RSU and other higher education institutions in Latvia and in the world that use *Turnitin*), with the Internet resources that are freely available to everyone, and with journals, other publications, and resources included in the *Turnitin* database.

Skills monitoring system

A Skills Monitoring System consisting of several components has been set up for the improvement of students' skills and for the maintenance of the acquired skills portfolio:

1. A catalogue of simulation technology resources, which aims to ensure the management of simulation technology resources, is based on a hierarchical catalogue of simulation technology resources to be used for the acquisition and development of skills.
2. Management of the Medical Education Technology Centre (MITC) resources aimed at providing support for the management of MITC simulation events and related resources. The basis of the MITC resource management system is the MITC simulation event calendar, where the MITC simulation events are planned, the MITC resources (premises, simulation technology resources, support staff) are planned for their implementation, resources for the implementation of the simulation event and the availability of equipment for planning other simulation events are recorded.
3. RSU e-services portal contains the e-service "Application for skills training and independent development", which provides an opportunity for students to register for the planned simulation events for skills development, the management of which is implemented in the MITC resource management system.

E-Resource Repository

The e-resource repository DSpace.rsu.lv stores digital research. This site contains articles, papers, conference proceedings and other documents in a variety of digital formats. The defended Bachelor's, Master's and other final theses of RSU students have been accessible on the e-resource repository (DSpace) since 2020. Various RSU publications in Open Access are also published in the repository on a regular basis.

Repository for study materials

RSU has introduced a repository for study materials, which is a well-structured storage base for digital learning materials, where study materials for teaching purposes developed at RSU or obtained as a result of cooperation are placed. These include presentations, video lectures, training videos, infographics, digital interactive scenarios, digital books and other types of information. Materials in the repository are structured by subject and collection, so that the necessary information can be found easily and quickly. Filters will allow you to search by author, year of creation, keywords or the format of the material, such as video, book, or presentation. Searching with the help of filters will provide an opportunity to narrow down the amount of information and quickly find the study material you need.

The repository will give lecturers the opportunity to share materials, saving resources, as well as to familiarise themselves with examples of good practice of their colleagues.

E-services for students

Upon starting studies at RSU, each student is assigned a username and, using the self-service facility available to RSU students, students obtain a password that can be used in RSU IT systems for students.

RSU offers its students to use *Office365*, providing an option to use full *Microsoft Office, OneDrive* file storage without additional fee. While studying at RSU, students have access to all the software necessary for a successful study process. The student can install *Microsoft Office* software, *Word, Excel, PowerPoint, OneNote* on five computers (*Windows* or *Mac*) and five mobile devices (e.g. a smartphone, a laptop and a tablet). Students may use *OneDrive* of 1 TB for automatic synchronisation of devices. With *Microsoft Office 365* synchronisation, RSU students can see their class and lecture schedules on their phones and other smart devices. The service is available using the built-in calendars on smartphones or via *Microsoft Outlook* application. Students can share files using RSU student account *OneDrive* cloud service.

RSU students and employees have access to a modern application system (*JIRA*) on the platform help.rsu.lv in order to receive necessary IT or other support.

Mapping system for study programmes

For more efficient management of the study programme, the introduction of the mapping system for study programmes has started. The catalogue, descriptions, learning outcomes and implementation plan of the study programmes and directions implemented at RSU are available in the mapping system for study programmes. The system contains the following sections:

1. Study directions: study directions implemented at RSU and the study programmes included therein.
2. Study programmes: programmes implemented at RSU, their descriptions, learning outcomes and study plans.
3. Implemented programmes: a catalogue of programmes implemented at RSU (includes different types of programme implementation (full-time/part-time), languages (Latvian/English) and locations (Riga/Liepaja).
4. Comparison of study plans: an interface for comparing study plans to review the scope of

changes in the programmes and their impact.

5. Documents on requirements: documents regulating the content of study programmes (Cabinet Regulations, Standards for Occupations, etc.) and the requirements included therein, which are used for mapping learning outcomes.

Student information system

RSU administrative staff have the possibility to use the Student Information System (SIS), where all RSU student data is available, such as student admission data, final grades and study courses. The Academic Portal is the user interface of the Student Information System through which RSU academic staff, Directors of study programmes, Heads of departments and other staff involved in the educational process can access certain data sets located in the Student Information System.

Academic portal

The Academic Portal was developed for RSU needs to provide access to information from various RSU information systems related to the study process at RSU, such as register of study courses, clinical skills register, survey results, feedback to students related to the survey results, etc. The modular structure of the Academic Portal is based on the *Microsoft SharePoint* platform.

Improvement of digital skills

RSU Centre for Educational Growth regularly organises continuing education courses on both face-to-face and remote teaching and learning, as well as advises teaching staff on the application of appropriate pedagogical methods and optimal selection of e-learning support tools.

In order to improve the skills of the teaching staff, the IT Department regularly organises thematic training sessions on IT tools, as well as provides an opportunity to apply for online one-to-one consultations with experts in improving the digital skills of the teaching staff. Consultations are mostly provided using one of the communication platforms (Zoom, MS Teams).

More detailed information is available in the Annex 23.2 "Assessment of the information and methodological provision regarding IT infrastructure and available resources".

2.3.5. Provide information on the procedures for attracting and/or employing the teaching staff (including the call for vacancies, employment, election procedure, etc.), and the assessment of their transparency.

When developing a new StP, academic and research staff in compliance with provisions of Section 55, Paragraph one, Clause 3 of the Law on Higher education Institutions and the Law on Scientific Activity is involved for its provision. Academic and pedagogical staff with high qualification, relevant competence and good reputation are involved in the implementation of the study direction and achievement of results.

The process of recruitment and evaluation of lecturers is transparent, effective and one of the prerequisites for high quality of the study process.

At the study programme level, the duty of the director of the StP is to ensure the compliance of the content of the study programme with internal and external laws and regulations, requirements of the labour market, sectoral development trends and needs of students, to analyse data that might provide information about factors affecting learning outcomes and quality of the study programmes and to implement necessary improvements to the study programmes. Quality indicators of StP that

are directly linked to the remuneration of the directors of the StPs are measured at the level of the StP.

At RSU level, the duty of the management is to set strategic and quality aims and quality policy, to make a decision on quality approach, to manage resources, and set the internal procedures. Supervision of the implemented system in RSU is carried out both by internal system and quality auditors, and independent external experts. One of the indicators of study quality at the University level is the public attitude and opinion, as well as the popularity of RSU. It is regularly established by participating in a reputation survey and brand evaluation.

More information on the procedures for attracting and/or employing the teaching staff is available in the Regulations on academic elections specified in Annex 1 and in the Process description No. 29 "Academic Staff Elections" and in the Part 1, Paragraph 1.10 of Annex 23 Compliance of the study direction with Part 1 of the standards and guidelines for quality assurance in the European higher Education area (ESG).

2.3.6. Specify whether there are common procedures for ensuring the qualification of the academic staff members and the work quality in place and provide the respective assessment thereof. Specify the options for all teaching staff members to improve their qualifications (including the information on the involvement of the teaching staff in different activities, the incentives for their involvement, etc.). Provide the respective examples and specify the way the added value of the possibilities used for the implementation of the study process and the improvement of the study quality is evaluated.

For the lecturers involved in the study direction and programme implementation, the teaching load is planned according to the study plan of each academic year and study semester. Study courses can be organised in modules and the workload is reviewed according to necessity and regulations. RSU promotes a balanced workload for lecturers, and promotes a healthy lifestyle to reduce and eliminate the risk of burnout for teaching staff.

Academic and research activities at RSU are carried out by distinguished and highly regarded permanent employees elected to academic positions. In order to ensure comprehensive knowledge and skills appreciated on the labour market, educational staff performing the duties as the teaching staff only for a certain time are involved in addition to the permanent staff. The staff includes industry experts and teaching staff elected in other higher education institutions,

Annex 6.2 provides biographies of the teaching staff attached electronically (*Curriculum Vitae in Europass* format). Annex 6.1 (in *Excel* format) provides basic information on the teaching staff involved in the implementation of the study direction, specifying their degree/qualification, election status at the higher education institution, study programmes and study courses, in the implementation of which they participate, and certification of knowledge of the official language and foreign language (if applicable). Annex 24.6./24.7 shows the analysis of the teaching staff data.

In order to ensure the fulfilment of functions in support of the training and study process, record keeping and quality management, human resources and financial management, solution of legal issues, RSU employs general and administrative staff, that constitute one fourth of the number of employees. At the same time, the operating staff is responsible for the management of the buildings and the territory, for the development of the infrastructure, etc.

The academic staff application and selection procedure at RSU is regulated by internal regulations:

- Regulations on Academic Election at RSU;
- Regulations on the Procedure of Inviting Visiting Lecturers to Rīga Stradiņš University.

Qualification for an academic position takes place according to the requirements set for the job in the Law on Higher Education Institutions, the tasks of academic positions defined in RSU Constitution and the election procedure of RSU on the basis of the individual's:

- education,
- experience,
- competences,
- potential,
- achievements,
- scientific contribution,
- teaching skills,
- service record,
- recommendations of experts and sectoral representatives.

The career development of academic staff is one of the main ways, how RSU can affect the renewal of human resources for research and studies.

RSU Centre for Educational Growth was established in 2014 to increase the quality of studies and improve the competence of teaching staff. Within the scope of its operations, it provides support in the improvement of the quality of studies by analysing the study process, providing support and advising teaching staff on the study programmes, updating of courses and organising pedagogical growth of academic staff in continuing education activities according to current needs.

The education activities offered by the Centre are based according to the following thematic blocks:

- pedagogy (university didactics and education management),
- technology-enhanced learning and teaching (information and communication technologies, digitisation),
- transversal competence (e.g., skills to communicate, collaborate, innovate, improvise, work interdisciplinary and data-based research).

So far, the Centre has developed more than 40 different training activities, the format of which is adapted to the goal to be achieved. These can include interactive workshops, seminars, conferences, think tanks, thematic cycles, guest lectures, simulation-based scenarios, etc. Since March 2020, training has been conducted remotely, maintaining the same level of participant involvement as in face-to-face training activities, but allowing a wider range of participants to join the training activities. Within the framework of one semester, approximately ten thematic cycles are implemented for more than 140 academic hours. Interest in offered activities continues to increase. For example, the number of academic staff participating in continuing education activities increased by 29% in spring 2021 compared to autumn 2020. The Centre for Educational Growth attracts the interest of teaching staff by organising training sessions of various content, for example, in the spring semester of 2021, training on academic integrity, presentation writing and assessment was very popular.

At the beginning of the Centre's activity, thematic activities focused mostly on defining learning outcomes, assessment of the learning outcomes and development of the pedagogical design of the study course, focusing on basic pedagogical regularities. Over time, these topics have been supplemented by a wide range of training activities for the improvement of pedagogical and digital skills of the teaching staff. The great work invested in upgrading of digital skills showed its

efficiency during the pandemic with the onset of remote work. The Centre, in active cooperation with RSU information Technology Department, carried out a huge number of training activities on the use of the communication platforms *Zoom*, Teams, the use of the e-learning *environment* Moodle, the organisation of remote group work in *the Miro* tool, the development of interactive digital scenarios in the Twine environment, the creation of self-check tasks on *THE H5P* platform and the use of many other digital tools in the study process.

The Centre for Educational Growth conducts mostly counselling activities, which has provided substantial support for the improvement of pedagogical and digital skills of the teaching staff and for the meaningful implementation of the technology-enriched study process, especially during the period of remote and hybrid studies.

The most frequent thematic groups identified in the consultations are:

- **assessment in the digital environment:** definition of the learning outcomes to be achieved, design of activities, adaptation of the type of examination to full summative, formative and cumulative assessment;
- **organisation of group work and independent work in the digital environment:** promotion of student involvement, cooperation in a team, adequate assessment of individual contribution;
- **high-quality combination of synchronous and asynchronous activities:** creating a study course design for combined, remote and hybrid process;
- **increasing interactivity of learning activities**: the student is an active participant in the process and not a passive consumer.

The teaching staff involved in the implementation of the study programmes included in the study direction "life Sciences" have access to the entire content of continuing education offered by RSU Centre for Educational Growth, which is updated every semester. Contribution to the quality of the study process is provided by the fact that thematic studies are attended not only by the teaching staff, but also the support staff involved in organisation of the study process in order to promote pedagogical understanding of the study process and strengthen effective cooperation with the students. Each semester of the academic year, relevant content in various process forms corresponding to the research of the lecturers' needs is offered.

In RSU External Reputation Assessment, for several times in a row, RSU has been recognised as the university with the best reputation in Latvia by a study conducted by *Kantar* among the largest universities. RSU also attracts *Kantar* to conduct research on employee satisfaction. The English language training project assessment was included in the questions of RSU Employee Satisfaction and Engagement Survey in 2019, confirming that 85% of the employees who participated in the survey (a total of 731 employees) consider the English language proficiency testing and training project as an opportunity to improve their qualifications. At the same time, with regard to ensuring of the development of improvement of the lecturers' competences, most of the 367 lecturers - 86% - have answered affirmatively to the statement "I receive sufficient support for the improvement of my pedagogical competence".

In general, it can be concluded that systematic and regular activities are carried out to strengthen the capacity of the teaching staff, which is also appreciated. (See Annex 23, Paragraph 1.5 for more information)

2.3.7. Provide information on the number of the teaching staff members involved in the implementation of the relevant study programmes of the study field, as well as the

analysis and assessment of the academic, administrative (if applicable) and research workload.

Annexed:

Annex 6.1 Basic information about the teaching staff involved in the implementation of the study direction (*in Excel* format).

Annex 6.2 Biographies of the teaching staff (*curriculum vitae in the Europass* format).

Annex 6.4 List of publications of the teaching staff during the reporting period (compiled information on scientific activity of the teaching staff).

Annex 24.4 A statement that the knowledge of the official language of the teaching staff involved in the implementation of the StPs corresponding to the study direction complies with the regulations regarding the extent of knowledge of the official language and the testing procedure of the official language proficiency for the performance of professional duties.

Annex 24.5 Evidence of the relevant foreign language skills of the teaching staff to be involved in the implementation of the STP at least at level B2 according to the Common European Framework of Reference for languages.

Annex 24.7 Analysis of the composition of the teaching staff.

The teaching staff involved in the implementation of the StD and StPs plan their pedagogical workload according to the study programme for each semester and academic year. Individual study courses are organised in modules and the workload is reviewed in accordance with the need and provisions of laws and regulations.

The implementation of the StD involves highly qualified lecturers who are experts in the sector and specialise in the respective study course topics. Lecturers, whose qualification and abilities are of high level and assessed over a long period of cooperation, are involved in the implementation of the StD and programmes, therefore, changes in the staff composition are not relevant.

Full-time university lecturers are required to participate in research activities that are regulated by staff job descriptions. Depending on the type of academic position, the proportion of duties and responsibilities of the employee in scientific and research activities has been determined.

The division of responsibilities within a structural unit may be changed by the head of the structural unit in agreement with the employee, according to the planning of the pedagogical work and the projects to be implemented.

Results of the research activity of the academic staff are summarised once a year and included in the research activity report. For some groups of the staff, they are related to the principles of remuneration and motivation. Achievements of the teaching staff can be seen not only in their personal *CVs,* but also in RSU Research information Management system (*ZDIS pure*), where information on the scientific performance of structural units and academic staff is added, compiled and maintained.

RSU is constantly planning and implementing activities aimed at motivating the academic staff to engage in high-level scientific and research work, in particular associate professors and professors (aiming to reach 60% of working time spent on research), which will encourage new specialists to

engage in sectoral research, and contribute to the overall development of science at national and international level.

2.3.8. Assessment of the support available for the students, including the support provided during the study process, as well as career and psychological support by specifying the support to be provided to specific student groups (for instance, students from abroad, part-time students, distance-learning students, students with special needs, etc.).

RSU student with special needs is an RSU student with functional restrictions requiring adaptation of the study environment and process in order to create equal opportunities to receive the higher education. RSU supports students with special needs in various stages related to studies – selecting a suitable study programme, when enrolling with the higher education institution, and in the study process (study materials, taking examinations, etc.) and creating appropriate social and physical environment. (e.g., availability of the environment of the medical Education Technology Centre, information in Latvian, in English). The aim of the support measure is to promote the independence and inclusion in the study process of the students with special needs. Guidelines and support policy have been developed regarding support to RSU students with special needs (information in Latvian, in English).

Since 2012, all RSU students have access to psycho-emotional support. The service was introduced with the aim of helping students to overcome adaptation problems when starting their studies, reducing the emotional manifestations of stress, stress-related health disorders, psychosomatic disorders or illnesses, overcoming relationship-building difficulties and crisis situations. A human being is a single entity, and only an emotionally stable and balanced student rarely gets sick and achieves more. The availability of the service has been appreciated by both local and international students. The student may choose to attend group or individual visits to the resident physician. The introduction of the service has helped to reduce the number of students who have dropped out of the study process, and has helped to increase the efficiency of study work by reducing students' stress and adaptive disorders

RSU has a Career Centre (information in Latvian, in English). The Career Centre is an active member of the Latvian Career Development Support Association (LKAAA). LKAAA is a non-governmental organisation established with the aim of promoting the development of the career development support system (KAAS) intended for strengthening the national economy and well-being of the people of Latvia. LKAAA cooperates with the European Cummission Career guidance and information network *Euroguidance*. In Latvia, *Euroguidance* is represented by the Information and Career Support Department of the State Education Development Agency. *Euroguidance* aims to promote the policy and practice of the KAAS by providing information to policy makers and support to career guidance counsellors and other actors in the system.

The services of the Career Centre are available to all RSU students, prospective students, as well as employees. Group career counselling is particularly appreciated and in demand. Individual consultations are held regularly for any interested party upon request. Events organised by the Career Centre on current issues in the labour market, as well as other career and self-development related topics, are regular (weekly) and in demand among the students. Students can post their *CVs* and receive information about employer vacancies on RSU Career Centre Portal (information in Latvian, in English). RSU Career Centre provides literature and information materials on career

topics that students can read on the spot or take home for reading. "Mana karjeras grāmatiņa" *("My Career Book")* was published in collaboration with the author Arta Citko - a workbook for young people to record their potential career, business or study choices and other experience.

Since 2019, excellent cooperation has been maintained with the National Library of Latvia - "Come with the classmates on an excursion to the National Library of Latvia and participate in a class of RSU Career Centre!". Prospective students, i.e., secondary school students, are provided with the opportunity to learn about career choices, higher education options during the seminar, as well as to perform an express test developed at the Career Centre in cooperation with the specialists of the RSU Psychosomatics Clinic.

There is continuous cooperation with employers on several levels. In order to promote cooperation with employers' organisations, their involvement in the education of future specialists, as well as to increase RSU students' competitiveness on the labour market, meetings, guest lectures and excursions to cooperation companies and institutions are organised on a regular basis. Employers' organisations give presentations where employer representatives tell about the career opportunities in the respective organisation, offer RSU students and graduates the current vacancies, as well as give practical advice on how to succeed in the labour market.

The International Department (ID) provides informational support to the international students who have confirmed their desire to commence studies to ensure their successful and swift integration in the university and Latvia. The new international students electronically receive an invitation to RSU Orientation Week, informative edition of *Survival Guide*, internal rules and regulations of the higher education institution, as well as other regulatory study documents and a sample of a study contract in Latvian and in English, also information on various accommodation options in Riga, etc. RSU website in English offers wide information on RSU and life in Riga. To make the life of the students easier, the university offers several housing options, including RSU Halls of Residence at Dārza iela 5, Riga, which was built at the end of 2017. The ID provides support to third-country nationals in handling immigration procedures.

One week before the beginning of each semester, the ID organises Orientation Week during which international students are informed about the university, studies, assessment system, students' rights and duties, students' e-systems, immigration and residence aspects, the Latvian culture and language. During the Orientation Week, international students learn about various RSU departments (for example, Student Services, Information Technology Department, Library, faculties, etc.) and the available support. RSU student organisations - RSU Student Union and International Students' Association, are also involved in the events of the Week. In cooperation with the ID, they provide a cultural programme for the new international students.

Mentor programme is maintained with the aim of helping the new international students to adapt to the higher education institution. Even before the new students arrive in Latvia, they may contact previously trained mentors, senior local and international RSU students. Before the beginning of each semester, the ID organises an informative exhibition, providing an opportunity for the new international students to obtain information, for example, about various RSU student organisations, amateur groups, sports Club, outpatient health and psychosomatic assistance.

2.4. Scientific Research and Artistic Creation

2.4.1. Description and assessment of the fields of scientific research and/or artistic creation in the study field, their compliance with the aims of the higher education

institution/ college and the study field, and the development level of scientific research and artistic creation (provide a separate description of the role of the doctoral study programmes, if applicable).

RSU is a modern research university in Europe with outstanding research and practice-based education and experience. The aim of RSU research is creation of locally and internationally significant research results, the main sub-goals are:

- Increase in internationally high quality research results,
- Integration of research into the study process,
- Organisation of a science process based on synergistic cooperation,
- Digitisation of research processes,
- Closer integration of science and study departments,
- Ensuring a balanced development of internationality.

RSU research aims are implemented on the basis of the Strategy, current development strategy for 2022-2027 (available in Latvian, in English).

RSU researchers conduct not only fundamental and applied research, but also actively co-operate with business people in Latvia and Europe, as well as with other research institutions, providing research services and expertise. RSU supports and promotes interdisciplinary and interdisciplinary research, as well as data-intensive research and research involving the re-use of data.

RSU research takes place on 3 research platforms - the medical platform, public health platform, social sciences platform - each with research conducted in several science sector groups, priority science directions for the economy of Latvia and in the areas determined by the health policy of Latvia and EU. (information on RSU research platforms is available in Latvian and English). The areas of research are updated as policy documents are updated.

Medical Platform

The Medical Platform (hereinafter referred to as the MP) supports research in medicine, pharmacy, and dentistry, with basic, applied and clinical research conducted in all these areas. Research covers major disease groups and virtually all the basic sciences of medicine – molecular aspects of disease, genetics, epidemiology, prognosis and treatment, impact on quality of life, treatment goals and outcomes. The leading topics that RSU should continue to develop as a priority are general medicine, oncology, infectology, microbiology, and virology. MP is the second largest scientific institution in the field of medical and health sciences in the Latvian biomedical ecosystem with the largest number of peer-reviewed publications included in Scopus and Web of Science (hereinafter referred to as WoS). Compared to 2016, the scientific results have improved significantly, as reflected by the number of original scientific articles published and cited in WoS or Scopus databases, peer-reviewed scientific monographs published by scientific staff, and intellectual property maintained or registered abroad. The number of said research outputs in absolute terms has doubled (from 359 to 728 in 2016 and 2020 respectively), and in terms per full-time equivalents (hereinafter – FTE) – from 4.2 to 7.3910. A similar increase can be observed in the number of original scientific articles, peer-reviewed scientific monographs published by scientific staff and not published in WoS and Scopus databases, and patents registered and maintained in Latvia (in absolute terms – from 864 to 1540; per FTE from 10.1 to 15.5 in 2016 and 2020, respectively). In order to achieve the goals set out by RSU, research in the life sciences, including microbiology and virology, should be particularly promoted, not only to support existing research topics, but also to encourage the development of new research areas and to invest adequately in

infrastructure.

The development of bioinformatics is a horizontal priority of this platform, as it not only contributes to RSU research in the current field of multiomics and develops the digital skills of researchers, but also acts as an infrastructure in areas requiring big data analysis. Understanding the need for strong knowledge in the field of bioinformatics and big data analytics, RSU has established a Bioinformatics Laboratory (information in Latvian, English). The main focus of the laboratory is analysis and integration of genome, transcriptome, microbiome, and other omics data with epidemiological, clinical, and environmental and lifestyle information in the context of personalized medicine, which aims to tailor diagnosis and therapy to the needs of individuals.

Public Health Platform

The Public Health Platform (hereinafter referred to as the PHP) includes research that essentially addresses practical problems in the fields of public health, occupational safety and environmental health, and rehabilitation. Research areas covered by this platform include epidemiology, disease prevention and health promotion, rehabilitation, healthy ageing, longevity, quality of life research, health systems and digital health, health economics, internal and external sector analysis, occupational safety and environmental health – sustainable urban development, climate impact, new technologies for nanoparticle detection, working environment and occupational diseases.

Social Sciences Platform

The Social Science Platform is developing as an independent and fully-fledged unit of research on people and society. The Social Sciences Platform carries out research in all sectors of social sciences: psychology, economics, educational sciences, sociology and social work, law, political science, mass media and communication research, etc. The main areas of empirical and theoretical research are political and state processes; media studies and strategic communication; national, international and cyber security; international business and economic development – labour market and social policy, business studies; international and national justice systems and legislation: international and EU law, medical law. Multidisciplinary and interdisciplinary research encompasses media studies, various fields of communication, sociology, psychology, social anthropology, complementing time-tested research methods with the use and development of innovative digital tools, including elements of artificial intelligence. It is also a platform for research in education and pedagogy. In line with the recommendations of the RSU Social Sciences Platform international evaluation experts, the RSU Social Sciences Platform works synergistically with the RSU Medical and Public Health Platform to promote a comprehensive understanding of the research of one of the RSU's values – people.

RSU was awarded a high rating in the 2019 International Evaluation of Scientific Institutions – a rating of "4" on a scale of 1 to 5. More detailed scores were also given for individual RSU research platforms: medicine – 4, public health – 3, social sciences – 3. This assessment identified certain areas at RSU that provide internationally recognised research quality, such as virology, vaccine research, phage research, dentistry, and stomatology.

One of the recommendations of the International Evaluation of Scientific Institutions on doctoral theses is to tailor-make doctoral study programmes to promote human resources development in RSU research areas. This requires driving changes in the external framework to bring more flexibility into the everyday study process. In addition, the International Evaluation of Scientific Institutions highlights the need for improvements in doctoral study programmes and residency programmes, because the current system meets European standards at minimum level. According to the recommendations of the RSU Medical Platform international evaluation experts, the involvement of RSU researchers in clinical trials should be facilitated, and this is done actively.

According to the recommendations of the RSU Public Health Platform international evaluation experts, the development of the platform requires attracting talent to develop new research topics.

In 2008, when ERDF funding was raised, a **Technology Transfer Office** (hereinafter referred to as TTO) was created at RSU, the purpose of which was to create and maintain external communications with the private sector by providing information on research activities and experience of RSU. The TTO identifies and popularises the research capacity of RSU, is involved in the protection and management of RSU's intellectual property, as well as organises cooperation with the private sector (contract research, commercialisation offers to companies, contact exchanges, exhibitions, etc.).

Organisation of research at the University is regulated by the Law on Scientific Activity. The highest collegiate organ in research is the RSU Council of Science – a collegiate institution that operates constantly and, within the scope of its competence, deals with and coordinates issues related to scientific activity (information is available only in Latvian). The functions and tasks of the Council of Science are determined by the Regulations of the RSU Council of Science (approved at the RSU Senate meeting on 19 May 2020, available only in Latvian). The role of the Council of Sciences is to oversee the development, implementation and coordination of the scientific strategy of RSU.

The Council of Science elects the RSU Research Ethics Committee (information in Latvian, in English), which helps RSU lecturers and students by consulting and evaluating ethical aspects of medical research. The Research Ethics Committee follows its Regulations, provisions of laws of the Republic of Latvia and international laws in biomedical research and is independent in adopted decisions.

RSU follows the European Code **of Conduct for Research Integrity** (information in Latvian, in English) adopted by All European Academies (ALLEA). This document serves the European research community as a self-regulation instrument. The European Commission has recognised this Code of Conduct as the reference document for research integrity for all EU-funded research projects.

RSU research data management (information in Latvian, in English) is implemented based on FAIR principles (findable, accessible, interoperable, reusable), following ethical conditions, enduring safety and quality of data. RSU supports data-intensive research and research involving the re-use of data.

On the level of operational administration the research activities are supervised by the Research Board that is chaired by RSU Vice-Rector for Science.

Annual monitoring in research is ensured by summarising results of scientific activities of the structural units. All the data are retrieved from the RSU Research Portal (available only in English). The RSU Research Portal collects information on the results of the scientific activities of the academic staff of RSU – publications, projects, awards, research activities, datasets, performances, communications in the press and media and others.

The portal is publicly available and enables RSU's achievements in research and academic work to be demonstrated in one place, scientific results to be visualised and communicated, and research results to be shared. The RSU Research Portal promotes collaboration with university researchers and research teams, communication and knowledge dissemination.

The RSU Research Portal displays information included in the RSU scientific activity information management system (ZDIS Pure), where information on the scientific performance results of structural units and academic staff is added, collected and maintained. The data collected by ZDIS Pure is used to generate reports, track progress in meeting the objectives of the structural unit, prepare scientific activity reports for external institutions, while reducing the administrative burden

on researchers, structural units and staff.

In accordance with financial possibilities of RSU and topicality of the research direction, RSU supports participation of academic staff in scientific conferences by assigning a paid period of absence or creative leave, provides financial support for the payment of high citation publications.

2.4.2. The relation between scientific research and/or artistic creation and the study process, including the description and assessment of the use of the outcomes in the study process.

The relation between scientific research and study process of StP of the "Life Sciences" direction takes place with the involvement in research, mainly, drafting of a Master's thesis, where scientifically relevant topics of Master's theses are selected (see Paragraph 3.2.6 Description of StP "Biomedicine" and Annex 22: Analysis and assessment of the topics of the graduation papers of students), Master's theses are developed under supervision of scientists (PhD, lead researcher) in scientific institutes of RSU and also in other scientific institutions (for example, BIOR Institute, RTU, etc.). Students often engage in various working groups on the development of RSU scientific projects, e.g. in 2022 students: (1) draft the paper "Changes in the intestinal microbiome in breast cancer patients during neoadjuvant therapy" supervised by Zanda Daneberga, lead researcher at the RSU Institute of Oncology. (2) draft a paper within the framework of the RSU scientific project "Fibromyalgia-specific microbiome, viral infection and immunological profile" under supervision of Zaiga Nora-Krūkle, lead researcher at the RSU Institute of Microbiology and Virology.

Use of the results of research papers of students in the study process

The results of the student research papers are reflected mainly in the study process, as the results obtained during the drafting of a Master's thesis, they are based on the conclusions drawn, which are not only presented during defence of Master's theses (in which all students participate), but also at scientific conferences, and are also published.

It should be noted that during the study process, within the framework of the implementation of individual courses, students also acquire data and, by processing them using statistical methods, obtain results, which they then present to other students during the practical classes and they are discussed together with the lecturers, for example, in the StP "Biomedicine" course "Functional Physiology and Biological Regulatory Mechanisms". In other study courses, students independently prepare presentations, which are also based on the acquired research results, which are discussed and debated during practical classes.

2.4.3. Description and assessment of the international cooperation in the field of scientific research and/or artistic creation by specifying any joint projects, researches, etc. Specify those study programmes, which benefit from this cooperation. Specify the future plans for the development of international cooperation in the field of scientific research and/or artistic creation.

In order to promote cooperation and attract funding for the development of priority research areas, RSU actively participates in various EU and national programmes and initiatives – the largest EU

research and innovation programme *Horizon Europe*, international cooperation programmes such as *COST Actions; ERA-NET, ERDF, FLAG-ERA,* etc. RSU is a member of international research infrastructures *(EATRIS, BBMRI, EOSC, SHARE), EIT Health,* participates in international consortia *(CIMBA, BCAC).*

A total of 130 international research projects were submitted for 2017-2021, of which 39 have been funded. These include 13 *Horizon 2020* projects and 9 *ERA-NET* projects. Overall, *Horizon 2020* has an average success rate of 13%, while the *ERA-NET* programme has 22%, slightly higher than the EU average. The most important projects for the EU Structural Funds are related to infrastructure improvements, improvement of management processes and modernisation of study programme content, strengthening of academic staff capacity, reduction of fragmentation of study programmes and promotion of internationalisation of studies. During this period, RSU has welcomed foreign visiting researchers into its family of researchers.

Doctoral School (information in Latvian, in English) - one-stop shop for raising research competence attracts visiting lecturers who read lectures, participate in the Researchers' Breakfast (information in Latvian, in English) - a networking event for academic and scientific staff, in which current research matters are discussed. The Doctoral School organises international webinar cycles with involvement of a visiting lecturer – a leading expert, such as: The interdisciplinary webinar cycle of cognitive sciences; webinars on the application of FAIR data principles in medical and health sciences (information in Latvian, in English).

To promote closer cooperation in research, RSU concludes cooperation agreements with leading scientific institutions.

RSU organises international scientific conferences, (information in Latvian, in English) supports international symposiums and conferences organised by other scientific institutions, such as the International Symposium of Cognition, Logic and Language (information in Latvian, in English).

There has been international cooperation in the implementation of the study programme (e.g., lecturer Inese Čakstiņa-Dzērve has taught a remote class to students of the programme Biomedicine of the Coventry University as part of her course "Current Problems and Research Directions of Biomedicine"), but it is in research that it is more related to the fact that individual lecturers (heads of courses) are involved in international scientific projects and thus international cooperation, which results in lecturers transferring their newly acquired knowledge to students, including biomedical students, such as the European Structural Funds grant SHARE LV9 "Survey of Health, Ageing and Retirement in Europe" 2021-2022; project manager Assoc. Prof Andrejs Ivanovs is also the head of "Biomedicine" StP course "Statistical Programming and Data Management".

The visiting professors involved in StP (see section 3.4.1 Description of StP "Biomedicine") are also internationally recognisable scientists and there is knowledge transfer in their communication with StP students, which facilitates scientific activity and development of StP. International cooperation in science will be extended, e.g. cooperation with the Lithuanian University of Health Sciences (Prof. E. Stankevičius).

Further, in the post-pandemic period, lecturer will be invited to make greater use of mobility opportunities under both individual grants and the Erasmus+ programme. The participation of lecturers in international scientific conferences will also be encouraged, as this often results in the development of international scientific projects in the biomedical sectors as well. Lecturers involved in organising international scientific conferences also promote international cooperation in research and development of StPs, e.g., Assoc. Professor Andrejs Ivanovs (Director of StP "Biostatistics") (31 st International Biometric Conference)[1].

[1] IBC2022, 10-15 July 2022, Riga, https://www.biometricsociety.org/meetings/conferences

2.4.4. Specify the way how the higher education institution/ college promotes the involvement of the teaching staff in scientific research and/or artistic creation. Provide the description and assessment of the activities carried out by the academic staff in the field of scientific research and/or artistic creation relevant to the study field by providing examples.

Many of the teaching staff involved in the study programmes of the direction "life Sciences" are not only teaching staff but also active scientists who also conduct biomedical research, such as:

- Māra Pilmane https://orcid.org/0000-0001-9804-4666;
- Edvīns Miklaševičs https://orcid.org/0000-0002-7817-4268;
- Ilze Štrumfa https://orcid.org/0000-0002-7393-9524;
- Ivars Vanadziņš https://orcid.org/0000-0002-5391-1583;
- Valērija Groma https://orcid.org/0000-0003-2616-2668;
- Pēteris Tretjakovs https://orcid.org/0000-0001-9446-0558;
- Prof. Anda Ķivīte-Urtāne https://orcid.org/0000-0001-6362-1187;
- Prof. Andrejs Ivanovs https://orcid.org/0000-0002-7376-3776;
- Prof. Žanna Martinsone https://orcid.org/0000-0001-7009-1479;
- Prof. Inese Čakstiņa-Dzērve https://orcid.org/0000-0001-5589-0395;
- Prof. Gita Gersone https://orcid.org/0000-0003-2228-4713;
- Prof. Aigars Reinis https://orcid.org/0000-0002-3671-1213 and many others (see Section 4.4.1. of the Description of the study Programme "Biomedicine").

RSU structural unit Research Department (information in Latvian, in English), Development and Project Department (information in Latvian, in English) and Technology Transfer Office (information in Latvian, in English) regularly carry out various activities addressing teaching staff involved in research activities, offer not only concrete opportunities for research projects, but also provide practical support both in project preparation and project implementation, as well as in connection with industries, such as biomedicine.

Annexed:

Annex No 6.2 summarises, inter alia, the information on scientific activity of the teaching staff.

Annex 14. Information about projects in which RSU is involved.

Annex 6.4. List of high-ranking publications of academic staff according to the impact factor IF.

See Annex 23, Paragraph 1.5 for more information.

2.4.5. Specify how the involvement of the students in scientific research and/ or applied research and/or artistic creation activities is promoted. Provide the assessment and description of the involvement of the students of all-level study programmes in the relevant study field in scientific research and/ or applied research and/or artistic creation activities by giving examples of the opportunities offered to and used by the students.

The involvement of students in scientific research at RSU in general takes place at the level of students' knowledge, skills, competence and experience.

In general, RSU students may participate in research activities in the following ways:

- Vertically integrated projects that are designed to provide students with the opportunity to acquire in-depth and practical knowledge and skills necessary for carrying out research. More information about the VIP procedure at RSU is available on the website (information in Latvian, in English);
- when applying for the funding of research projects for student research and innovation grants (SPIG), the aim of which is to support and motivate RSU students for conducting research. More information on the introduction of the SPIG is available on RSU website (information in Latvian, in English);
- developing research skills by participating in the programmes of PINK and INK of RSU Business Incubator B-space (information in Latvian, in English). More information about the programmes is available on RSU website (information in Latvian, in English);
- by participating in student research interest groups in various areas. 26 research interest groups (information in Latvian, in English) are currently established and actively active;
- applying for receipt of financial assistance from the Student Union for participation in conferences or seminars within or outside the country (each year more than 10 students receive financial support for participation in conferences);
- by applying at the student portal with a doctoral student of RSU to assist in the development of a research paper;
- participating in RSU Student Union project "Academy of researchers" (information is available only in Latvian);
- participating in RSU international scientific conference "Science week" (information is available only in English);
- using the offer of the School of Doctoral studies, a one-stop shop for the development of research competences (information in Latvian, in English);
- using the Science Platform - for involving students in research projects (information in Latvian, in English)
- by participating with their own research paper at RSU International Student Conference. (*International Student conference, ISC*, information is available only in English). RSU *ISC* is an annual project hosted by the Student Union that became international in 2015 and every year it attracts more and more students from different countries. in 2018, the conference reached new peaks, being held for two days and attracting more than 270 students with research work both in healthcare sector (including biomedicine-related sectors) and social sciences. More information about RSU international student conferences is available on RSU website (information is available only in English).

RSU departments are involved in the organisation of RSU International Student Conference. Student research interest groups participate in the creation of workshops. RSU professors are involved in evaluation of the papers, whereas management and structural units are involved in various organisational issues.

Each year, a new team of organisers is created for this project; therefore, each year, the project manager faces a challenge to set a higher standard than the previous year, so the outcome depends on the vision and ambitions of the manager. in 2019 and 2020, it was particularly successful to advertise the conference both via the conference website, radio interviews and distribution of tangible materials in RSU and buildings of other universities. Challenge of the next

year's conference is to involve even more students with their research work both in the healthcare and social sciences sessions in order to increase the number of sessions and interested participants.

From April 2019, the annual Science week (RSU Science week 2021, RSU Science week 2019) is organised within the framework of which an international scientific conference of researchers and also students takes place. It promotes the development of wider international cooperation, involvement in research networks and associations, allows to attract international partners to joint projects, research and publications.

Students of the study programme "Biomedicine" are invited to present their results related to the Master's thesis even before the defence of the Master's thesis at one of the scientific conferences. Students use this opportunity, for example, when presenting their work at RSU International Scientific Conference, as it gives academic performance in obtaining a higher assessment of the Master's thesis during its defence. For example, the alumni have presented their papers and abstracts have been published in the e-editions of these RSU conferences: "Evaluation of antibacterial Properties of chemically cross-linked hydrogels based on ε-polylysine and HYALURONIC acid" (2021), "creation of Digital bones collection with anatomically correct and optimized 3D models" (2021), "Association of Interleukin-10 Gena engine Allelic variants with Rheumatoid arthritis in a Sample of residence in Latvia" (2019).

2.4.6. Provide a brief description and assessment of the forms of innovation (for instance, product, process, marketing, and organisational innovation) generally used in the higher education institution, especially in study field subject to the assessment, by giving the respective examples and assessing their impact on the study process.

Certain boundaries are not defined for RSU pedagogical innovations, but their task is to change the usual way of learning and teaching in order to promote the quality of studies and enrich students' learning experience. Learning and teaching innovations are a successful use of new ideas, reflecting on traditional learning and teaching approaches and methods and rebuilding them for the needs of today's world. Consequently, no sign of equality with excellence is put on pedagogical innovations. Innovations can differ from one teaching staff to another - at the same time for someone the same innovation can be something big, but for another it has long been done. However, the most important thing is that innovation changes the way of learning and teaching, creating a better study experience for students. Learning and teaching innovations are considered in two perspectives: 1. methodological innovations - promotion of studies based on research, work environment, search activity, projects, problem situations, etc. approaches and methods; 2. technological innovation - *USE OF H5P*, *Miro*, *Turnitin QuickMark*, 3D printers, augmented and virtual reality and other solutions to develop a technology-enriched study process. In order to promote the culture of learning and teaching innovation, not only training and exchange of good practice experience sessions are organised at RSU, but guidelines for learning and teaching innovations have been developed (available only in Latvian), which are approved by the teaching staff and feedback has been received that the guidelines help teaching staff to understand the full innovation cycle and to start work on the modernisation of their study courses.

Mapping

According to the recommendations of the accreditation experts of the previous study direction, in 2017-2018 the mapping of study programmes was carried out, which has now become part of the study programme management process and supports the implementation of student-centred teaching. In the mapping of study programmes, cross-compliance analysis of the programme content, mainly of the learning outcomes to be achieved within the programme, is carried out at the level of study programmes and study courses. Results of the mapping process of the STP - the maps obtained and the observations made are used for the improvement of the study programme, both for the improvement of the course content, results and assessment methods, when the overall plan of the STP is revised.

Mapping is performed by using MS Excel mapping tool developed by Study Programme Administration Unit of the Centre for Educational Growth of RSU, which extracts data from descriptions of study courses of the respective study programme in RSU register of study courses. The *MS Excel* mapping tool is being improved every year and is currently based on the findings of the mapping process. RSU STP planning IT system is supplemented with mapping functionality, which was developed within the framework of the project "improvement of management processes and study programme content modernisation at Riga Stradins University". At present, the mapping system is integrated into RSU IT systems and provides for mapping of the learning outcomes of study programmes and study courses, monitoring the coherence of learning outcomes, mapping of study programmes against professional standards, external laws and regulations, as well as any other documents describing the learning outcomes relevant to the programmes. (e.g. recommendations of international professional associations, UN sustainable Development Goals, etc.).

See Annexes 17.1 and 18.1 for the mapping results.

Target scholarships of Boriss and Inara Teterevs Foundation

Every semester from the academic year 2014/2015, RSU teaching staff have the opportunity to receive special scholarships from the Boriss and Inara Tetereva Foundation: development of new innovative study courses, modernisation of the existing study courses, as well as integration of international experience into RSU.

Activities of the Scholarship shall be implemented in two ways: the young or experienced teaching staff working individually or the young teaching staff working together with a mentor, where both target scholarship holders are equally responsible for both the process and the quality of the outcome of the work. Four months are provided for the implementation of the activities planned within the framework of the Scholarship, during which the teaching staff introduces innovative learning and teaching solutions, such as playing activities, digital scenarios and other interactive learning materials and resources, student peer-to-peer assessment activities, etc., as well as develops new study courses. During the Scholarship, teaching staff receive both pedagogical and technical support and financial gratitude for the work done. Within the framework of the study programmes, teaching staff can also receive a special purpose scholarship for attracting guest lecturers to the study course, both for conducting individual lectures and classes, for student and doctoral student counselling, as well as for strengthening the professional continuing education of the teaching staff.

RSU Research Portal

From 2021 a new research activity information system RSU Research Portal was introduced, which lists various research results: data on publications, projects, intellectual property, holder of doctoral degree dissertations, awards, public speaking and various other research activities (including participation in collegial units, presentations at events of various types and scales,

activities of a reviewer and expert, etc.)

The system replaces the method used previously, namely the list of data that was created and stored in *Microsoft Excel* and *Word* applications. The possibility of several versions is replaced, data quality is improved, time is saved (for both academic staff and administration, as data do not have to be submitted repeatedly to several units, but access is provided to both sides) and employees no longer need to submit data within one narrow period of time, but the system can be accessed and data added at any time convenient for the employee. The system offers a wide range of opportunities, including to see your "impression" or "*Fingerprint*" – the most common terms in research results, to exhibit your research results more publicly, as well as to see your true network of cooperation, at the level of people and organisations (as well as the scale – in Latvia or abroad). The system facilitates the accounting and submission of research results to various external institutions, including submission to the Ministry of Education and Science (NZDIS system), creating RSU annual report, which is taken as the basis for the calculation of basic funding for science.

In order to increase the quality of studies by using advanced technologies and e-solutions, RSU has set the following tasks:

- 1) to supplement the existing RSU Register of Study Courses in order to ensure vertical integration of the content of study courses that will provide a possibility to link topics of study courses within the framework of the study programme in support of succession of study courses. A dictionary of keywords of study courses and visualisation of keywords will be developed that will reflect the related topics of the study courses;
- 2) to establish a link between the thematic planning of the course description and the corresponding e-studies environment course, where the lecturer would be allowed to choose whether to create the respective e-course with the same thematic division as indicated in the study course description;
- 3) to use RSU library of audiovisual study materials, including descriptions of various study objects, for example, clinical cases, dissection cases, simulation scenarios, interactive training videos, etc., ensuring systematisation and collection of study objects, as well as the possibility to share study objects with other higher education institutions; and for the students to be able to find the necessary simulation cases, clinical cases, and other study objects easily.
- 4) to develop a new system that would make it much easier for students to register for the available elective study courses at times convenient to them. Establishing a system would facilitate the work of the administrative staff, allowing students to be added to elective courses more easily and quickly;
- 5) to improve the Electronic Admission System by reducing the administrative workload, automating manual actions, improving the user interface, supplementing functionality, etc.

In order to ensure an advanced internal information exchange system for solution of administrative issues, speeding up the circulation of information and decision-making, as well as to ensure electronic circulation of documents within RSU, the following tasks for increasing administrative efficiency are set by RSU:

- 1) transition to electronic storage of the student file – in accordance with the Cabinet Regulations No. 203, applications, requests of the students and decrees on the movement of students and study process may be stored only electronically. It will decrease the time for processing of documents, increase the efficiency of administrative work and data quality, decrease the use of natural resources;
- 2) acquisition of additional HOP modules to provide availability of new e-services: expanding HOP functionality by implementing new e-services for the staff, for example, record keeping

of business trips, e-instructions, etc.

- 3) to develop a quality and process management system – RSU Quality Assurance and Internal Audit Department already uses process management tool *QPR Enterprise Architect* In May 2019, an agreement was signed, under which additional licenses were acquired to use the process modelling tool in a more comprehensive manner and to access the latest version of *QPR.* in 2023, the purchase of a new process modelling tool with more extensive functionality is planned, which will allow each RSU employee to view the processes created, adapt the content of the site to their needs, follow the changes made and monitor the activities under their responsibility, as well as ensure the accounting and monitoring of quality criteria.

When evaluating innovative solutions implemented in order to support the study process, it can be said that it is a continuous process of growth guided by RSU management and respective structural units.

2.5. Cooperation and Internationalisation

2.5.1. Provide the assessment as to how the cooperation with different institutions from Latvia (higher education institutions/ colleges, employers, employers' organisations, municipalities, non-governmental organisations, scientific institutes, etc.) within the study field contributes to the achievement of the aims and learning outcomes of the study field. Specify the criteria by which the cooperation partners for the study field and the relevant study programmes are selected and how the cooperation is organised by describing the cooperation with employers. In addition, specify the mechanism for the attraction of the cooperation partners.

RSU has implemented a variety of growth activities and achieved high academic and scientific results, as shown by: (1) *Times Higher Education (THE) World University Rankings* – ranks 601th-800th among the world's top universities and is 2nd in the Baltic States; (2) RSU research activity has received a high international assessment "4" (in Baltic States); but (3) in 2021 it has become one of the four research universities in Latvia[1]. This is also closely related to the modernisation activities of the study programme "Biomedicine", e.g., a modern, multi-faceted academic (departmental) base created during the reporting period and a research base with modern technologies is used in the implementation of the StP. The premises of RSU departments and institutes were renovated and constructed for the implementation of study courses.

Thus, it is not necessary to involve other institutions of higher education in the implementation of the study programme "Biomedicine", however, cooperation takes place regarding the development of Master's theses, which is a scientific research.

Criteria for choosing the cooperation partners suitable for the study direction and the relevant study programmes are as follows: 1) biomedical research is carried out in a cooperation institution of higher education or research institute (the publications thereof are included in the SCOPUS database); 2) the partner represents the biomedical industry and is a potential employer for the graduates of the programme; 3) professional associations related to biomedicine. For example, there was good cooperation with Riga Technical University (RTU) Rudolfs Cimdins Riga Biomaterials Innovation and Development Centre, where the following papers were developed: "Studies of

antibacterial properties of chemically cross-linked hydrogels based on ε-polylysine and hyaluronic acid" and "Antimicrobial Activity of Strontium Ranelate-containing Biocomposites for Osteoporotic Bone Regeneration". The supervisors of both Master's theses have been Assistant Professor Aigars Reinis from RSU and Associate Professor Dr.sc.ing. Kristīne Šalma-Ancāne from RTU.

There has been good cooperation with the Department of Medical Biochemistry of the University of Latvia, in which the student has developed a Master's thesis "Interaction of 1,4-dihydropyridine derivatives with DNA and their antioxidative properties", its supervisor *Dr.habil.biol., Professor* Nikolajs Sjakste. Whereas, another student in cooperation with the Department of Medical Biochemistry of the University of Latvia has developed the work "Changes in nitrite concentration in blood and urine of patients with type 1 diabetes mellitus and their relation to other biochemical parameters", the supervisor of which is Dr. *med. Assistant Professor* Evita Rostoka.

There has been very good collaboration with the Institute of Science BIOR in the development of the Master's thesis "Analysis of Salmonellosis outbreak using full genome sequencing" supervised by Dr. biol., lead researcher at BIOR Lelde Grantiņa-Ieviņa.

Representatives from the biomedical industry, especially from research institutes, were involved in RSU Master's Thesis Assessment Commission. For example, the Head of this Commission was the chair of the board of the Institute of Innovative Biomedical Technology (IBTI) Dr. Habil. biol. Dmitrijs Babarikins, as well as reviewers of Master's theses were professionals of the biomedical industry (scientists, e.g., from the BIOR Institute).

Cooperation with the Latvian Association of Laboratory Specialists (Association of Laboratory Physicians) has also changed the regulations for the speciality "Laboratory Specialist" (Registered under No 080607; 26.10.2017 LLSB), thereby opening opportunities for graduates with a "Mg. biomed." degree to certify and work in clinically diagnostic laboratories.

Colleagues from the Faculty of Physics, Mathematics and Optometry of the University of Latvia, the Department of Mathematics and colleagues from the Statistical Studies and Data Analysis Laboratory were involved in the development of the StP "Biostatistics", development of study courses and related materials with their ideas, experience and knowledge.

At the time of the development of the StP "Biostatistics", letters of intent were concluded regarding the possibility for students of the StP to undergo placement in the above mentioned Latvian institutions –

- Institute of Food Safety, Animal Health and Environment "BIOR" (information in Latvian, English);
- Latvian Biomedical Research and Study Centre (information in Latvian, in English).

There is continuous cooperation with employers on several levels. In order to facilitate cooperation with employers' organisations, their participation in educating prospective professionals, as well as to increase the competitiveness of RSU students on the labour market, a Career Week is organised in the university each year. During this week presentations of employers' organisations are made with representatives of employers telling about career opportunities in the represented organisation and offering current vacancies to RSU graduates and students, as well as giving practical advice on how to succeed in the labour market.

National Examination Boards and Committees for defence of Master and Bachelor's theses comprise at least 50% of employers: it is established by the Cabinet Regulations No. 481 of the Republic of Latvia, and the compliance with these Regulations is strictly controlled at RSU.

[1] https://likumi.lv/ta/id/326218-par-valsts-augstskolu-tipiem

2.5.2. Provide the assessment as to how the cooperation with different institutions from abroad (higher education institutions/ colleges, employers, employers' organisations, municipalities, non-governmental organisations, scientific institutes, etc.) within the study field contributes to the achievement of the aims and learning outcomes of the study field. Specify the criteria by which the cooperation partners suitable for the study field and the relevant study programmes are selected and how the cooperation is organised by describing the cooperation with employers. In addition, specify the mechanism for the attraction of the cooperation partners.

International cooperation in the implementation of studies contributes significantly to the achievement of the aims and learning outcomes of the study direction, where in relation to the criteria for cooperation with a foreign partner in the implementation of the study process an institution of higher education (in EU or other economically developed countries) is chosen, where similar study programmes are implemented (see below for example), while in relation to scientific activity the criterion is implementation of international scientific research (projects) and publications in SCOPUS and PubMed databases are available on research results.

Cooperation takes place in the implementation of the study direction with the Coventry University in Great Britain within the framework of the Master's study programme "Biomedical Sciences" (*MSc Biomedical Science)*, which also provided for the exchange of students, but the withdrawal of Great Britain from the European Union and the events of the pandemic have halted this cooperation. However, some cooperation was implemented as, for example, Assistant Professor of RSU Biomedicine programme Inese Čakstiņa-Dzērve conducted a *Skype* session with biomedical students of the Coventry University and their Prof. Bernard Burke, analysing the publication by Assistant Professor I. Čakstiņa "*Primary culture of avian embryonic heart forming region cells to study the regulation of vertebrate early heart morphogenesis by vitamin A*" BMC Dev Biol. 2014.02 (14):10. doi: 10.1186/1471-213X-14-10., in which she answered many of the questions asked by students.

Cooperation of the teaching staff (scientists) of the StP with foreign partners took place within the framework of the development of scientific projects, including research related to biomedicine, for example, the Director of the StP "Biostatistics", Assoc. Prof. Andrejs Ivanovs, led the international cooperation project – European Structural Fund grant *SHARE LV9* "*Survey of Health, ageing and rehabilitation in Europe*" 2021-2022. Other lecturers are also involved in international scientific research, including meeting scientists from different countries at international scientific conferences, as well as launching new projects. In addition, this communication also results in the transfer of new knowledge to students and in the improvement of the StP, for example, in the use of modern technologies and approaches. Teaching staff of the BIOMEDICINE programme are involved in the following international cooperation projects: (1) Prof. Edvīns Miklaševičs has led the following projects: "*Biomarkers of altered gut microbiome in children with autism spectra disorders.*" (Fundamental and Applied Research Programme. 01/12/18 → 28/02/21); "*HEPAMUT:*

Mutated neo-antigens in hepatocellular carcinoma." (20/02/17 → 19/02/20. EU Programmes › ERA-NET TRANSCAN); (2) Prof. Māra Pilmane leads the project: "*Biosens4PrecisionMastitis: Channel-based biosensors to support a precision agriculture approach for improved bovine mastitis management*" (EU Programmes › ERA-NET. 01/04/21 → 31/03/24); (3) Prof. Valērija Groma is involved in the project: "*VirA: Reducing networking gaps between Rīga Stradiņš University (RSU) and internationally - leading counterparts in viral infection-induced autoimmunity research*" (EU Programmes › Horizon 2020. 01/12/20 → 30/11/23); (4) Assist Prof. Aigars Reinis is involved in the project: "*System of rapid assessment of antibacterial resistance in patients with secondary bacterial infections*" (European Regional Development Fund (ERDF/ERAF). 01/01/22 → 30/11/23); (5) Prof. Ivars Vanadziņš has lead the project: "*Analysis of characteristics of medical sapropel and its usage for medical purposes and elaboration of industrial extraction methods*" (EU Structural Funds › ERDF. 01/04/17 → 30/03/20.); (6) prof. Ilze Štrumfa is involved in the project: "*NanoTENDO: Nanoparticle Transfer Through Endothelial Barrier*" (EU Programmes › ERA-NET. 01/04/20 → 31/08/23).

During the development of the StP "Biostatistics", a great emphasis was placed on strengthening cooperation with foreign universities, so colleagues from the Tartu University in Estonia, Uppsala University and Chalmers University of Technology in Sweden were approached already when the StP was developed, with an invitation to participate in the development of the StP and in the development of study materials. Representatives of all three universities mentioned above – Ieva Reine, lecturer at Uppsala University (UU), Krista Fišere, Professor at the Tartu University and Ziad Taib, lecturer at Chalmers University of Technology – agreed to participate in the development and development process of the StP and helped to draw up a study course plan and developed training materials for several study courses. It was conceptually agreed with colleagues that once students are admitted to the StP, they will continue to teach the courses for which they developed study materials.

In addition, it should be mentioned that RSU International Department (ID) has established an extensive network of partner higher education institutions in Europe. Partner higher education institutions are regularly informed on *Erasmus* exchange possibilities at RSU, including the exchange of visiting teaching staff. In addition to electronic communication, every year RSU ID organises *Erasmus+* International Week, the programme of which includes several professional networking events. Within the framework of this event, contacts are established with new *Erasmus+* cooperation partners.

In addition to these events organised by RSU, representatives of RSU ID regularly attend annual events of professional international associations with a purpose to ensure exchanges, including visiting teaching. For example, RSU participates in networking exhibitions organised by the *European Association of Erasmus Coordinators* and *European Association for International Education.*

RSU ID supports *Erasmus* visiting teaching visits both before the visiting teaching staff arrives in Riga and during the period of their visiting teaching (for example, administers documentation of the visiting teaching, develops the plan of activities, assists in the process of the visit, etc.).

Current development of cooperation and internationalisation is in line with the objectives of the directions and the plan and is generally considered sufficient.

In order to implement the StP, RSU concluded cooperation agreements with other institutions.

RSU students have the opportunity to go on exchange studies or international placement for one semester or the entire academic year abroad with an *Erasmus+* scholarship. The programme covers all StPs, as well as all levels of higher education, including doctoral studies (information in

Latvian, English).

The *Erasmus +* programme mobility activity has been implemented among the countries of the programme. In total, more than 200 bilateral cooperation agreements have been signed, providing mobility of the students and staff in all cycles of studies: during Bachelor's, Master's, and doctoral studies. The partner universities are selected on the basis of information available on equivalent StPs and the language of instruction. One of the main conditions is the coordination of study courses during the student exchange programme in order to be able to validate the study courses and to add them to the Diploma supplement of the corresponding study programme of RSU. As a result, a full study process is provided, complemented by experience from abroad. The *Erasmus +* programme mobility activity has been implemented among the countries of the programme.

RSU has been positively evaluated in the international environment. International university ranking *QS World University Rankings 2022* included RSU among the 1,000 best-performing universities in the world, especially appreciating the ability of the university to attract international students. Similarly, RSU regularly receives the highest rating "A" in various categories in the *U-Multirank* rating of European Union institutions of higher education (information about ratings in Latvian, English).

The university has also received other international recognitions. For example, as mentioned above, it was recognised as a student-centred higher education institution in the evaluation *PASCL* of the European Association of Students. In their 2016 study, the World Bank experts also praised the involvement of students in RSU decision-making, the presence of international students and strategic planning at the university.

The extensive network of *Erasmus* partner higher education institutions also proves the international recognition of RSU. In 2017, RSU received recognition from the National Education and Development Agency for the successful implementation of the European Commission's *Erasmus* programme.

2.5.3. Specify the system or mechanisms, which are used to attract the students and the teaching staff from abroad. Provide the assessment of the incoming and outgoing mobility of the teaching staff in the reporting period, the mobility dynamics, and the issues which the higher education institution/ college faces with regard to the mobility of the teaching staff.

Assessment of the outgoing mobility of the teaching staff during the reporting period.

Outgoing mobility of the teaching staff of RSU is implemented within the framework of *Erasmus+* programme, bilateral cooperation and a number of EU-funded projects. Cooperation agreements have been concluded with other higher education institutions of the European Union, in which equal study programmes are implemented in order to ensure full cooperation. Before leaving for a teaching visit, the teaching staff contact the receiving higher education institution in order to develop the lecture plan of suitable content. Main condition of a teaching visit within *Erasmus+*: the lecturer must provide at least eight academic hours that can be both lectures and seminars. Guest lectures must be given in accordance with the Common European Framework of Reference for Languages.

It is positive that students have increased mobility opportunities and are being offered short-term mobility within the framework of projects, which in the future could arouse students' interest.

Assessment of the incoming mobility of the teaching staff during the reporting period.

Since 2018, Regulations on the Procedure for attracting visiting teaching Staff to RSU have been in force at RSU (approved on 18.12.2018, minutes of the Senate meeting No. 2-1/18.12.18) (Regulations on the Procedure for Attracting visiting teaching Staff to RSU at the Senate meeting of 18.12.2018, minutes No. 2-1/18.12.18). The Regulations establish the attraction of visiting lecturers with whom employment legal relations are established on the basis of an employment contract with the aim to implement RSU strategic directions in promoting international recognition and development of high quality research-based studies, taking into account the requirements of the Law on higher Education institutions (Sections 3, 15, 38, 40). The application of the position is regulated by the regulations according to certain criteria, including experience in an academic position in a European or Latvian institution of higher education and/or merit in research and practice in the relevant field.

During the reporting period, on the basis of those Regulations, visiting lecturers were involved in teaching a number of courses, for example, Professor Edgaras Strankevičius (PhD) of Lithuanian University of Health Sciences was involved in the implementation of the course "Functional Physiology and Biological Regulatory Mechanisms".[1] He is a recognised researcher (H-index 19) in the study of mechanisms of cardiovascular dysfunction. Whereas, Andrejs Ivanovs (PhD), a visiting lecturer from the University of Edinburgh, was involved in the implementation of the course "Functional Histology and Embryology"[2]. Although the StP is implemented in Latvian, students appreciated the work of visiting lecturers.

[1] https://www.ncbi.nlm.nih.gov/search/all/?term=Stankevicius%20E

[2] https://rw2021.rsu.lv/andrejs-ivanovs

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

2.6.1. Assessment of the fulfilment of the plan regarding the implementation of the recommendations provided by the experts during the previous accreditation of the study field, as well as the assessment of the impact of the given recommendations on the study quality or the improvement of the study process within the study field and the relevant study programmes.

Assessment of the impact of the recommendations provided in the previous accreditation on the quality of studies and the improvement of processes in the study direction and the corresponding study programmes is provided in Annex 11, as well as taken into account in the development plan of the study direction (Annex 4.1).

It should be noted that these recommendations have contributed to achieving the following results:

(1) the establishment of a modern study programme corresponding to the scientific achievements in the sectors of the biomedical framework and the needs of its labour market, and is implemented by involving RSU research institutes[1] and representatives of other institutions of higher education (e.g. RTU) and biomedical industry (BIOR institute, etc.).

(2) the development of a modern academic and material and technical base for the implementation of the StP courses, so that students acquire not only theoretical knowledge but also diverse skills and abilities during practical classes, such as testing biological samples with modern analysers, the ability to use computer simulation programs. As a result, students acquire useful skills in the fields of biomedical industry, including medicine (e.g., clinical diagnostics laboratory work).

(3) increase the attraction of applicants to the study programme "Biomedicine", including the use of fee-based study places.

Annexed:

Annex 11 Implementation of the plan for implementation of the recommendations provided by experts during the previous accreditation of the study direction.

Annex 4.1 Development plan for the study direction.

[1] https://www.rsu.lv/petnieciba/zinatniskie-instituti-un-laboratorijas

2.6.2. Implementation of the recommendations given by the experts during the evaluation of the changes to the study programmes in the respective study field or licensed study programmes over the reporting period or recommendations received during the procedure for the inclusion of the study programme on the accreditation form of the study field (if applicable).

During the previous accreditation period, the recommendation given by experts "the study programme should be developed in cooperation with other institutions of higher education (for example, the University of Latvia, Daugavpils University, Latvia University of Life Sciences and Technologies) or implemented not only in Latvian but also in English" was fulfilled due to the fact that the result has been achieved (see paragraphs 2.6.1 above and Annex 11).

During the previous accreditation period, the recommendations given by experts "Rīga Stradiņš University could be responsible for medical courses, laboratory premises and student supervision" were fulfilled due to the fact that the result was achieved (see paragraphs 2.6.1 above and Annex 11).

The following recommendation was implemented partially: "In order to maintain sustainable study efficiency, 15-20 students are required for admission to the study programme, which is too many at the level of Latvia, but it would be achievable to develop international study opportunities". The recommendation has been partially implemented due to an increase in the number of applicants (see paragraphs 2.6.1 above and Annex 11), although this number is still small, due to the following reasons: (1) because the tuition fee for applicants from Latvia is high (4,646 EUR/year), (2) it is possible because wages in Latvia are still quite modest after graduating from the programme in the biomedical sector. It should be noted that the increase in the number of applicants was seen immediately after the change of the degree to "Mg. biomed." in 2018.

As regards the expert conclusions of 07.08.2018 on the evaluation of changes in an accredited study direction, there are two recommendations: 1. Planning of the creation of the bachelor's study programme "Biomedicine" to be supported in order to promote the recognition of the academic

degree of biomedicine to be obtained in Latvia (partially introduced). 2. The involvement of students of the master's study programme in biomedical research in both Latvian and foreign research laboratories (introduced) should be promoted.

Although recognition of the master's degree in biomedicine increases every year, including a large number of interested parties (both potential applicants and employers), it is planned to complete the development of the bachelor's study programme in biomedicine and to conduct procedures for the implementation of this programme by first solving the cost of the implementation of the programme.

The involvement of students of the study programme "Biomedicine" in research carried out at RSU research projects (local and international), where the development of master's theses is based, thereby gaining not only new knowledge but also skills and competences characteristic to the achievements of modern science in the fields of biomedicine, is already self-evident.

Annexed:
Annex 11. Plan for implementation of recommendations made by experts of previous accreditation.

Annexes

I - Information on the Higher Education Institution/ College		
Information on the implementation of the study field in the branches of the higher education institution/ college (if applicable)		
List of the governing regulatory enactments and regulations of the higher education institution/ college	Annex 1_List of Internal Laws and Regulations.pdf	1_pielik_Ieksejo_normativo_aktu_saraksts_lv_eng.pdf
The management structure of the higher education institution/ college	Annex 3_RSU organisational charts.pdf	3_pielik_RSU parvaldibas_strukturshema.pdf
II - Description of the Study Field - 2.1. Management of the Study Field		
Plan for the development of the study field (if applicable)	Annex 4.1 Development plan 2023.pdf	4.1_pielik_StV_Attistibas_plans.pdf
The management structure of the study field	Annex 4.2_RSU management structure of study direction.docx	4.2_St_virziena_parvaldibas_strukturshema_lv.pdf
A document certifying that the higher education institution or college will provide students with opportunities to continue their education in another study programme or another higher education institution/ college (agreement with another accredited higher education institution or college) if the implementation of the study programme is terminated.	Annex 24.2_Document attesting students' ability to continue their education.pdf	24.2_pielik_Apliecinajums par studiju turpinasanas iespeju.pdf
A document certifying that the higher education institution or college guarantees compensation for losses to students if the study programme is not accredited or the study programme license is revoked due to actions (actions or omissions) of the higher education institution or college and the student does not wish to continue studies in another study programme.	24.3_Zaudejumu_kompens_eng.pdf	24.3_Zaudejumu_komens_abam_StP.pdf
Standard sample of study agreement	Annex_24.8_Sample study contract.pdf	24.8_pielik_Studiju liguma paraugs.pdf
II - Description of the Study Field - 2.2. Efficiency of the Internal Quality Assurance System		
Analysis of the results of surveys of students, graduates and employers	Annex 21_Student_and_graduate_survey_results.pdf	21_pielik_Studejosoun_absolventu_aptauju_analize.pdf
II - Description of the Study Field - 2.3. Resources and Provision of the Study Field		
Basic information on the teaching staff involved in the implementation of the study field	Annex 6.1_List of teaching staff involved in implementation of StPs.pdf	6.1_pielik_Studiju programmas istenosana iesaistito macibspeku saraksts_apvienots.pdf
Biographies of the teaching staff members (Curriculum Vitae in Europass format)	6.2_Docetaju_CV_Abas_StP_eng.pdf	6.2_pielik_Docetaju_CV_Abam_StP_lv.pdf
A statement signed by the rector, director, head of the study programme or field that the knowledge of the state language of the teaching staff involved in the implementation of the study programmes within the study field complies with the regulations on the state language knowledge and state language proficiency test for professional and official duties.	Annex 24.4_Confirmation regarding study programmes of the study direction Life Sciences.pdf	24.4._Apliecinajums par macibspeku valsts valodas atbilstibu.pdf
A statement of the higher education institution/ college on the respective foreign language skills of the teaching staff involved in the implementation of the study programme at least at B2 level according to the European Language Proficiency Assessment levels (level distribution is available on the website www.europass.lv, if the study programme or part thereof is implemented)	Annex 24.5_Statement on the StP language knowledge level Biostatistics.pdf	24.5_pielik_Apliecin_docetaju_anglu_valoda_AMSP_Biostatistika_lv.pdf
II - Description of the Study Field - 2.4. Scientific Research and Artistic Creation		
Summary of quantitative data on scientific and/ or applied research and / or artistic creation activities corresponding to the study field in the reporting period.	Annex 6.4_List of high-ranking publications _StP Biomedicine.pdf	6.4_pielik_Top_publikacijas_AMSP_Biomedicina_lv.pdf
List of the publications, patents, and artistic creations of the teaching staff over the reporting period.	Annex_6.4_List of high-ranking publications_StP Biostatistics.pdf	6.4_pielik_Top_publikācijas_AMSP_Biostatistika_lv.pdf
II - Description of the Study Field - 2.5. Cooperation and Internationalisation		
List of cooperation agreements, including the agreements for providing internship	Annex 9.2_Information about contracts.pdf	9.2_pielik_Sadarbibas institutu saraksts.pdf
Statistical data on the teaching staff and the students from abroad	Annex 8.1_Statistical data about international students and teaching staff StP Biostatistics.pdf	8.1_pielik_Statist_arvalstu_stud_docetaji_AMSP_Biostatistika_lv.pdf
Statistical data on the incoming and outgoing mobility of students (by specifying the study programmes)	Annex 8.1_Statistics on international students and lecturers_StP Biomedicine.pdf	8.1_pielik_Statistika_par_arvalstu_stud_un_macibspekiem_StP Biomedicine.pdf
Statistical data on the incoming and outgoing mobility of the teaching staff	Annex 6.3_Summary of statistical data on incoming and outgoing mobility of teaching staff.pdf	6.3_pielik_Macibspeku_mobilitate_lv.pdf
II - Description of the Study Field - 2.6. Implementation of the Recommendations Received During the Previous Assessment Procedures		
Report on the implementation of the recommendations received both in the previous accreditation and in the licensing and/ or change assessment procedures and/ or the procedures for the inclusion of the study programme on the accreditation form of the study field.	Annex 11_Plan for Implementation of Recommendations_StP Biomedicine and Biostatistics.pdf	11_pielik_Rekomendaciju_iev_plans_abam_StP_lv.pdf
An application for the evaluation of the study field signed with a secure electronic signature	RSU_Iesniegums_StV_Dzivas dabas zinatnes_eng.pdf	Iesniegums studiju virziena "Dzīvās dabas zinātnes" novērtēšanai.edoc
III - Description of the Study Programme - 3.1. Indicators Describing the Study Programme		
Sample of the diploma and its supplement to be issued for completing the study programme		
For academic study programmes - Opinion of the Council of Higher Education in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions (if applicable)		
Compliance of the joint study programme with the provisions of the Law on Higher Education Institutions (table) (if applicable)		
Statistics on the students in the reporting period		
III - Description of the Study Programme - 3.2. The Content of Studies and Implementation Thereof		
Compliance with the study programme with the State Education Standard		
Compliance of the qualification to be acquired upon completion of the study programme with the professional standard or the requirements for professional qualification (if applicable)		
Compliance of the study programme with the specific regulatory framework applicable to the relevant field (if applicable)		
Mapping of the study courses/ modules for the achievement of the learning outcomes of the study programme		
The curriculum of the study programme (for each type and form of the implementation of the study programme)		
Descriptions of the study courses/ modules		
Description of the organisation of the internship of the students (if applicable)		
III - Description of the Study Programme - 3.4. Teaching Staff		
Confirmation that the academic staff of the doctoral study programme includes not less than five doctors, of which at least three are experts approved by the Latvian Council of Science in the branch or sub-branch of science in which the study programme intends to award a scientific degree (if applicable)		

Confirmation that the academic staff of the academic study programme complies with the requirements specified in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions (if applicable)		

Other annexes

Name of document	Document
1.2_pielik_Uznemsanas noteikumi magistra StP_2023_2024.pdf	1.2_pielik_Uznemsanas noteikumi magistra StP_2023_2024.pdf
1.3_Uznemsanas kartiba StP kas tiek istenotas anglu valoda.pdf	1.3_Uznemsanas kartiba StP kas tiek istenotas anglu valoda.pdf
5_pielik_Studejoso_pasparvaldes_darbiba_lv.pdf	5_pielik_Studejoso_pasparvaldes_darbiba_lv.pdf
13.1_pielik_RSU_Marketinga_Sabiedrisko_att_kom_aktivitates_lv.pdf	13.1_pielik_RSU_Marketinga_Sabiedrisko_att_kom_aktivitates_lv.pdf
13.2_pielik_RSU īstenotie projekti_StV Dzivas dabas zinatnes_LV.pdf	13.2_pielik_RSU īstenotie projekti_StV Dzivas dabas zinatnes_LV.pdf
20.2_pielik_Brivas_izveles_studiju_kursi_lv.pdf	20.2_pielik_Brivas_izveles_studiju_kursi_lv.pdf
21.3_pielik_absolventu_aptaujas_anketas_LV.pdf	21.3_pielik_absolventu_aptaujas_anketas_LV.pdf
23_pielik_ESG_standarta_istenosana.pdf	23_pielik_ESG_standarta_istenosana.pdf
23.1_pielik_ESG_Biblioteka_lv.pdf	23.1_pielik_ESG_Biblioteka_lv.pdf
23.2_pielik_ESG_IT_Inform_Metod_bazes_novert_lv.pdf	23.2_pielik_ESG_IT_Inform_Metod_bazes_novert_lv.pdf
1.2_Admission Regulations_Master StP_2022_2023 ac.y.pdf	1.2_Admission Regulations_Master StP_2022_2023 ac.y.pdf
13.1_Annex_RSU integrated marketing and public relations communication activities.pdf	Annex 13.1_RSU integrated marketing and public relations communication activities.pdf
13.2_Annex_Projects implemented by RSU_Life sciences.pdf	Annex 13.2_Projects implemented by RSU_Life sciences.pdf
20.2_Annex_Offer of free elective study courses at RSU.pdf	Annex 20.2_Offer of free elective study courses at RSU.pdf
23_Annex_Compliance of RSU Study Programmes with Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) Part 1.pdf	Annex_23_Compliance of RSU Study Programmes with Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) Part 1.pdf
23.1_Annex_Assessment of the informative and methodological provision regarding library resources for the implementation of the study direction "Life Sciences".pdf	Annex 23.1_Assessment of the informative and methodological provision regarding library resources for the implementation of the study direction "Life Sciences".pdf
23.2_Annex_Assessment of the information and methodological provision regarding IT infrastructure and available resources.pdf	Annex 23.2_Assessment of the information and methodological provision regarding IT infrastructure and available resources.pdf
5_Annex_Activities_of_Student_Union.pdf	Annex_5_Activities_of_Student_Union.pdf
21.3_Annex_RSU_Graduate_Survey_regarding_studies.pdf	Annex_21.3_RSU_Graduate_Survey_regarding_studies.pdf
01 List of Annexes of the Study Direction Life Sciences.pdf	01_List of Annexes of the Study Direction Life Sciences.pdf
01_Pielikumu_uzskaitijums_lv.pdf	01_Pielikumu_uzskaitijums_lv.pdf
25_pielik_Senata izraksts.pdf	25_pielik_Senata izraksts.pdf
25_Annex_Extract from Senate.pdf	Annex_25_Extract from Senate.pdf
0_Self-Assessment Report of Study direction Life Sciences.pdf	0_Self-Assessment Report of Study direction Life Sciences.pdf
Annex 1.3_RSU Admission procedures StP taught in English.pdf	Annex 1.3_RSU Admission procedures StP taught in English.pdf
Annex_24.7_Analysis_of_the_Composition_of_the_Academic_Staff_StP_Biostatistics (1).pdf	Annex_24.7_Analysis_of_the_Composition_of_the_Academic_Staff_StP_Biostatistics (1).pdf
24.7_pielik_AMSP Biostatistika docetaju sastava analize_precizets papildinformacija (1).pdf	24.7_pielik_AMSP Biostatistika docetaju sastava analize_precizets papildinformacija (1).pdf

Biomedicine (45421)

Study field	*Wildlife Sciences*
ProcedureStudyProgram.Name	*Biomedicine*
Education classification code	*45421*
Type of the study programme	*Academic master study programme*
Name of the study programme director	*Pēteris*
Surname of the study programme director	*Tretjakovs*
E-mail of the study programme director	*peteris.tretjakovs@rsu.lv*
Title of the study programme director	*Dr. biol.*
Phone of the study programme director	
Goal of the study programme	*The aim of the study programme is to prepare graduates who are competent in biomedical guidelines and topical issues; are able to apply principles of natural sciences, including technologies in clinical medicine; are able to apply modern scientific and technological achievements in planning research in biomedicine and are able to carry out and manage such research, as well as to prepare graduates not only for modern scientific activities, for example, in various research institutes, but also to respect the labour market needs of the biomedical industry in Latvia.*
Tasks of the study programme	*The main objectives of the StP are:* *1. Prepare such graduates in the fields of biomedicine who not only have up-to-date theoretical knowledge and practical skills, but are also able to carry out scientific research in various fields of biomedicine, using scientific advances and modern technologies;* *2. Foster the integration of scientific research, higher education and modern technologies into a unified innovative operating environment and enhance research productivity;* *3. Promote the development of academic staff and the integration of specialists from different natural sciences into medicine.* *Specific objectives:* *1. Provide knowledge in the various fields (areas) of biomedicine that would enable graduates to work in medicine-related fields and to solve medicine-related problems;* *2. Provide knowledge and develop skills so that graduates are able to plan and carry out interdisciplinary biomedical research, e.g. in biomedical technology, biomaterials, pharmacology and other areas;* *3. Prepare such graduates who are able to plan and also conduct research in molecular biology, cell biology and biochemical technologies and other areas.*

Results of the study programme	1. Demonstrate extensive knowledge of various areas of biomedicine, including the latest scientific advances and the development and application of biomedical technologies.
	2. Demonstrate the ability to discuss current issues in the fields of biomedicine in a reasoned manner and able to propose innovative solutions for both scientific activity and entrepreneurship.
	Able to carry out biomedical research both independently and as part of a research team and take responsibility for the results obtained.
	4. Able to offer high quality solutions to unforeseen research problems in relevant areas of biomedical research.
	5. Able to integrate knowledge of different biomedical fields and contribute creatively to the advancement of knowledge in both theoretical and practical (methods) aspects, while respecting the ethical principles of research.
	6. Able to conduct business in the field of biomedicine, including organising and leading a team (e.g. staff of a biomedical laboratory), and to use innovative approaches to achieve their goals, using modern technologies in biomedicine.
Final examination upon the completion of the study programme	Master's Thesis

Study programme forms

Full time studies - 2 years - latvian

Study type and form	Full time studies
Duration in full years	2
Duration in month	0
Language	latvian
Amount (CP)	80
Admission requirements (in English)	Higher education: a Bachelor's degree or the second level professional higher education in the following subject areas of education: Life Sciences, Health Care, Veterinary Medicine, Pharmacy. Test in natural sciences (chemistry and biology).
Degree to be acquired or professional qualification, or degree to be acquired and professional qualification (in english)	Master's Degree of Natural Sciences in Biomedicine
Qualification to be obtained (in english)	-

Places of implementation

Place name	City	Address
Rīga Stradiņš University	RĪGA	DZIRCIEMA IELA 16, KURZEMES RAJONS, RĪGA, LV-1007

3.1. Indicators Describing the Study Programme

3.1.1. Description and analysis of changes in the parameters of the study programme made since the issuance of the previous accreditation form of the study field or issuance of the study programme license, if the study programme is not included on the accreditation form of the study field, including changes planned within the evaluation procedure of the study field evaluation procedure.

Table 1. Changes in the StP parameters

No	Parameter	Description and analysis of changes in the StP parameters during the accreditation (until 2022)	Planned changes within the assessment procedure (after the accreditation)
1.	Study direction	—	—
2.	Title of the StP	—	—
3.	Code according to the Latvian Education Classification	—	—
4.	Director of the StP	From 2015, the StP is headed by prof., *Dr. biol.* Pēteris Tretjakovs	—
5.	Scientific degree of the Director of the StP	—	—

No	Parameter	Description and analysis of changes in the StP parameters during the accreditation (until 2022)	Planned changes within the assessment procedure (after the accreditation)
6.	Aim of the StP	—	—
7.	Objectives of the StP	—	—
8.	Learning outcomes to be achieved	The leaning outcomes have been clarified according to the aim, objectives and wording of LQF/EQF. The information regarding the analysis of the learning outcomes performed during the mapping process are reflected in Annex 18.1. The learning outcomes of study courses have also been updated to help achieve the StP outcomes.	—
9.	Final examination upon completion of the StP	—	—

No	Parameter	Description and analysis of changes in the StP parameters during the accreditation (until 2022)	Planned changes within the assessment procedure (after the accreditation)
10.	Type and form of studies	—	—
11.	Duration of implementation	—	—
12.	Language of implementation	—	—
13.	Workload of the StP (CP)	—	According to the amendments of Section 1, Clause 8 of the Law on Higher Education Institutions, which entered into force on October 11, 2022, the transition to the European Credit Transfer and Accumulation System will be implemented by December 31, 2024.
14.	Admission requirements	—	—

No	Parameter	Description and analysis of changes in the StP parameters during the accreditation (until 2022)	Planned changes within the assessment procedure (after the accreditation)
15.	Degree to be awarded	By the decision of the the AIC Accreditation Commission No 91-A, on 04.09.2018, the degree to be awarded was changed to *Mg. biomed*.	—
16.	Qualification to be awarded	—	—
17.	Place of implementation	—	—

Academic Master's study programme "Biomedicine" (programme code: 45421) was successfully reaccredited in 2013, but in 2018 the degree to be awarded was changed from Master's degree in Biology (*Mg. biol.*) to Master's degree in biomedicine (*Mg. biomed.*). The name of the degree was changed by decision No 91-A, 04.09.2018, of the Study Accreditation Commission of the Academic Information Centre (AIC).

No other significant changes in the StP parameters were made in the reporting period, however, adjustments to learning outcomes were made during mapping, the courses of the study programme were modernised, as well as their implementation was improved in order to achieve the StP outcomes more effectively.

3.1.2. Analysis and assessment of the study programme compliance with the study field. Analysis of the interrelation between the code of the study programme, the degree, professional qualification/professional qualification requirements or the degree and professional qualification to be acquired, the aims, objectives, learning outcomes, and the admission requirements. Description of the duration and scope of the implementation of the study programme (including different options of the study programme implementation) and evaluation of its usefulness.

Biomedicine is linked to the application of the principles of natural sciences (physics, chemistry), in particular life sciences (physiology, biochemistry, molecular biology, genetics, etc.) in medicine, – for understanding, treatment and prevention of diseases. The StP corresponds to the study direction "Life sciences". As a result of mastering the StP, a Master's degree in biomedicine – *Mg. biomed*. is obtained. Aims, objectives and learning outcomes of the StP are mutually compliant. This is demonstrated by the StP's aim – to prepare graduates who (1) are competent in biomedical guidelines and topical issues; (2) are able to apply principles of natural sciences, including technologies in clinical medicine; (3) are able to apply modern scientific and technological achievements in planning research in biomedicine and are able to carry out and manage such research. It should be noted that the StP aims to prepare graduates not only for modern scientific activities, for example in various research institutes, but also to respect the labour market needs of the biomedical industry in Latvia.

The main objectives of the StP are: (A) to prepare graduates in biomedical sectors who not only possess up-to-date theoretical knowledge and practical skills, but are also able to carry out scientific research in different fields of biomedicine using achievements in science and modern technologies; (B) to promote the integration of scientific research, higher education and modern technologies into a single innovative operating environment and to enhance research productivity; (C) to promote the growth of academic staff and the integration of various natural sciences specialists into medicine. Specific objectives: (a) to provide expertise in various biomedical sectors (fields) that would enable graduates to work in medicine-related fields and address medicine-related problems; (b) to provide knowledge and skills to enable graduates to plan and conduct interdisciplinary biomedical research, for example, in the field of biomedical technologies, biomaterials and pharmacology; (c) to prepare graduates who are able to plan and also conduct research in the fields of molecular biology, cell biology, biochemical technologies, etc.

Based on aims and objectives, six learning outcomes of the StP have been set (see 3.2.1). They are consistent with the knowledge, skills and competences acquired through study courses.

There is no Bachelor level biomedicine programme available in Latvia, therefore applicants with a wide range of higher education in various sciences related to biomedicine are admitted. Admission requirements to the StP: higher education – Bachelor's degree or second level professional higher education in the following thematic areas of education: life sciences (e.g. biology), health care, veterinary science, pharmacy. Applicants should pass a test in natural sciences (chemistry and biology) (information in Latvian, information in English is not available).

In order to prepare for the admission test in natural sciences (biology and chemistry), which consists of two parts, potential applicants have the opportunity to take preparatory courses for studying in the Master's study programme "Biomedicine". The information is available on the RSU website (in Latvian, not available in English).

As the study programme "Biomedicine" is highly intensive in terms of knowledge, the duration of the StP implementation is 2 years (4 semesters) and the total number of credit points obtained in study courses is 80. This is consistent and complies with the objectives set for the StP.

The current programme code 45421 corresponds to "Biology"[1], not "Biomedicine," however, since biomedicine is defined as part of "Medicine," it could be classified as "0912 *Medical science*" or "0919 *Health not elsewhere classified*", based on *INTERNATIONAL STANDARD CLASSIFICATION OF EDUCATION*[2].

At universities of European Union countries (in Scandinavian countries and Western Europe), not

Mg. biol, but *Mg. biomed. (Biomedicine MSc)* is awarded when graduating from the study programme "Biomedicine".

In addition, given that the programme is scientifically oriented, it can be mentioned that, according to CM Regulations No. 595, the relevant **group of fields of sciences** would be "Medicine and Health Sciences", **field of science**: "Medical base sciences, including pharmacy (The field of science includes anatomy and morphology, human genetics, immunology, neurosciences (including psychophysiology), pharmacology and pharmacy, medical chemistry, toxicology, physiology, pathology)" and **sub-field of science** similarly to the classification "Medical biochemistry", however, "Sub-field of other medical based sciences, including pharmacy," which also includes biomedicine, would be more relevant.

Enclosed:
Annex 24.1 "Model diploma and supplement thereto";

Annex 24.8 "Sample study contract".

[1] Cabinet of Ministers. CM Regulations No. 322 of 13.06.2017 "Regulations on the Classification of the Latvian Education". *Latvijas Vēstnesis*, 119, 15.06.2017.
https://likumi.lv/ta/id/291524-noteikumi-par-latvijas-izglitibas-klasifikaciju

[2]
http://uis.unesco.org/sites/default/files/documents/international-standard-classification-of-education-fields-of-education-and-training-2013-detailed-field-descriptions-2015-en.pdf

3.1.3. Economic and/ or social substantiation of the study programme, analysis of graduates' employment.

Biomedicine, together with medical technology, biopharmacy and biotechnology disciplines, has been recognised as a smart specialisation area strategy (*Research and Innovation strategy for smart specialization* – RIS3; Latvia has joined the European Commission's S3 platform since 2014) to develop research and innovation, for example, in the following thematic areas: (1) personalised medicine; (2) translational medicine; (3) infectious diseases/antimicrobial resistance/global health[1]. Thus, the biomedical industry plays an important role in the national economy of Latvia.

By content, StP "Biomedicine" has been developed in such a way that its graduates have extensive and various job opportunities not only in various Latvian scientific institutes and laboratories, including structural units of higher education institutions, where biomedical research is carried out, but also in the pharmaceutical industry, clinical diagnostic laboratories, etc. Graduates of StP "Biomedicine" are a valuable contribution to the Latvian biomedical industry's labour market. It should be noted that demand for these is currently more than insufficient for the real needs of biomedical industries.

According to forecasts of the Ministry of Economics[2], labour market demand for highly qualified specialists in the group of educational programmes "Life Sciences" will increase by 11% by 2030. Looking at the market forecasts for different levels of education, the ministry predicts that during that period demand will increase the most (+12%) for life sciences specialists with academic education and second level professional education. At the same time, a shortage of highly skilled labour force is expected at all levels of education (doctors, masters, bachelors)[3], indicating

positive employment opportunities for students of the study direction, including StP "Biomedicine".

For the StP to be compliant and targeted to the real needs of the biomedical industry in Latvia, various surveys are carried out and the results are used for improvement of the quality of studies. The first level of the survey affects students – they complete a centralised e-questionnaire of RSU for each semester evaluating the study process, the work of lecturers and other aspects (for the detailed survey report see Annex 21.1). These survey results are evaluated at departments, the head of the course publishes a feedback questionnaire on the academic portal of RSU, and the programme director reports on the results of the questionnaires in the annual report on the study process at the meeting of the RSU Dean's Council.

Taking into account the results of the surveys, proposals have been implemented to improve the quality of the study process, for example, there are more possibilities to implement laboratory protocols during practical classes, the timetable of classes have been optimised to prepare for examinations more qualitatively.

During surveys of StP graduates (2017-2021) 83% of survey participants have replied that the overall quality of StP is very good (for the detailed survey report see Annex 21.2).

During the period from 30 July 2019 to 31 March 2020, a report was prepared on the study commissioned by RSU "Investigation of the competitiveness of Rīga Stradiņš University and RSU Red Cross Medical College Study Programmes and Compliance with Medium- and Long-Term Development Trends of the Labour Market and Industry", which included an analysis of the labour market in Latvia also in relation to the sector "Life Sciences". As a result, the views and recommendations of employers were collected. Thus, for example, although it was recognised that "virtually all study programmes at RSU are based on the innovative solutions of the moment", the following finding was made at the same time: "Theoretical preparation is good, practical skills are lacking. Any laboratory has its own work specifics, its mastering is included in the competence and duties of the employer." These and other survey results are taken into account, for example, by increasing the mastering of practical skills in practical classes of study courses, and they are also acquired in scientific institutes of RSU (within the framework of the study programme). It should be noted that students start developing their Master's thesis in these institutes in a timely manner.

Enclosed:

Annex 21.1 "Results of the study course and study programme assessment surveys";

Annex 21.2 "Questionnaire of the graduate survey or graduate survey results".

[1] Ministry of Education and Science. (2020). Biomedicine, Medical Technology, Biopharmacy, and Biotechnology.

https://www.izm.gov.lv/lv/biomedicina-medicinas-tehnologijas-biofarmacija-un-biotehnologijas

[2] Ministry of Economics of the Republic of Latvia. (2018). Informative Report on medium-term and long-term labour market forecasts.

[3] Dynamic University. (2020). Investigation of the competitiveness of Rīga Stradiņš University and RSU Red Cross Medical College Study Programmes and Compliance with Medium- and Long-Term Development Trends of the Labour Market and Industry.

3.1.4. Statistical data on the students of the respective study programme, the dynamics of

the number of the students, and the factors affecting the changes to the number of the students. The analysis shall be broken down into different study forms, types, and languages.

Admission to StP takes place in spring every other year. In the first half of the reporting period, 10 budget-funded places were provided but not all were used (see Annex 16 "Statistical data on students"). After 2018, when the degree to be acquired was changed to *Mg. biomed.* and interest in studying in StP "Biomedicine" increased, the number of budget-funded places sadly reduced to six (6). In the following reporting period, all budget-funded places were filled and paid study places were used. It should be noted that the tuition fee is relatively high (EUR 4646/year), therefore the number of these students is not high (3 students in academic year 2021/2022, 2 students in academic year 2022/2023). However, with the development of the biomedical industry (for example, the demand of laboratory diagnostics specialists has increased in Latvia in recent years, which was fostered by the pandemic, as well as the funding and number of scientific projects, the implementation of which requires researchers in different biomedical fields) and the importance and reputation of the biomedical industry in the country has increased, the number of interested persons (applicants) of the RSU StP "Biomedicine" has increased.

Students are offered the opportunity to use the *ERASMUS+* programme for mobility for one year immediately after their graduation, as this mobility is difficult to implement during their studies given the specific nature of the courses and the timetable for their implementation. Despite this, a student of the programme of 2023, whose Master's thesis will already be largely drafted, will implement this *ERASMUS+* programme in semester 4 at the University Hospital Freiburg in Germany, where she will have a virology research methods traineeship, for example, learning of flow cytometry and work with cell cultures. It should be noted that students are allowed to choose for themselves where to go directly and what new knowledge and skills to acquire through the *ERASMUS+* programme for mobility.

Enclosed:
Annex 16 "Statistical data on students".

3.1.5. Substantiation of the development of the joint study programme and description and evaluation of the choice of partner universities, including information on the development and implementation of the joint study programme (if applicable).

3.2. The Content of Studies and Implementation Thereof

3.2.1. Analysis of the content of the study programme. Assessment of the interrelation between the information included in the study courses/ modules, the intended learning outcomes, the set aims and other indicators with the aims of the study course/ module and the aims and intended outcomes of the study programme. Assessment of the

relevance of the content of the study courses/ modules and compliance with the needs of the relevant industry, labour market and with the trends in science on how and whether the content of the study courses/ modules is updated in line with the development trends of the relevant industry, labour market, and science.

The knowledge, skills and competences reflected in study course descriptions ensures in a purposeful way the achievement of the aims and six learning outcomes of StP, because graduates:

1) demonstrate extensive knowledge of various areas of biomedicine, including the latest scientific advances and the development and application of biomedical technologies;

2) demonstrate the ability to discuss current issues in the fields of biomedicine in a reasoned manner and able to propose innovative solutions for both scientific activity and entrepreneurship;

3) able to carry out biomedical research both independently and as part of a research team and to take responsibility for the results obtained;

4) able to offer high-quality solutions to unpredicted research problems in relevant areas of biomedical research;

5) able to integrate knowledge from different biomedical fields and contribute creatively to the advancement of knowledge in both theoretical and practical (methods) aspect, while respecting the ethical principles of research;

6) able to conduct business in the field of biomedicine, including organising and leading a team (e.g. staff of a biomedical laboratory) and to use innovative approaches to achieve their goals, using modern technologies in biomedicine.

The two-year StP includes basic courses and advanced knowledge courses in specific areas. They are both compulsory and elective (see Annex 18.1). **Courses of part A** (basic courses) ensure learning the required theoretical knowledge in individual biomedical disciplines (sciences). This set of courses constitutes compulsory (A) courses for research of biomedical theoretical knowledge, each of which is provided by one of the academic structural units of RSU, mainly departments. **Courses of part B** are biomedicine-oriented (related to biomedicine) elective courses, which form approbation (application) of theoretical sciences (applications) in the aspect of current problems in the sector or sub-sector of science, ensuring deeper learning of knowledge, shaping awareness of individual fields of science, their interrelation in solving medical problems. These courses are also taught by RSU scientific institutes[1]. The aim of drafting the Master's thesis is to provide students with the opportunity to demonstrate in practice the knowledge and practical skills acquired during their studies in the selected field of biomedicine. The Master's thesis demonstrates a student's competence in the chosen sector of biomedicine (field). In their Master's thesis, students demonstrate their skills in planning, conducting and directing research, including obtaining and processing data, analysing the results of the study, and their ability to interpret the findings based on scientific publications.

Achievement of StP learning outcomes is ensured by a targeted set of study courses to be implemented. The study programme being implemented, the analysis of mutual compliance of the learning outcomes of the study courses included therein (see Annex 18.1) confirms the significant contribution of each study course to the achievement of the learning outcomes of the programme – knowledge, skills and competences.

The topics of StP study courses is in accordance with the generally accepted practice of study

courses at European Union universities. In these courses graduates acquire a Master's degree in biomedicine, while emphasising the main directions of the biomedical industry in Latvia, because the overall framework of biomedicine is very wide. Two new study courses have been introduced in the period since the last re-accreditation of the StP: "Nanotechnology in Medicine" (replacing the previous course "Food Toxicology") and "Civil and Environmental Protection, First Aid" (to meet the requirements of the Latvian CM Regulations). The sequence of mastering study courses and their layout by 4 semesters (this is reflected in the semester study plans) is complementary to acquire knowledge, skills and competences in some biomedicine related sectors (sciences).

In the first year of studies, the student should master Part A and Part B courses.

Part A courses:

"Cell Biology", "Biochemistry", "Microbiology, Immunology and Virology", "Functional Physiology and Biological Regulatory Mechanisms", "Molecular Genetics and Basics of Bio-Informatics", "Functional Histology and Embryology", "Pharmacology", "Biostatistics".

Part B courses:

"Nanotechnology in Medicine", "Topical Issues and Research Trends in Biomedicine", "Legal Problems in Biomedicine", "Information Management in Health Systems".

In the second year of studies, the student should master Part A and Part B courses.

Part A courses:

"Writing a Research Protocol", "Research Ethics", "Biochemistry (Biochemical Aspects of Oxygen Derivatives and Free Radicals in Medicine)", "General Pathology".

Part B courses:

"Basics of Neuroscience", "Biophysics", "Pedagogy in Health Care", "Occupational Safety Principles", "Civil and Environmental Protection, First Aid," "Statistical Programming and Data Management," "History of Medicine and Life Sciences".

Free elective C courses are also available for students in semester 3. Students finalise and defend their Master's thesis this year.

Each description of the study course reflects the content of lectures and their association with practical classes, as well as examination of students' knowledge. The description sets out the learning outcomes with regard to knowledge, skills and competences corresponding to StP. It is mandatory for heads of courses to update and modernise the course description (in RSU e-studies) each time before starting the course, so that the implementation of the course contributes more effectively to the learning outcomes of StP, taking into account the state-of-the-art scientific achievements and labour market trends.

The courses are purposefully related to certain fields (sciences), which are related to specific sectors (directions) of the biomedical industry exactly in Latvia, for example, research in molecular genetics, cell biology, as well as manufacture of medicinal products, diagnostic examinations in clinical laboratories. Several RSU scientific institutes and researchers working in them are involved in the implementation of StP courses. Their scientific achievements are evidenced by a large number of Scopus publications (see Chapter 3.4.1) related to the scientific development trends, and this knowledge is passed on to students and, in some cases, students are also involved in the development of scientific projects.

Enclosed:

Annex 17.1 "Compliance of the study programme with the national education standard";

Annex 18.1 "Mapping of the study courses for the achievement of learning outcomes of the study programme";

Annex 19 "Planning of the study programme";

Annex 20 "Study course description".

[1] RSU. Research. Scientific institutes and laboratories. https://www.rsu.lv/petnieciba/zinatniskie-instituti-un-laboratorijas

3.2.2. In the case of master's and doctoral study programmes, specify and provide the justification as to whether the degrees are awarded in view of the developments and findings in the field of science or artistic creation. In the case of a doctoral study programme, provide a description of the main research roadmaps and the impact of the study programme on research and other education levels (if applicable).

Biomedicine is a branch of medicine[1], although it includes both natural sciences (physics, chemistry) and wide spectrum life sciences and their sectors (physiology, biochemistry, molecular biology, genetics, etc.), which are used for the understanding, treatment, and prevention of diseases (pathogenesis).

Initially, the degree to be awarded in RSU StP "Biomedicine" was *Mg. biol.*, but the RSU decided to change the degree to be awarded to *Mg. biomed.* to better match both the content framework of StP "Biomedicine" and the practice of European Union countries, including all Scandinavian countries and Western Europe. At Master's level, it was decided to award only (!) *Mg. biomed.* (*Biomedicine Msc)*) in biomedicine or programmes with a very similar title or clarified them later even more, e.g. *MSc in Molecular Biomedicine* (*University of Copenhagen*).

Although the RSU programme Biomedicine includes courses characteristics to biomedical programmes of universities of EU countries[2], it should be noted that RSU StP "Biomedicine" does not cover the full range of all possible study courses related to biomedicine, but the RSU StP is not a narrow specialisation either, so *Mg. biomed.* without a detailed degree specialisation is more relevant. The name of the degree was changed by AIC decision No. 91-A, 04.09.2018. For the discrepancy of the current StP code and solution, see Chapter 3.1.2.

[1] The free dictionary. *Biomedicine*. https://medical-dictionary.thefreedictionary.com/biomedicine

[2] For example: https://www.mastersportal.com//disciplines/31/biomedicine.html

3.2.3. Assessment of the study programme including the study course/ module implementation methods by indicating what the methods are, and how they contribute to the achievement of the learning outcomes of the study courses and the aims of the study programme. In the case of a joint study programme, or in case the study programme is

implemented in a foreign language or in the form of distance learning, describe in detail the methods used to deliver such a study programme. Provide an explanation of how the student-centred principles are taken into account in the implementation of the study process.

The mastering of study courses indicated in the programme plan takes place in lectures, seminars, laboratory work, discussions, group work, tutorials and independent work. A great emphasis in the study process is placed on independent work of students – analysis of methodological materials and studies of scientific literature, as well as the drafting of reports and other research papers, both individually and in teams. Particular emphasis is placed on the use of interactive methods in the study process, active participation of students in discussions during seminars and participation in the study process in cooperation with heads of seminars. The programme covers different scientific disciplines related to biomedicine that allow for exchange of experience and discussion among students.

Lecturers also use the broken lecture method in their work, which includes an outline of the subject, which is then followed by a discussion and analysis with student participation. Lecture materials and other methodological materials, including scientific articles, are also available to students in electronic form (on the e-learning page of each course). During practical classes, including laboratory work, students strengthen the knowledge acquired during lectures and acquire practical skills and competences as well. During seminars, students gain the experience of showing (demonstrating) their knowledge to other students and participating in discussions. Communication between the lecturer and students also takes place in the e-learning environment (for example, submission of research papers, laboratory protocols and other feedback), if necessary, by e-mail, as well as by meeting in individual tutorials with lecturers.

Given the specifics of the courses, the course implementation methods may differ to some extent between more theory-based courses, such as "Research Ethics," and so-called laboratory courses, such as "Biochemistry," where experimental work is carried out during practical classes (for example, to determine enzyme activity), "Physiology" – functional examinations are carried out (for example, electrocardiograms are recorded). The course "Cell Biology" uses, for example, viral expression diagnostics – transmission electron microscopy negative contrasting method, while the course "Functional Histology and Embryology" uses a variety of immunohistochemical methods. In general, StP courses use a very wide range of research methods, including computer simulation programs, which, for example, are related to understanding the body functions.

The courses are also implemented using a personalised approach, i.e. each student can express their creative and innovative potential, which is the added value of a future Master of biomedicine (future researcher and/or industry professional). This is fostered by a student-centred approach where the lecturer is like a coordinator, but the student who has already acquired some experience and knowledge is actively involved in the study process. A lot of attention is paid to independent work of students, which focuses not only on research literature studies, but also on the acquisition, analysis and conclusion of research material data. Students learn independently and responsibly, at the same time developing knowledge in interacting with each other and working with lecturers. Independent work can vary from course to course, for example, in laboratory courses, it involves carrying out laboratory protocols with data processing, obtaining results and drawing conclusions.

When mastering a course, the student has to pass certain tests – test work, independent work (including to submit laboratory protocols), knowledge tests and colloquiums, and the study course concludes with an examination (in all courses of the study programme). The evaluation of students'

knowledge takes place in accordance with CM Regulation No. 240 "On the National Academic Education Standard" and RSU Academic Regulations I. Special attention is devoted to the development and defence of the Master's thesis.

The purpose of the tests is to determine to what level the student has acquired theoretical knowledge and acquired the skills and abilities to use theoretical knowledge for the performance of the tasks necessary for performance of further tasks. Each knowledge and skill test form is a component of the common test system and has a defined share in the overall assessment. Test forms during the semester are chosen in such a way that students are motivated to work regularly and systematically and, when participating in tests, certified that the study course has been successfully mastered. The assessment is obtained by summing up the assessments obtained during the individual testing phases and taking into account the share of each individual component in the overall assessment system (cumulative approach). Knowledge assessment results and their analysis serve as the basis for further improvement of the study programme and study process.

3.2.4. If the study programme envisages an internship, describe the internship opportunities offered to students, provision and work organization, including whether the higher education institution/ college helps students to find an internship place. If the study programme is implemented in a foreign language, provide information on how internship opportunities are provided in a foreign language, including for foreign students. To provide analysis and evaluation of the connection of the tasks set for students during the internship included in the study programme with the learning outcomes of the study programme (if applicable).

3.2.5. Evaluation and description of the promotion opportunities and the promotion process provided to the students of the doctoral study programme (if applicable).

3.2.6. Analysis and assessment of the topics of the final theses of the students, their relevance in the respective field, including the labour market, and the marks of the final theses.

Already during the implementation of study courses, students, in communicating with lecturers, are shown a direction and an idea of different research fields (topics) in biomedicine, as well as real possibilities of drafting a Master's thesis, for example, within the framework of RSU scientific project working groups. Students are also offered a wider choice of Master's thesis topics, as they can use and engage in research directions, which are practised not only in departments but also in different RSU research institutes[1], and if the student's interests are even broader, the Master's thesis can also be drafted in another university (for example, Riga Technical University, University of Latvia – StP has a successful history of cooperation), and if the student has a desire to work more closely with the biomedical industry, then the Master's thesis can be drafted, for example, at the BIOR

Institute (this is one of the leading institutes in the field of various biomedical research in Latvia) or in any other scientific institution.

All the paper drafted during the reporting period received an assessment from the Master's Thesis Assessment Commission (in accordance with the RSU Regulations on the Development and Defence of a Master's Thesis" No. 2-1/9/2020, 10.11.2020), which was 8 (very good) or higher (see Annex 22). All topics of Master's theses were scientifically relevant. These papers have been supervised by scientists with international visibility and a large number of scientific publications, and many of the papers were presented at scientific conferences. For example, the following Master's theses were defended very successfully and with high scientific relevance in cooperation with the biomedical industry, including scientific institutes:

1) in 2015, the paper named "Circulating nucleic acids as a predictive factor in metastatic colorectal tumour" defended, which was drafted under the supervision of Zanda Daneberga, *Dr. med.*, lead researcher at the RSU Institute of Oncology, Laboratory of Molecular Genetics;

2) in 2017, the paper named "Preparation and properties of pharmaceutical active substance modified hyaluronic acid-based hydrogels" defended, which was drafted under the supervision of Aigars Reinis, *Dr. med.*, Assistant Professor, and Dagnija Loča, *Dr. sc. ing.*, lead researcher at the RTU Institute of General Chemical Engineering;

3) in 2019, the paper named "Investigation of salmonellosis outbreak using whole genome sequencing" defended, which was drafted under the supervision of Lelde Grantiņa-Ieviņa, *Dr. biol.*, lead researcher at BIOR Institute, Molecular Biology Department;

4) in 2021, the paper named "Peculiarities of urinary exosomal RNA composition in bladder cancer patients" defended, which was drafted under the supervision of Edvīns Miklašēvičs, *Dr. biol.,* professor, lead researcher at the RSU Institute of Oncology.

It should be noted that graduates often continue researching the topic of the drafted Master's thesis and publish Scopus level articles on it. Thus, for instance, in 2021, the paper named "Studies of antibacterial properties of chemically cross-linked hydrogels based on ε-polylysine and hyaluronic acid" was defended, which was drafted under the supervision of Aigars Reinis, *Dr. med.*, Assistant Professor, and Kristīne Šalma-Ancāne, *Dr. sc. ing.*, Associate Professor at RTU Riga Biomaterials Innovation and Development Centre of Rūdolfs Cimdiņš, while in 2022, an article was published with the graduate as a co-author: Salma-Ancane, K., Sceglovs, A., Tracuma, E., ... & Nikolajeva, V., Loca, D. (2022). Effect of crosslinking strategy on the biological, antibacterial and physicochemical performance of hyaluronic acid and ε-polylysine based hydrogels. International Journal of Biological Macromolecules, 208, pp. 995–1008.

Enclosed:
Annex 22 "Topics of diploma papers of students with assessments".

[1] RSU. Research. Scientific institutes and laboratories. https://www.rsu.lv/petnieciba/zinatniskie-instituti-un-laboratorijas

3.3. Resources and Provision of the Study Programme

3.3.1. Assessment of the compliance of the resources and provision (study provision, scientific support (if applicable), informative provision (including libraries), material and

technical provision, and financial provision) with the conditions for the implementation of the study programme and the learning outcomes to be achieved by providing the respective examples.

For the implementation of courses of StP "Biomedicine", students are provided with a comprehensive study process, using well-equipped auditoriums, modern laboratories, the RSU Library (information in Latvian, English) with a wide and modern provision of open access textbooks and scientific literature, extensive availability of computer hardware and the internet, including provision of RSU e-learning environment and student information system (SIS-3). The laboratories involved in the implementation of the courses are equipped with state-of-the-art, wide-spectrum hardware, equipment, computer simulation programs and other technologies. During the study process, including for drafting their Master's thesis, students may use not only the theoretical provision (departments) of RSU but also the laboratories of RSU scientific institutes:

- RSU Faculty of Medicine with the following departments – Department of Morphology (information available in Latvian and English), Department of Human Physiology and Biochemistry (information available in Latvian and English), Department of Biology and Microbiology (information available in Latvian and English), Department of Physics (information available in Latvian and English) and Department of Pathology (information available in Latvian and English);
- RSU Faculty of Pharmacy, Department of Pharmacology (information available in Latvian and English);
- RSU Faculty of Public Health and Social Welfare, Department of Public Health and Epidemiology (information available in Latvian and English); Department of Health Psychology and Pedagogy (information available in Latvian and English);
- RSU Department of Occupational and Environmental Medicine (information available in Latvian and English); RSU Department of Clinical Skills and Medical Technologies (information available in Latvian and English);
- RSU Statistical Unit (information available in Latvian and English); RSU Department of Humanities (information available in Latvian and English); RSU Institute of the History of Medicine (information available in Latvian and English); RSU Faculty of Law (information available in Latvian and English); RSU Health Management Lecturer Group (information available in Latvian and English);
- RSU scientific institutes: Institute of Anatomy and Anthropology (information available in Latvian and English), Institute of Microbiology and Virology (information available in Latvian and English), Institute of Oncology (information available in Latvian and English); Institute of Occupational Safety and Environmental Health (information available in Latvian and English).

For the implementation of StP "Biomedicine", modern infrastructure is available that includes latest generation equipment and hardware that allow modern techniques to be used in practical classes and scientific research, for example, *PowerLab, ADInstruments* makes it possible to conduct a wide range of functional examinations; *Exact Grunding*, a very hard tissue grinding system and a variety of immunohistochemical methods, can be used; the transmission electron microscopy negative contrasting method and many other methods of are available (see the websites of the RSU structural units mentioned above). Students have access to high-quality information technology, a wide range of computer programs. Thus, in general, the StP "Biomedicine" provides an excellent material technical provision (resources) for the qualitative implementation of study programme courses, and the provision of RSU scientific institutes is also available for the drafting of Master's theses.

Enclosed:

Annex 23.1 "Evaluation of the informative and methodological base on library resources for the implementation of the study direction "Life Sciences" in accordance with guideline requirements".

3.3.2. Assessment of the study provision and scientific base support, including the resources provided within the framework of cooperation with other science institutes and higher education institutions (applicable to doctoral study programmes) (if applicable).

Although this point **does not apply** to the Master's study programme, it should be noted that for the implementation of StP "Biomedicine", RSU has a sufficient and large study and scientific support, including not only a large number of different departments (including scientific laboratories; for more information see chapter 3.3.1) but also several RSU scientific institutes (they also attract significant external and internal funding for the implementation of scientific projects), there is therefore no need to involve other scientific institutions and universities, although in some cases, such as the drafting of Master's thesis, cooperation takes place and respectful scientific institutions are involved – such as the BIOR Institute, Riga Technical University – with which cooperation takes place which has already justified itself, for example, high-quality Master's theses have been defended.

3.3.3. Indicate data on the available funding for the corresponding study programme, its funding sources and their use for the development of the study programme. Provide information on the costs per one student within this study programme, indicating the items included in the cost calculation and the percentage distribution of funding between the specified items. The minimum number of students in the study programme in order to ensure the profitability of the study programme (indicating separately the information on each language, type and form of the study programme implementation).

It is planned to finance StP from the resources of private and legal persons, setting the tuition fee for the Latvian flow of 4700 euro. 12 students are expected to be enrolled in the Latvian flow in academic year 2023/2024. (StP "Biomedicine" has public funding for 6 budget funded places and places for paid students). It is planned in the cost estimate of the study programme that the number of students in the second year of studies will decrease to 9 students. Such a number of students per flow would be optimal to ensure a high-quality study process and to keep the programme cost-effective.

The funding is used for staff remuneration, attraction of visiting university lecturers, taxes, maintenance of IT infrastructure, purchase of equipment and devices and study visit costs. In addition to the direct costs of the implementation of lectures and classes, the StP must cover the infrastructure maintenance costs (facilities, IT solutions) and other RSU common resources used in StP (Student Service, Library, organisation of the study process, grant for the Student Union and other support and administrative functions).

StP is implemented by the RSU Faculty of Medicine, Statistics Unit, Department of Physics,

Department of Human Physiology and Biochemistry, Department of Biology and Microbiology, Institute of Anatomy and Anthropology Department of Morphology, and Faculty of Pharmacy, Department of Pharmacology. Remuneration of the academic staff in the first year of StP is planned to be approximately 30 thousand EUR.

Table 2. **Information on student costs**

Name	Costs
Average income per student	6020 EUR
Average cost per student	5987 EUR
Academic staff	51%
Department resources	2%
Other direct expenditure	14%
Fixed costs	4%
Overheads	29%

3.4. Teaching Staff

3.4.1. Assessment of the compliance of the qualification of the teaching staff members (academic staff members, visiting professors, visiting associate professors, visiting docents, visiting lecturers, and visiting assistants) involved in the implementation of the study programme with the conditions for the implementation of the study programme and the provisions set out in the respective regulatory enactments. Provide information on how the qualification of the teaching staff members contributes to the achievement of the learning outcomes.

Academic staff (lecturers) meeting the requirements of the Law on Higher Education Institutions and also scientific staff (researchers, lead researchers) meeting the requirements of the Law on Scientific Activity are involved for the implementation of the study programme "Biomedicine".

Lecturers (teaching staff) involved in the implementation of StP have the following qualification requirements: (1) at least a Master's degree, but preferably a scientific doctoral degree in the science related to the course; (2) pedagogical work experience; (3) the level of digital literacy and English language proficiency corresponding to job duties (for the implementation of relevant courses); (4) scientific activity in the field of science is desirable.

A total of 34 lecturers (teaching staff) are involved in the study programme "Biomedicine", of which 26 (75%) hold scientific doctoral degrees and they read study courses or participate in their

implementation. It should be noted that lecturers are often also lead researchers at RSU scientific institutes, and this contributes to the quality of programme implementation and cooperation with institutes (laboratories, project scientific working groups). 7 professors and 5 associate professors are involved in the programme as their main job, who together make up 35% of total academic staff of the Master's programme.

In the first year of studies, lecturers implement a number of courses, which include both basic knowledge of the field concerned and modern achievements and scientific aspects.

- Professor **Māra Pilmane** teaches courses "Functional Histology and Embryology" and "Basics of Neuroscience". She is a teacher rich in experience and also excellent, active scientist, moreover, she is the Director of the RSU Institute of Anatomy and Anthropology and expert in several biomedicine-related directions (further information available in Latvian and English). Several lecturers are involved in the implementation of both above-mentioned courses: Assistant Professor Anna Junga, Assistant Professor Sandra Skuja, Assistant Professor Zane Vitenberga, Assistant Professor Elga Bataraga and lecturer Mārtiņš Vaivads.
- Professor **Valērija Groma** teaches the course "Cell Biology". She is the head of the Joint Laboratory of Electron Microscopy, moreover, she is also a well-known scientist and expert in several biomedicine-related directions (further information available in Latvian and English).
- Lecturer **Ināra Nokalna** teaches the course "Biochemistry I". She has excellent teaching experience obtained when teaching the course "Medical Biochemistry" to students of StP "Medicine". The lecturer conducts scientific activity related to biomedicine (further information available in Latvian and English).
- Assistant Professor **Gita Gersone** is the leader of the course "Functional Physiology and Biological Regulatory Mechanisms". She teaches the course "Physiology" also in study programmes "Medicine" and "Medical Engineering and Physics". The Assistant Professor has extensive, excellent experience, moreover she is a well-known scientist and expert in biomedicine-related directions (further information available in Latvian and English).
- Assistant Professor **Aigars Reinis** delivers the course "Microbiology, Immunology and Virology". He has excellent knowledge and skills in these areas. A. Reinis is an active scientist, expert and evaluator in microbiology at the Latvian National Accreditation Bureau, as well as an expert in biomedicine-related fields (further information available in Latvian and English).
- Assistant **Irēna Teterina** delivers the course "Pharmacology" (lecturer of the Department of Pharmacology), who provides knowledge on basics of pharmacology, including knowledge on drug effects on disease mechanisms and pathogenesis (*manufacturing of medicinal products is a classic biomedical industry*).

Courses with a more profound or specific meaning in biomedicine are also implemented in the programme in the first year of studies.

- Professor **Edvīns Miklaševičs** delivers the course "Molecular Genetics and Basics of Bioinformatics". He is an excellent and active scientist, the Director of the RSU Institute of Oncology and an expert in biomedicine-related areas (further information available in Latvian and English). The following lecturers are also involved in the implementation of this course: scientific assistant Laura Zvejniece and lead researcher Linda Gailīte.
- Lecturer **Inese Čakstiņa-Dzērve** delivers the course "Topical Issues and Research Trends in Biomedicine", is the lead researcher at the RSU Institute of Oncology and an expert in biomedicine-related areas (further information available in Latvian and English). Assistant Professor Agnese Zariņa is also involved in the implementation of this study course.
- Lecturer **Māra Grēve** teaches the course "Biostatistics", which provides knowledge and skills in statistical data processing methods necessary for the performance of scientific research

work at Master's level and other biomedical research. She works at the RSU Statistical Unit. The lecturer has prior scientific experience, for example, at the Institute of Atomic Physics and Spectroscopy of the University of Latvia (further information available in Latvian and English).

- Assistant Professor **Jeļena Kosmača** teaches the course "Nanotechnology in Medicine", which provides knowledge on the use of nanotechnology in medicine. She is an active scientist, moreover, also in the field of medical physics.
- Associate Professor **Jānis Grasis** delivers the course *"Legal Problems in Biomedicine". He is also the lead researcher at the RSU Faculty of Law* (further information available in Latvian and English).
- *Lecturer **Ieva Bikava** delivers the course "Information Management in Health Systems". She is also a researcher* at the RSU Institute of Public Health.

The lecturers, who are involved in the implementation of courses in the second year of studies, deliver the courses that are directly related to the drafting of the Master's thesis.

- Associate Professor **Anda Ķīvīte-Urtāne** delivers the course "Writing a Research Protocol". At the same time, she is also the Director of the Institute of Public Health and manager of scientific projects (further information available in Latvian and English).
- Associate Professor **Vents Sīlis** delivers the course "Research Ethics". The aim of the course is to learn different approaches to solving problems of research ethics, to develop an argumented opinion and attitudes on key issues of research ethics (further information available in Latvian and English).

In the second year of studies, both courses with specific biomedical courses and socially important courses are offered, which are useful for Masters of biomedicine.

- The lecturer and lead researcher **Andrejs Šķesters** delivers the specialised course "Biochemistry II", which provides knowledge on oxidative stress of a cell and skills in testing biomarkers. He also leads the Scientific Laboratory of Biochemistry and is an expert in biomedicine-related areas.
- Lecturer **Andris Mikulis** delivers the course "Biophysics", which provides knowledge and shapes understanding of the importance of the laws of physics in principles of medical diagnostic equipment and diagnostics of diseases (further information available in Latvian and English).
- Professor **Ilze Štrumfa** delivers the course "General Pathology", which provides an overview of the morphological and functional components of disease pathogenesis, as well as a practical overview of pathology as a diagnostic medical sector at a level appropriate to the specific nature of the study programme (further information available in Latvian and English).
- Lecturer **Aira Aija Krūmiņa** delivers the course "Pedagogy in Health Care", which provides the comprehension of the basic categories of pedagogy and legalities in health care, improves the skill in applying the knowledge to personal growth and the professional activity for the benefit of patients/clients, promotes readiness to get involved in the solution of pedagogy problems with different target audiences. She is an expert in this area (further information available in Latvian and English).
- Professor **Ivars Vanadziņš** delivers the course "Basic Principles of Occupational Health and Safety", moreover, he is the Director of the RSU Institute of Occupational Safety and Environmental Health (further information available in Latvian and English). The following lecturers are involved in the implementation of course: lead researcher Žanna Martinsone and researcher Jeļena Reste.
- Professor **Oļegs Sabeļņikovs** delivers the course "Civil and Environmental Protection, First Aid", moreover, he is the Head of the Department of Clinical Skills and Medical Technologies

(further information available in Latvian and English).

- Associate Professor **Andrejs Ivanovs** delivers the course "Statistical Programming and Data Management". He is also the Head of the RSU Statistical Unit and Director of the RSU academic Master's study programme "Biostatistics" and an excellent expert in this area (further information available in Latvian and English).
- Professor *med.* **Juris Salaks** delivers the course "History of Medicine and Life Sciences" (further information available in Latvian and English).
- Professor **Pēteris Tretjakovs** is the Director of the academic Master's study programme "Biomedicine", the Head of the Department of Human Physiology and Biochemistry, the head of the course "Physiology" in StP "Medicine", expert in biomedicine-related areas (further information available in Latvian and English).

Visiting lecturers were also involved during the reporting period, for example, *PhD*, Professor Edgaras Stankevičius[1] from the Lithuanian University of Health Sciences was involved in the implementation of the course "Functional Physiology and Biological Regulatory Mechanisms". He is a well-known researcher (*H-index 19*) researching cardiovascular dysfunction mechanisms. Furthermore, visiting lecturer *PhD* Andrejs Ivanovs (information only available in English) from the University of Edinburgh was involved in the implementation of the course "Functional Histology and Embryology".

It should be mentioned that as an additional activity where individual lecturers were involved in cooperation with other EU universities, for example, Assistant Professor Inese Čakstiņa-Dzērve, who taught a remote class to students of the programme "Biomedicine" at the Coventry University with the course Delivered "Topical Issues and Research Trends in Biomedicine".

In general, all the lecturers involved in leading and teaching study courses demonstrate not only high pedagogical competence, but also scientific competence in various biomedical-related sectors. During the reporting period, the number of *Scopus*-level publications of the lecturers is high (see info on the above-mentioned pages of lecturers), as well as the lecturers were managers or performers of several scientific projects (e.g. European Structural Funds grant *SHARE LV9* "*Survey of Health, Ageing and Retirement in Europe*" 2021–2022; project manager – Associate Professor Andrejs Ivanovs). Thus, the scientific level of lecturers contributes to the effective achievement of learning outcomes (detailed information on publications and other scientific activities of lecturers is available in the RSU scientific activity information system ZDIS *Pure* (information in Latvian, English, Rīga Stradiņš University Research Portal).

Enclosed:

Annex 24.7 "Analysis of the composition of lecturers".

[1] National Library of Medicine. *Edgaras Stankevičius.* https://www.ncbi.nlm.nih.gov/search/all/?term=Stankevicius%20E

3.4.2. Analysis and assessment of the changes to the composition of the teaching staff over the reporting period and their impact on the study quality.

During the reporting period, during the implementation of the StP "Biomedicine", lecturers changed

in relatively small numbers, for example, heads of study courses "Biostatistics", "Biophysics", "Pharmacology" and individual lecturers involved in the courses changed. It should be noted that this has even contributed to the improvement of course teaching, since the lecturer was selected with a corresponding degree (mainly a doctoral degree), pedagogical experience and professional qualifications in the defined field (according to the course), as well as it was important that the new lecturer was motivated to do this work, including leading a course. For example, Assistant Professor Gita Gersone, who has excellent experience in teaching the course "Physiology" to students of StP "Medicine" and experience in biomedical research (*H-index 5*), was involved instead of Assistant Professor A. Paparde, head of the course "Functional Physiology and Biological Regulatory Mechanisms". In order to improve the quality of study courses, scientists are additionally involved in teaching individual courses, for example, *Dr. med.* Linda Gailīte, lead researcher at the RSU Scientific Laboratory of Molecular Genetics (*H-index 8*), is involved in the course "Molecular Genetics and Basics of Bioinformatics".

3.4.3. Information on the number of the scientific publications of the academic staff members, involved in the implementation of doctoral study programme, as published during the reporting period by listing the most significant publications published in Scopus or WoS CC indexed journals. As for the social sciences, humanitarian sciences, and the science of art, the scientific publications published in ERIH+ indexed journals or peer-reviewed monographs may be additionally specified. Information on the teaching staff included in the database of experts of the Latvian Council of Science in the relevant field of science (total number, name of the lecturer, field of science in which the teaching staff has the status of an expert and expiration date of the Latvian Council of Science expert) (if applicable).

3.4.4. Information on the participation of the academic staff, involved in the implementation of the doctoral study programme, in scientific projects as project managers or prime contractors/ subproject managers/ leading researchers by specifying the name of the relevant project, as well as the source and the amount of the funding. Provide information on the reporting period (if applicable).

3.4.5. Assessment of the cooperation between the teaching staff members by specifying the mechanisms used to promote the cooperation and ensure the interrelation between the study programme and study courses/ modules. Specify also the proportion of the number of the students and the teaching staff within the study programme (at the moment of the submission of the Self-Assessment Report).

Although many study courses are read by only one lecturer, who is also the head of the course, there are also courses (such as "Functional Histology and Embryology," "Basics of Neuroscience") involving several teaching staff representatives. Cooperation between lecturers is demonstrated,

for example, in attending lectures and classes of each other, analysing student survey data and making proposals for the improvement of specific courses. Following an *Erasmus+* visit or professional improvement courses abroad (e.g. Assistant Professor Gita Gersone after completing teaching of her "Physiology" course at the University of Oxford) and following courses attended at the RSU Centre for Educational Growth (CEG), lecturers share their knowledge of new, effective approaches to the implementation of study programmes with their colleagues.

Given that knowledge in both biology and biochemistry is very relevant in biomedical sectors (fields), as well as the fact that students are enrolled to RSU StP with a Bachelor's degree in different fields, it is intended that semester 1 courses contribute to equalising knowledge of these students. Course leaders and lecturers cooperate with each other (the director of the study programme supervises this) so that the courses they lead (for example, the courses "Cell Biology", "Biochemistry I", "Functional Physiology and Biological Regulatory Mechanisms") are mutually meaningfully linked and targeted, i.e. so that knowledge of one course fosters the mastering of other courses and they are balanced for the mastering of further (in-depth) courses of the study programme "Biomedicine".

It should be noted that lecturers often engage in joint scientific activities (e.g. implementation of projects), thus not only increasing their scientific qualifications, but also promoting mutual professional enrichment with knowledge and the acquisition of new skills, as well as the transfer of this to students and the implementation of more comprehensive study courses.

The ratio of students to lecturers (teaching staff) in StP is approximately 1:6. Many study courses are read by one lecturer, who is also the head of the course at the same time, but several lecturers are involved in the implementation of individual courses, and this promotes the quality of course teaching (this is related to the specifics of the particular course).

Annexes

III - Description of the Study Programme - 3.1. Indicators Describing the Study Programme		
Sample of the diploma and its supplement to be issued for completing the study programme	Annex_24.1_Sample_Diploma_and_Supplement_StP_Biomedicine.pdf	24.1_pielik_Diploma_un_pielikuma_paraugs_Biomedicina_lv.pdf
For academic study programmes - Opinion of the Council of Higher Education in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions (if applicable)		
Compliance of the joint study programme with the provisions of the Law on Higher Education Institutions (table) (if applicable)		
Statistics on the students in the reporting period	Annex 16_AMSP Biomedicine_statistics_eng.pdf	16_pielik_AMSP Biomedicina_statistika_lv.pdf
III - Description of the Study Programme - 3.2. The Content of Studies and Implementation Thereof		
Compliance with the study programme with the State Education Standard	Annex 17.1_ Compliance of Academic Master's Study Programme Biomedicine with the National Educational Standard.pdf	17.1_ pielik_ Atbilstiba_valsts_izgl_stand_AMSP_Biomedicina_lv.pdf
Compliance of the qualification to be acquired upon completion of the study programme with the professional standard or the requirements for professional qualification (if applicable)		
Compliance of the study programme with the specific regulatory framework applicable to the relevant field (if applicable)		
Mapping of the study courses/ modules for the achievement of the learning outcomes of the study programme	Annex 18.1_Mapping of the Study Courses for the Achievement of the Learning Outcomes of StP Biomedicine.pdf	18.1_pielik_Kartejums_StP_Rez_StK_Biomedicina_lv.pdf
The curriculum of the study programme (for each type and form of the implementation of the study programme)	Annex 19_Study plan StP Biomedicine.pdf	19_pielik_Planojums_AMSP_Biomedicina_lv.pdf
Descriptions of the study courses/ modules	Annex 20.1_Study course descriptions StP Biomedicine.pdf	20.1_pielik_Studiju kursu apraksti_StP Biomedicina.pdf
Description of the organisation of the internship of the students (if applicable)		
III - Description of the Study Programme - 3.4. Teaching Staff		
Confirmation that the academic staff of the doctoral study programme includes not less than five doctors, of which at least three are experts approved by the Latvian Council of Science in the branch or sub-branch of science in which the study programme intends to award a scientific degree (if applicable)		
Confirmation that the academic staff of the academic study programme complies with the requirements specified in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions (if applicable)	Annex 24.7_Analysis of the composition of the academic staff involved in the implementation of StP Biomedicine.pdf	24.7. pielik_AMSP Biomedicina docetaju sastava analize.pdf

Biostatistics (45421)

Study field	*Wildlife Sciences*
ProcedureStudyProgram.Name	*Biostatistics*
Education classification code	*45421*
Type of the study programme	*Academic master study programme*
Name of the study programme director	*Andrejs*
Surname of the study programme director	*Ivanovs*
E-mail of the study programme director	*Andrejs.Ivanovs@rsu.lv*
Title of the study programme director	*Dr. sc. sc.*
Phone of the study programme director	
Goal of the study programme	*To prepare qualified biostatisticians for health-related sectors, providing them not only with in-depth knowledge of statistical data processing methods but also promoting understanding of causes and progress of most common diseases, process of epidemiological and clinical research, so that graduates of the study programme are able to independently plan and conduct research in health-related sectors, collect data and statistically process them, analyse the obtained results that would serve as basis to define conclusions resulting from the research.*
Tasks of the study programme	*1. To provide students with the opportunity to acquire in-depth theoretical knowledge of classical and innovative statistical data processing methods, their practical use in research, as well as in elective study courses, to ensure the mastering of additional knowledge necessary to solve specific problems.* *2. To develop students' understanding of data in health-related sectors, the causes and progress of the most common diseases, as well as the planning of epidemiological and clinical studies.* *3. To develop the skills and competences necessary for the independent planning of research, data collection and the preparation of appropriate documentation.* *4. To promote students' skills and abilities so that they can fully analyse the results obtained in research and to define conclusions arising from them.* *5. To provide students with the opportunity to strengthen and deepen the practical applicability of theoretical knowledge acquired in the programme, to link theoretical knowledge with practice and acquire the additional practical experience and competences necessary for the day-to-day work of biostatisticians.* *6. To strengthen RSU's scientific capacity by ensuring that students in RSU research institutions process and analyse the collected data, as well as by promoting student participation in research, scientific conferences and preparation of publications.* *7. To attract the best graduates of the study programme to the study process at RSU or other institutions of higher education in Latvia.* *8. To promote the development of biostatistics in Latvia, to foster the implementation of biostatistical scientific considerations in statistics practice.*

Results of the study programme	1. Demonstrates knowledge of statistical theories and methods of intermediate complexity, understands and implements innovative statistical approaches. 2. Learns to plan and conduct clinical and epidemiological research in healthcare. 3. Communicates verbally and in writing in a clear and plain manner about simple and complicated statistical concepts, statistical methods, and results to both specialist and non-specialist audiences. 4. Plans studies in health-related areas, selects and uses appropriate statistical analysis software, and analyses the findings. 5. The ability to learn innovative statistical methods independently. 6. Ability to collaborate with other researchers in a team in research design, data management and statistical analysis, and reporting of research results. 7. Uses statistical methods to analyse non-trivial problems effectively, build statistical models based on health data, and interpret the results of statistical analyses from health-related studies, understanding the ethical, regulatory, and practical aspects of the studies. 8. Participates in the consultation process on biostatistical issues, disseminates new knowledge in health-related research through written and oral presentations based on advanced biostatistical analysis, and uses these results to draw appropriate data-based conclusions.
Final examination upon the completion of the study programme	Master's Thesis

Study programme forms

Full time studies - 2 years - latvian

Study type and form	Full time studies
Duration in full years	2
Duration in month	0
Language	latvian
Amount (CP)	80
Admission requirements (in English)	Higher education: a Bachelor's degree or the second-level professional higher education in the following subject area of education: Mathematics and Statistics, Biology, Programming, Medicine, Medical Services, Nursing Studies, Dentistry, Pharmacy, Public Health, Medical Physics.
Degree to be acquired or professional qualification, or degree to be acquired and professional qualification (in english)	Master's Degree of Natural Sciences in Biology
Qualification to be obtained (in english)	-

Places of implementation

Place name	City	Address
Rīga Stradiņš University	RĪGA	DZIRCIEMA IELA 16, KURZEMES RAJONS, RĪGA, LV-1007

Full time studies - 2 years - english

Study type and form	Full time studies
Duration in full years	2
Duration in month	0
Language	english
Amount (CP)	80
Admission requirements (in English)	Higher education: a Bachelor's degree or the second-level professional higher education in the following subject area of education: Mathematics and Statistics, Biology, Programming, Medicine, Medical Services, Nursing Studies, Dentistry, Pharmacy, Public Health, Medical Physics. For studies in English, the level of English knowledge is at least B2 level.
Degree to be acquired or professional qualification, or degree to be acquired and professional qualification (in english)	Master of Natural Sciences in Biology
Qualification to be obtained (in english)	-

Places of implementation

Place name	City	Address
Rīga Stradiņš University	RĪGA	DZIRCIEMA IELA 16, KURZEMES RAJONS, RĪGA, LV-1007

Part time studies - 2 years, 6 months - latvian

Study type and form	Part time studies
Duration in full years	2
Duration in month	6
Language	latvian
Amount (CP)	80
Admission requirements (in English)	Higher education: a Bachelor's degree or the second-level professional higher education in the following subject area of education: Mathematics and Statistics, Biology, Programming, Medicine, Medical Services, Nursing Studies, Dentistry, Pharmacy, Public Health, Medical Physics.
Degree to be acquired or professional qualification, or degree to be acquired and professional qualification (in english)	Master of Natural Sciences in Biology
Qualification to be obtained (in english)	-

Places of implementation

Place name	City	Address
Rīga Stradiņš University	RĪGA	DZIRCIEMA IELA 16, KURZEMES RAJONS, RĪGA, LV-1007

Part time studies - 2 years, 6 months - english

Study type and form	Part time studies
Duration in full years	2
Duration in month	6
Language	english
Amount (CP)	80

Admission requirements (in English)	Higher education: a Bachelor's degree or the second-level professional higher education in the following subject area of education: Mathematics and Statistics, Biology, Programming, Medicine, Medical Services, Nursing Studies, Dentistry, Pharmacy, Public Health, Medical Physics. For studies in English, the level of English knowledge is at least B2 level.
Degree to be acquired or professional qualification, or degree to be acquired and professional qualification (in english)	Master of Natural Sciences in Biology
Qualification to be obtained (in english)	-

Places of implementation

Place name	City	Address
Rīga Stradiņš University	RĪGA	DZIRCIEMA IELA 16, KURZEMES RAJONS, RĪGA, LV-1007

Part time extramural studies distance education - 2 years, 6 months - latvian

Study type and form	Part time extramural studies distance education
Duration in full years	2
Duration in month	6
Language	latvian
Amount (CP)	80
Admission requirements (in English)	Higher education: a Bachelor's degree or the second-level professional higher education in the following subject area of education: Mathematics and Statistics, Biology, Programming, Medicine, Medical Services, Nursing Studies, Dentistry, Pharmacy, Public Health, Medical Physics.
Degree to be acquired or professional qualification, or degree to be acquired and professional qualification (in english)	Master of Natural Sciences in Biology
Qualification to be obtained (in english)	-

Places of implementation

Place name	City	Address
Rīga Stradiņš University	RĪGA	DZIRCIEMA IELA 16, KURZEMES RAJONS, RĪGA, LV-1007

Part time extramural studies distance education - 2 years, 6 months - english

Study type and form	Part time extramural studies distance education
Duration in full years	2
Duration in month	6
Language	english
Amount (CP)	80
Admission requirements (in English)	Higher education: a Bachelor's degree or the second-level professional higher education in the following subject area of education: Mathematics and Statistics, Biology, Programming, Medicine, Medical Services, Nursing Studies, Dentistry, Pharmacy, Public Health, Medical Physics. For studies in English, the level of English knowledge is at least B2 level.

Degree to be acquired or professional qualification, or degree to be acquired and professional qualification (in english)	*Master of Natural Sciences in Biology*
Qualification to be obtained (in english)	-

Places of implementation

Place name	City	Address
Rīga Stradiņš University	RĪGA	DZIRCIEMA IELA 16, KURZEMES RAJONS, RĪGA, LV-1007

3.1. Indicators Describing the Study Programme

3.1.1. Description and analysis of changes in the parameters of the study programme made since the issuance of the previous accreditation form of the study field or issuance of the study programme license, if the study programme is not included on the accreditation form of the study field, including changes planned within the evaluation procedure of the study field evaluation procedure.

Table 1. Changes in the study programme parameters

13.	Workload of StP (CP)	—	According to the amendments of Section 1, Clause 8 of the Law on Higher Education Institutions, which entered into force on October 11, 2022, the transition to the European Credit Transfer and Accumulation System will be implemented by December 31, 2024.

Table 1 clearly shows that no changes have been made since the programme was licenced.

3.1.2. Analysis and assessment of the study programme compliance with the study field. Analysis of the interrelation between the code of the study programme, the degree, professional qualification/professional qualification requirements or the degree and professional qualification to be acquired, the aims, objectives, learning outcomes, and the admission requirements. Description of the duration and scope of the implementation of the study programme (including different options of the study programme implementation) and evaluation of its usefulness.

The study programme fully complies with the strategic specialisation of RSU, the research programme, and development needs of the national economy. When developing the StP, RSU used the priorities defined in SO 8.2.1[1], as well as Science, Technology, Engineering and Mathematics (STEM) guidelines as a basis. RSU plays a key role in the development of "Biomedicine, Medical Technology, Biopharmacy, and Biotechnology" (so-called health technologies) field of smart specialisation (RSI3). There are four main stages in the development of a new health technology:

- the emergence of basic and practical knowledge,
- development of technology,
- clinical studies,
- introduction of new products in the market.

The StP complies with Paragraphs 2.2 (to create new, interdisciplinary, inter-university programmes (including in English)) and 2.9 (to provide long-term cooperation of academic departments with

international visiting lecturers) of the RSU Strategy, since this is an interdisciplinary programme with active involvement of international teaching staff in the implementation of its study courses.

Aim of the study programme: to prepare qualified biostatisticians for health-related sectors, providing them not only with in-depth knowledge of statistical data processing methods but also promoting understanding of causes and progress of most common diseases, process of epidemiological and clinical research, so that graduates of the study programme are able to independently plan and conduct research in health-related sectors, collect data and statistically process them, analyse the obtained results that would serve as basis to define conclusions resulting from the research.

Objectives of the study programme:

1. To provide students with the opportunity to acquire in-depth theoretical knowledge of classical and innovative statistical data processing methods, their practical use in research, as well as in elective study courses, to ensure the mastering of additional knowledge necessary to solve specific problems.
2. To develop students' understanding of data in health-related sectors, the causes and progress of the most common diseases, as well as the planning of epidemiological and clinical studies.
3. To develop the skills and competences necessary for the independent planning of research, data collection and the preparation of appropriate documentation.
4. To promote students' skills and abilities so that they can fully analyse the results obtained in research and to define conclusions arising from them.
5. To provide students with the opportunity to strengthen and deepen the practical applicability of theoretical knowledge acquired in the programme, to link theoretical knowledge with practice and acquire the additional practical experience and competences necessary for the day-to-day work of biostatisticians.
6. To strengthen RSU's scientific capacity by ensuring that students in RSU research institutions process and analyse the collected data, as well as by promoting student participation in research, scientific conferences and preparation of publications.
7. To attract the best graduates of the study programme to the study process at RSU or other institutions of higher education in Latvia.
8. To promote the development of biostatistics in Latvia, to foster the implementation of biostatistical scientific considerations in statistics practice.

The learning outcomes were mapped according to the Latvian Qualifications Framework (LQF), which corresponds to the level descriptions of the European Qualifications Framework, level 7 descriptions of knowledge, skills and competences (see Annex 18.1).

By carrying out an additional analysis of the StP content and linking study course objectives with the StP objectives, the number of learning outcomes was reduced from the initial 15 to eight. More detailed StP outcomes are given in Annex 18.1.

The degree to be awarded in the StP is "Master's degree of Natural Sciences in Biology". Although the content of the programme corresponds more to the StP education programme group "Mathematics and Statistics", which, according to the thematic direction, fits in the study direction "Physics, Material Science, Mathematics and Statistics", but this direction is not implemented by RSU, the next nearest direction implemented by RSU was therefore sought. The synonym of the term "biostatistics" is biometrics – a science that studies biological processes and phenomena using a set of mathematical methods, or, in other words, biological statistics. Thus, the nearest direction implemented by RSU is the programme group "Biology" and the study direction "Life Sciences".

Perhaps, when the StP is developed further and the number of students increases, RSU could accredit the study direction "Physics, Material Science, Mathematics and Statistics", which is more in line with the content of the programme.

Enclosed:
Annex 24.1 "Model diploma and supplement thereto".

Annex 24.8 "Sample study contract".

[1] In 2018, RSU, in cooperation with industry experts, involving academic and general staff, and representatives of students, drafted a "Plan for development and consolidation of study programmes". The Commission for Evaluation of Consolidation Plans of the Ministry of Education and Science coordinated the development of six new programmes at RSU. On 24 April 2019, RSU concluded an agreement with the Central Finance and Contracting Agency (CFCA) on the implementation of the project "Reduction of fragmentation of StPs and promotion of internationalisation of studies at RSU Stradiņš University" (project No. 8.2.1.0/18/A/014, Operational Programme "Growth and Employment", specific objective "To reduce fragmentation of StPs and strengthen resource sharing" second project applications selection round; hereinafter referred to as SO 8.2.1). Academic Master's study programme "Biostatistics" was developed within the framework of SO 8.2.1.

3.1.3. Economic and/ or social substantiation of the study programme, analysis of graduates' employment.

The development of the RSU "Study programme development and consolidation plan" is based on a justified evaluation and an intentional link to the needs of sectors of the Latvian national economy. In order to prepare it in a qualitative way, RSU organised several activities: organised brainstorming sessions of the parties involved, analysed available data, conducted surveys, involving industry experts, employers, deans, heads of study directions, programmes and departments, as well as representatives of students. The purpose of the brainstorming sessions and other meetings was to listen to opinions of experts and to get recommendations for further lines of action for updating the study curriculum and modernising the study process, as well as to basically prepare the RSU concept for SO 8.2.1, 8.2.2 and 8.2.3 projects.

The Consolidation Plan is developed in line with the vision of RSU to be a modern, prestigious university recognised in Europe and around the world, the main value of which is a person and which provides high-quality and exportable research-based higher education. The Consolidation Plan has been shaped in such a way to support the achievement of strategic goals of the field of higher education, promoting the reduction of StP fragmentation, sharing of resources and internationalisation of the study environment. The Consolidation Plan fosters the development of supply of internationally competitive education at RSU, strengthening those study directions, in which it has the highest development potential, as well as creating new supply of StPs, using the capacity of the research and material and technical basis accumulated by RSU. Synergy among all SO programmes that ensures targeted advancement to the objectives defined in European Union and Latvian development planning documents, as well as in the strategy of the European Commission "Europe 2020: strategy for smart, sustainable and integrating growth" – to improve work and international attractiveness of European higher education institutions and to increase the

general quality of all education and training levels across the European Union, combining excellence and equality, for this purpose promoting mobility of students and teachers, as well as improving the situation in the area of youth employment.

In the course of SO 8.2.1 project activities, new opportunities for strengthening and diversification of the cooperation were identified in the inter-sectoral aspect of the sciences represented by RSU and for Latvia and foreign cooperation partners. Extension of cooperation with partners in foreign countries in the course of further development and implementation of the StP will ensure continuous professional improvement of students, employees and researchers, mastering of knowledge, skills and competences meeting international requirements in the study process and extension of research cooperation networks within the scope of RSU's strategic specialisation. Internationalisation will also reinforce the improvement strengthening of academic fairness and quality culture maintained in current contract research organisations.

The study programme "Biostatistics" corresponds to the evaluation criteria set by RSU, namely, corresponds to the RSU Development Strategy for 2022-2027 (see RSU website in Latvian and English). The study programme has been developed based on the need and vision of the development of RSU StP, taking into account the requirements of the Latvian higher education quality assurance system, as well as observing Standards and guidelines for quality assurances in the European Higher Education Area. Academic staff and general staff of RSU and partner institutions, representatives of students, employers, as well as representatives of industry associations, state and local government institutions and other organisations participated in the development of the StPs.

The implementation of the StP fosters the achievement of the tasks set in the National Development Plan of Latvia for 2014-2020: to ensure availability of higher education, implementation of the measures supporting export, promotion of competitiveness and consolidation, as well as drives the development of a knowledge-based society. The StP corresponds to strategic objectives and priorities of the first revision of the National Development Plan of Latvia for 2021-2027, in particular productivity and income, as well as knowledge and skills for personal and national growth.

In cooperation with higher education institutions in Latvia, Sweden and Estonia the only academic Master's study programme "Biostatistics" in the Baltic countries was created, which is included in the study direction "Life Sciences". The StP concept corresponds to the smart specialisation area "Biomedicine, Medical Technologies, Biopharmacy and Biotechnologies" defined in the Latvian Smart Specialisation Strategy. The content of AMSP "Biostatistics" includes mastering of such competences in demand on the labour market, which are related to processing of big data. The StP content will ensure competitiveness of the programme and its graduates both in Latvia and also internationally, taking into account global trends in data collection and analysis, as well as the development of e-services, and implementation of research for the implementation of new medicines and food supplements.

In today's world, biostatistics (also biometrics) is a fast-growing industry. According to the definition in the National Encyclopaedia, biostatistics (or biological statistics) is a science that studies biological processes and phenomena using a set of mathematical methods. Biostatistical methods are used for the planning and processing of observations and experiments in biological, medical, epidemiological, agricultural and forestry research.

In modern practice, a biostatistician is a statistician in sectors related to healthcare, less often in other sectors such as biology, epidemiology or agriculture. Most often biostatisticians in the world labour market are involved in clinical studies and observations or in health-related scientific research, less often in biological experiments. For the performance of their daily duties,

biostatisticians generally need to know not only statistics but also the related area. If it is medicine, then, to perform their job, biostatisticians need additional knowledge, such as aetiology and progress of common diseases, as well as biochemistry, to plan the course of the research more thoroughly and analyse the findings of the research more meaningfully. The most common subjects of biostatistical research are health determinants, therapeutic efficacy, drug efficacy and safety, determining drug dosage, etc.

The most common basic tasks of biostatisticians typically required by employers are:

- planning of studies and observations;
- creation of documentation related to statistical data processing in the study design;
- verification, statistical processing and analysis of the results of the research;
- preparation of a statistical report on the main research results and conclusions;
- presentation and publication of research results.

The biostatistician's profession is widespread in the world mainly in the field of healthcare.

Biostatisticians primarily work in:

- pharmaceutical companies developing new medicines and conducting clinical trials such as *AstraZeneca, Pfizer, Janssen*;
- contract research organisations (CRO) that coordinate the conduct of clinical trials and observations such as *Parexel International, Statandocs, StatFinn, Quanticate, Cros NT*;
- universities, scientific institutes, laboratories and other research foundations carrying out scientific activities in the field of health care such as *Baylor College of Medicine, George Washington University, University of California.*

Second, biostatisticians work in hospitals, health centres and polyclinics if they are engaged in scientific research in the field of health.

In line with European and global trends, universities offer students the opportunity to acquire knowledge of biostatistics, enabling them to lean a Master's StP and prepare future biostatisticians for the labour market. In Latvia, the closest programme is the academic Master's StP "Mathematics" of the University of Latvia (LU), but LU's StP focuses more on demand of the financial (banking and insurance companies) labour market and prepares a wide range of mathematicians rather than statisticians for sectors related to health care. Currently no such or similar StPs are implemented in Latvia or in other Baltic countries, therefore, this gap in the educational market should be filled in cooperation with colleagues from LU, Estonia and Sweden.

By offering the StP in English with innovative elements of the study process and close cooperation with the industry, a high demand for the StP is expected. The StP is suitable for both Latvian and potential international students with previous education not only in mathematics or statistics, but also from other fields such as medicine, public health, computer science or biology. In the first years of studies, 10-15 students are expected to make one group.

Demand for the StP could grow in the future. In Latvia and the world, there is a shortage of statisticians in the private, academic and scientific labour market, and given that the acquisition of a wide range of data on consumers and customers in trade, finance and also medicine is becoming increasingly large and easier to implement, a thorough and in-depth statistical analysis of data will also become increasingly relevant. This prognosis is also confirmed by the information of the State Employment Agency that according to the Classification of professions, there will be a slight increase in demand for specialists from the group of occupations 2120 (mathematicians, actuaries and statisticians) and 3314 (technicians and associate professionals in statistics, mathematics and related fields) in the near future. The number of academic and scientific studies collecting

quantitative open-access data on various processes in society is increasing, as well as increasingly more stringent requirements for the introduction of new medicines are set, there has also been a tendency to make observations on dietary supplements (until now there was no mandatory requirement for such studies). The provision of statistical programmes with open access resources is also becoming increasingly more accessible and makes the statistical processing of data easier and faster. All this contributes to the development of statistics and the demand for statisticians in the commercial, academic and scientific labour market.

Several professional organisations and other institutions, being aware of the situation in the labour market, support the implementation of the StP, for example, the Latvian Association of Statisticians, the International Biometric Society and the State Agency of Medicines.

3.1.4. Statistical data on the students of the respective study programme, the dynamics of the number of the students, and the factors affecting the changes to the number of the students. The analysis shall be broken down into different study forms, types, and languages.

A licence for the study programme was received on 7 April 2021 and restructuring was implemented, planning to enrol students starting from the academic year 2021/2022, however, the number of applications was insufficient to commence the programme. Admission was also announced for the autumn and winter admission of the academic year 2022/2023, but during this period it was also not possible to recruit a group of students, although interest was shown throughout all admissions. 11 international applicants had filled in the admission for the academic year 2022/2023, but these applications were not completed and submitted.

During the application period, in parallel, the RSU Statistical Laboratory overseeing the study programme organised and implemented an event of global importance for the biostatistics sector – on 10-15 July 2022, Radisson Blu Latvia Conference & Spa Hotel in Riga, successfully held the 31st International Biometric Conference (information available in both Latvian and English), which brought together 519 biostatisticians from 54 countries, including 163 students, and in total 124 course sessions were conducted in the conference programme. The conference was organised by the International Biometrics Society, which celebrated its 75th anniversary. It is the largest association of statisticians, mathematicians and biologists, whose aim is to promote the development and application of statistical, mathematical theories and methods in biomedicine, public health and ecology. The conference advertised the new study programme – it was presented in the conference premises on a separate stand, which contained details of the statistical study opportunities at RSU.

Several other measures are currently being taken to promote the awareness of the programme:

- creating and publishing videos of the StP business card on the RSU website and in social media;
- promoting content on social media – Facebook and LinkedIn;
- sending a specially designed e-mail to the target audience – laboratories, pharmaceutical companies, collaborators, hospitals and other institutions;
- sending letters and materials to scientific laboratories of Baltic countries, which have potential students;
- Google keyword ad;
- general ad campaign for winter admission.

The programme will be announced for admission once again in the academic year 2023/2024. RSU has planned to support admission with at least four state-funded study places. A number of interested persons have expressed their desire to study this programme, and there is interest from potential students asking questions about the StP both by phone and email during the academic year.

3.1.5. Substantiation of the development of the joint study programme and description and evaluation of the choice of partner universities, including information on the development and implementation of the joint study programme (if applicable).

3.2. The Content of Studies and Implementation Thereof

3.2.1. Analysis of the content of the study programme. Assessment of the interrelation between the information included in the study courses/ modules, the intended learning outcomes, the set aims and other indicators with the aims of the study course/ module and the aims and intended outcomes of the study programme. Assessment of the relevance of the content of the study courses/ modules and compliance with the needs of the relevant industry, labour market and with the trends in science on how and whether the content of the study courses/ modules is updated in line with the development trends of the relevant industry, labour market, and science.

The content of the StP is designed to gradually develop the knowledge, skills, and competences of students in biostatistics over four (or five for part-time studies) semesters. In order to ensure the learning of the content of the StP, along with knowledge transfer and skills development, equal consideration was given to the format of teaching and delivery of the courses and their interconnection.

In **study semester 1** – given that the StP is interdisciplinary and students can come from different fields, with different previous education, two blocks of study courses B are distinguished: medical study courses and mathematical study courses aimed at equalising students' initial knowledge so that the programme material can be successfully mastered. Study courses of both groups are planned as courses B. The intention is: students will choose either a study course in medicine or a study course in mathematics – medics in mathematics and mathematicians in medicine.

In the group of medical courses, there are three study courses – "Human Anatomy and Physiology" (4 CP), "Biochemistry and Laboratory Diagnostics" (2 CP) and "Internal and Infectious Diseases" (4 CP). Their common objective is to raise students' awareness of normal human anatomy, chemical processes in the body and laboratory diagnostics, as well as of the aetiology, diagnosis and treatment of the most common internal and infectious diseases, so that the student can fully understand and analyse the statistical data obtained in health care and fully interpret the results obtained. Medical study courses are primarily intended for those students whose previous education is not related to medicine (mathematics and biology).

The group of mathematical courses also has three study courses: "Probability Theory" (2 CP), "Mathematical Methods" (4 CP) and "Statistical Methods" (4 CP). The aim of these courses is to compensate students for the lack of knowledge of statistical concepts without which further StP learning is unthinkable, and these courses are primarily aimed at potential students who would come from non-mathematical sectors such as medicine, public health or biology.

Three mandatory courses A are planned for the study semester 1. "Clinical Research I" (4 CP), aimed at explaining to students the concept and key elements of clinical trials, as well as at explaining the key statistical concepts and methods used in the planning and analysis of clinical trials. This course focuses on the practical application of these methods, in particular in relation to suitable software packages.

The second compulsory course of the study semester 1 is "Statistical Programming and Data Management" (4 CP), which aims to introduce students to the two most popular statistical software tools used in biostatistical research, *R* and *SAS*. Recently, *R* is one of the most popular languages for data analysis and statistics and is widely used in both academic environment and industry. *SAS* is a statistical software developed for detailed data analytics and specifically suited to data management, and has long been a key choice of software in multiple sectors, especially the pharmaceutical sector. After completing this course, students know statistical programming and data management using *R* and *SAS*, as well as are prepared to work with a computer in other courses of this StP.

The third compulsory study course is the "Socio-Medical Approach in Quantitative Research" (2 CP), which provides students with an in-depth knowledge of classical statistical concepts and methods, with an emphasis on methods used in epidemiology and public health to engage in population health research, public health practices and policymaking. The study course provides students with the basics of understanding of the nature of research, planning and analysis of research, complemented by other study courses in the following semesters.

Compulsory study courses of the first semester have been selected from different thematic areas – clinical studies, statistics and epidemiology – so that the first semester for students is not saturated with statistical topics alone.

Study semester 2 is the core of the StP with the inclusion of compulsory study courses A primarily related to classical methods of data processing, for example:

- "Linear Models" (4 CP) – provides students with in-depth knowledge of linear model theory and the possibility to practise theory in solving real problems in health-related research;
- "Analysis of Repeated Measurement and Longitudinal Data" (2 CP) – the course provides knowledge of repeated measurements involving case effects, correlated observations and missing data. The emphasis is on continuous longitudinal data and on modelling and analysing repeated models;
- "Non-Parametric and Robust Statistical Methods" (4 CP) – provides in-depth knowledge of non-parametric and robust methods of mathematical statistics, which are often used in biostatistics, as health-related research tends to contain small samples and data normality is questionable;
- "Category Data Analysis" (2 CP) – given that most statistics are category data, the course aims at pointing out the specific characteristics of such data and teaching the use of appropriate statistical analysis methods for category data analysis;
- "Causation Statistics" (2 CP) – the course is designed to build students' understanding of the difference between statistical models and causation patterns and to provide knowledge of methodologies that enable the identification of causalities for a particular study to be assessed, as well as develop skills of assessing causation parameters using some specific

analysis tools.

In study semester 2, the module on clinical studies continues with the compulsory study course "Clinical Research II" (4 CP), the content of which is planned as a continuation of the study course "Clinical Research I" from the study semester 1. The second course of clinical research gives students a patient-oriented view of clinical trials and covers safety aspects and efficacy, as well as various ethical matters that arise when planning, implementing and reporting clinical trials. The study course focuses on statistical matters, also discussing ethical statistical practice guidelines.

Restricted elective study courses are offered to students:

- "Health Economics" (2 CP) – provides students with an understanding of practical, methodological and theoretical matters related to the economic evaluation of health care programmes and how the economic evaluation can be used in the health care sector to justify decisions;
- "Bayesian Statistics" (2 CP) – provides students with an overview of key areas of Bayesian conclusions (Bayesian statistics is an innovative direction in statistics, an alternative to the probability theory, it is developing rapidly and gaining worldwide popularity, so it is important to include this direction in the StP content);
- "Numerical Methods in Statistics" (2 CP) – restricted elective study course that provides students with an overview of the basics and basic methods of statistical computing so that students can use standard methods for generating random numbers themselves and understand the principles and methods of stochastic simulation;
- "Genetic and Genome Epidemiology" (2 CP) – restricted elective study course, which provides students with knowledge of the main methods in genetic epidemiology, as well as practical skills for their implementation in practice. This study course teaches how to use both genotyping and whole-genome (and whole exome) sequencing data in the associative analysis, which is also an innovative statistical direction today given the rapid evolution of genetics.

Study semester 3 includes some study courses from several thematic blocks of courses – compulsory study courses with classical statistical methods, two compulsory and the possibility to choose one restricted elective course C, one from the epidemiology block, one from the language block, and the placement.

The block of classical methods ends with two compulsory study courses:

- "Survival Rate Analysis" (2 CP) – provides students with in-depth knowledge of time-to-event data analysis methodology, these data are very frequently found in biomedical research, for example, clinical research, cohort studies. In the study course, it is planned to familiarise students with the tools and most common methods used for such data, as well as to provide a brief overview of in-depth and topical topics;
- "Multidimensional Statistical Analysis" (2 CP) – familiarises students with the methods and concepts of multidimensional data analysis, paying particular attention to their applications with the *R*

The block of innovative methods contains two compulsory courses:

- "Machine Learning and Big Data Analysis" (2 CP) – compulsory study course that familiarises students with the most important machine learning methods – variations of regression and classification algorithms, as well as introduces to the concepts of deep machine learning and big data analytics. Machine learning is today's current and innovative statistical direction with big future development potential, it is linked to research of algorithms that can automatically gather information and generate new knowledge from data. Machine learning

tasks are often associated with large datasets;

- "Consultations in Statistics" (4 CP) – compulsory study course, which familiarises students with the different skills needed to become a successful consultant in statistics, both specialists and non-specialists. Such skills include explaining the concepts of technical statistics to people who are not specialists in statistics, cooperating with other researchers, turning the research problem into a statistical problem, leading the consultation process and transferring results according to the client's technical characteristics, as well as other things. The software tools demonstrated in the study course can help you better present your results. The course provides a general overview of statistical methods and their application context to encourage students to develop their own methods/action plan that can help present potentially relevant information to the customer. Common misconceptions about statistics and misuse are discussed, along with some ethical considerations.

In the study course "Epidemiology" (4 CP), students are familiarised with biostatistics in medical science, emphasising theory, ideas and epidemiological axioms. The course describes and explains basic concepts and methods of epidemiology, with vivid examples and statistical explanations. All relevant aspects of epidemiology have been included, as well as findings on how the sector has evolved and is likely to continue to evolve over the lifetime of those who are now starting to pursue careers in this area.

For international students, mandatory learning of Latvian (2 CP) is also planned in semester 3 in accordance with the requirements of the Law on Higher Education Institutions. It is not planned for Latvian flow students, so the placement with a different number of CPs – 2 and 4 CP – is planned this semester. 2 CPs are planned for international students and 4 CPs for Latvian flow. The StP describes the planned organisation of the placement in more detail in section 3.2.4.

In study semester 4 – students develop their StP graduation paper – a Master's thesis under the leadership of a supervisor and placement supervisor, where the student can use all the theoretical knowledge obtained. Students can choose the topic of their own or choose from a range of topics offered to them by the Statistics Unit, in cooperation with potential placement institutions that can provide students with research data for drafting their Master's thesis.

The StP implementation mechanism fully and innovatively fits the RSU study process ensuring valuable, interesting studies, focusing on the achievement of learning outcomes.

One of the operational principles of interdisciplinary nature of the StP is its flexible structure, competence approach and method of teaching (project work, simulation classes, debates, research, digitalisation solutions for e-learning, both in classes and in independent work). The attraction of visiting lecturers from other European and US universities, as well as the involvement of representatives of the pharmaceutical industry, is widely ensured.

Enclosed:

Annex 17.1 "Compliance of the study programme with the national education standard".

Annex 19 "Planning of the study programme (for each type and form of the implementation of the study programme)".

Annex 20 "Study course description".

Annex 18.1 "Mapping of the study courses for the achievement of learning outcomes of the study programme".

3.2.2. In the case of master's and doctoral study programmes, specify and provide the justification as to whether the degrees are awarded in view of the developments and findings in the field of science or artistic creation. In the case of a doctoral study programme, provide a description of the main research roadmaps and the impact of the study programme on research and other education levels (if applicable).

The StP "Biostatistics" is originally planned as an academic StP with the degree to be obtained "Master's degree of Natural Sciences in Mathematics and Statistics", but in the future the possibility of transforming it into a professional StP with the professional qualification to be obtained "biostatistician" is assessed as one of the vectors of the StP development. In order to do this, a letter to the Ministry of Welfare was prepared in the course of the StP planning and sent in February 2020 urging to include a new profession "biostatistician" in the existing category 2120 "Mathematicians, Actuaries and Statisticians" of the Classification of Professions. RSU's initiative was supported by the LU Faculty of Biology, LU Faculty of Physics, Mathematics and Optometry and the Latvian Association of Statisticians. A response was received that in 2020, Group 2020 "Mathematicians, Actuaries and Statisticians" of the Classification of Professions, was supplemented with the profession "biostatistician" and was assigned the profession code 2120 21. The inclusion of the new profession in the Classification of Professions is not only in the interests of RSU, but also generally corresponds to employment trends in European countries and countries of the world.

It was planned that RSU specialists, together with colleagues from the LU Faculty of Biology, LU Faculty of Physics, Mathematics and Optometry, Department of Mathematics, and colleagues from the Latvian Association of Statisticians, would develop a standard for the profession of a biostatistician, which includes a more detailed description of employment of the new profession, as well as the knowledge, skills and competences necessary for the professional activity of a biostatistician. Given that the commencement of the programme was prioritised and that it turned out that the popularisation of the programme required investment of quite many resources, work has now been suspended. By admitting students and forging their competencies, the Director of the programme predicts potential involvement of new specialists, such as graduates, in the development of the standard and also potentially as lecturers of the programme.

The academic master's programme and the degree to be obtained are based on the achievements and findings of the relevant science field, although there are certain contradictions in the definition of the degree to be awarded directly, which RSU continues to work on in order to find the best solution. Upon completion of the study programme, RSU had planned to award a Master's degree of Natural Sciences in Biostatistics, when it developed the study programme and consulted with foreign partners (for example, a degree to be awarded in an equivalent programme to a foreign university: http://www.masterbioestadistica.com Master's degree in biostatistics). However, the licensing Study Quality Commission established the degree to be awarded upon the completion of the study programme "Biostatistics" to be in biology, on the grounds that RSU does not implement the study direction "Physics, material science, mathematics, and statistics" and referring to the explanation of the International Standard Classification of Education (ISCED 2013) levels. According to RSU, such a formulation of the degree is not contributing to the success of the programme and emphasises that the ambition of the programme is interdisciplinarity and developing a new area, which has received recognition worldwide, therefore it is important to keep pace with international development. In addition, it should be noted that in the future the Ministry of Education of Latvia intends to give up study directions. Evaluation experts involved in licensing have also included a recommendation to encourage changes to the education classification of

Latvia, in cooperation with other higher education institutions in Latvia, by supplementing the system of classification to include a group of biostatistics programmes, so that degrees corresponding to the name and essence of the programme can be awarded in academic study programmes; in this case, a Master's degree of natural sciences in biostatistics.

3.2.3. Assessment of the study programme including the study course/ module implementation methods by indicating what the methods are, and how they contribute to the achievement of the learning outcomes of the study courses and the aims of the study programme. In the case of a joint study programme, or in case the study programme is implemented in a foreign language or in the form of distance learning, describe in detail the methods used to deliver such a study programme. Provide an explanation of how the student-centred principles are taken into account in the implementation of the study process.

In order to prepare students for tackling with problems faced by the industry, RSU introduces and develops study methods, which are based on practical training in simulated environment. The StP "Biostatistics" also includes learning methods aimed at the use theoretical developments in practice. Another important direction for the modernisation of studies is the use of digital technologies in the implementation of studies – it ensures the promotion of digitalised study processes that meet modern requirements and digital literacy of students.

The StP is implemented in an integrated manner, combining the acquisition of interdisciplinary theoretical knowledge and the development of skills in both regular classes and independent studies. Visiting lecturers from Latvia and foreign universities will be attracted in addition for the integration of specialised knowledge in the implementation of the StP.

In the implementation of studies, both traditional teaching methods (presentations, analysis of study and scientific literature, etc.) and modern learning methods are used, which include a simulation- and project-based approach (correct acquisition of real and analogic medical data, processing of relevant statistical data for obtaining, interpreting and presenting results), and problem-based learning approach (identifying biostatistics-related problems and developing solutions). E-solutions developed by both RSU's internal and external developers (for example, RSU e-learning site with provision of interactive online class opportunities, *Amboss* learning platform, *Panopto* video recording system, *Zoom* platform for online classes) will be used to modernise the study process and to achieve learning outcomes in the implementation of the StP and acquisition of the study content in a more efficient manner.

Specialised learning methods and approaches are used to acquire specific knowledge and skills of the StP, which include practical classes. They are implemented in RSU specially equipped computer classrooms, while also providing students with remote access to specialised software through *Terminal Services* infrastructure, providing appropriate statistical software (*R* software, *SAS*, *IBM SPSS Statistics*, *STATA*), including programmes that allow for mathematical modelling of the future development of a situation. Practical classes in epidemiology and clinical research study courses include student group work, the development of a joint clinical research protocol, implementation of joint projects and presentation of the results obtained.

For the provision of study courses of the medical block, digital solutions with audiovisual effect are used, which can be used for research and analysis of anatomical, biological, and other biomaterials in case of various diseases and pathological conditions, as well as training simulators, video

equipment, interactive devices, and other technical equipment for the acquisition of diverse clinical skills and mastering of manipulations are used. During placement, students will have the opportunity to acquire specific knowledge and skills of the field working with actual problems that are topical in the industry and scientific environment, data and research projects.

Students' research skills are developed by conducting independent research work in the study courses and conducting a Master's thesis research as well as engaging in a new and innovative vertical integration research (VIP) programme. The VIP programme was developed within the framework of the SO 8.2.3 project, and it provides for creation of groups of researchers for research under the leadership of a high-level lead researchers, involving other researchers and students from study programmes of different study level in the group.

Upon commencement, the StP will have full-time studies in Latvian and/or English, depending on applications. However, given the future need, the StP will respond flexibly to potential student demand, the StP will also be implemented as part-time and/or part-time distance learning in the future. The plans for all the indicated possibilities, namely full-time regular Latvian and English streams and part-time regular, and part-time distance learning Latvian and English streams are attached in Annex 19. With regard to the English language skills of the teaching staff, in Annex 24.5, RSU confirms that the teaching staff involved in the StP "Biostatistics", which is conducted wholly or partly in English, have English language skills of at least B2 level according to the European Framework of Reference for Languages. Accordingly, those lecturers who do not have appropriate English language skills could be attracted to the Latvian flow or to perform certain tasks for the English flow. The English language proficiency of lecturers is also fostered by the requirements of SO 8.2.1, which provide that elected lecturers who will teach in English need to reach the language proficiency level C1 for the commencement of the implementation of the programme in English. RSU organises and offers both regular language courses and tests for determining the level of English proficiency, as described in Chapter 2.3.6.

Implementation of distance learning

RSU strategically develops digital resources – educational technologies, digital skills of the staff and digital teaching aids to ensure the achievement of the set goal (see Annex 26 "Introduction of Distance Learning at RSU").

In the distance learning study courses and programmes implemented by RSU, the student acquires the study content and takes the examinations using digital and online study means, without attending RSU in person or with minimal attendance.

To promote the export capacity of a study programme, there are plans to implement the study programme also remotely. *Moodle*, an open source study management platform or the e-learning platform, is used as a tool for the organisation of the study process in each study course and provides proper opportunities for the implementation of study programmes remotely.

Possibilities for distance learning implementation were demonstrated well by global pandemic conditions. Studies in similar study programmes during the pandemic were implemented online, and such a study model was also provided by the Statistical Laboratory. The e-learning platform became the basis for the University's interaction with students – all current information about the study process was available there, including timetable of classes, study course descriptions, study course materials, links to video lectures and classes. Classes were mostly implemented using *Zoom* (video recordings were available using *Panopto* – relevant licences have been provided to lecturers by RSU). Both employees and invited lecturers developed convincing IT skills and demonstrated them in the study process. Finally, not only study courses, but also drafting, pre-defence and defence of Master's theses could be fully provided online. This is a confirmation that studies can be

provided at RSU effectively also in the format of distance learning.

See Annex 26 "Introduction of Distance Learning at RSU".

Methods of assessment of student performance and learning outcomes achieved

Methods of assessment of student performance and achieved learning outcomes, as well as assessment criteria for study course acquisition, are defined in the description of each study course and are available to all students prior to the start of the study course. The academic freedom of each lecturer is respected in the implementation of the study courses, including the development and implementation of study examinations, at the same time providing that the teaching and examination methods must be chosen according to the learning outcomes to be achieved in the study course. Both summative and formative assessment are combined in the study process to enhance students' individual performance and assess the level of learning outcomes achieved. In the context of learning outcomes, both study course-specific and transversal knowledge, skills, and attitudes are important, therefore, students' active involvement and participation, initiative, and taking responsibility are additionally evaluated. Individual assessments of intermediate and final examinations of study courses are available to each student on their student profile in the RSU e-learning environment. Students can familiarise themselves with the criteria, conditions and binding procedures for the assessment of student performance in the RSU Academic Regulations I".

External and internal laws and regulations governing student achievements and evaluation of learning outcomes (in Latvian, in English):

- Law on Higher Education Institutions;
- Education Law;
- "Academic Regulations I" – regulations of undergraduate and Master's studies (available in Latvian, English)
- Regulations on the development and presentation of the qualification paper, student's research paper, Bachelor's thesis and Master's thesis (available in Latvian, English);
- Process Description No. 6 "Assessment and Submission of Learning Outcomes", etc.

Online examinations

The forms of examinations of study courses and programmes are adapted to the online environment, ensuring the assessment of the planned learning outcomes identical to the regular study course or programme, using synchronous and asynchronous online examinations.

Solutions of the RSU e-studies environment (*Moodle* tests, *Moodle* file uploading tasks, *Turnitin* assignments) are used to ensure implementation of written examinations. The *Turnitin* content originality verification system is used to verify written work submitted by students. If *Moodle* tests are used in written final examinations, security of examinations is monitored, using the online examination security system *Respondus Monitor*.

Either *Zoom* or *Microsoft Teams* platform is used for remote oral final examinations.

Student-centred approach

With regard to the student-centred approach, the RSU Quality Policy is based on the strategy and values of the university and includes three basic principles: student-centred approach, partnership, and quality. In 2016, RSU performed an international external assessment of the implementation of student-centred learning approach implemented by the group of assessment experts of project "Peer Assessment of Student-Centred Learning" (PASCL). It was an EU-level project promoted by the European Students' Union in cooperation with other European higher education organisations, whereas the visit of experts in Riga was initiated by the RSU Student Union. The expert opinion

described RSU as a student-centred higher education institution that actively involves students in the improvement of the study process.

In the future, the possibility of dividing the programme into more detailed specialisations, as currently practised by Hasselt University, Chalmers University of Technology, etc., is being considered as a vector of the StP development. Statistical study courses with classic data processing techniques would be common to all specialisations, without which the StP in the biostatistical sector cannot be imagined. There would still be elective courses depending on the student's chosen specialisation. Provisionally, specialisations could include:

- "Biostatistics in Clinical Trials" – a direction that would be even more focused not only on statistical data processing in clinical trials but deeper on the organisation of clinical trials from planning to implementation (protocol design, budget development, commencement, monitoring and results – their processing, analysis, reporting, publication and metanalysis method);
- "Biostatistics in Scientific Research" – a direction with greater emphasis on scientific research, evidence-based medicine and epidemiology. This direction would be more focused on data processing in independent scientific research;
- "Applied Biostatistics" – the direction would be more focused on an even wider and more in-depth mastering and practical application of classical and innovative statistical data processing methods in healthcare-related sectors.

This StP development scenario will come true when there is a sufficiently large and stable flow of the StP applicants to have enough students to fill specialisation groups. From the experience of other universities, this could happen in no sooner than five years after the opening of the StP, when, if the quality of studies remains consistently good, student interest in the StP could grow, as the reputation of the StP would be built up, which is the best advertisement.

In addition, in the case of a small number of applicants, the possibility of cooperation in the development of other interdisciplinary programmes in the fields of data science and digital health, where biostatistics would be a potential specialisation of students, is being assessed.

3.2.4. If the study programme envisages an internship, describe the internship opportunities offered to students, provision and work organization, including whether the higher education institution/ college helps students to find an internship place. If the study programme is implemented in a foreign language, provide information on how internship opportunities are provided in a foreign language, including for foreign students. To provide analysis and evaluation of the connection of the tasks set for students during the internship included in the study programme with the learning outcomes of the study programme (if applicable).

The **placement regulations** developed by the StP (see Annex 9) contain the requirements for students and placement providers of the Master's study programme "Biostatistics" on the procedure of organisation of the placement within this StP and necessary documents, on the preparation of a placement report, as well as informs about goals and tasks of the placement and the procedure of defence of placement.

The **purpose** of placement is to enable students to strengthen and deepen the theoretical knowledge acquired in the StP and the applicability of this knowledge in practice, to link the skills

acquired in study courses with the actual situation in healthcare-related companies, and in practice, based on the acquired study materials, gain additional practical experience and competences required by biostatisticians in their daily work.

The placement for students may be organised in companies or institutions in Latvia or other EU countries (hereinafter referred to as the Placement Institution), whose activities are related to research planning, data verification, statistical processing and analysis of results, as well as preparation of a statistical report in a health-related field. For example, pharmaceutical companies, contract research organisations, universities, scientific institutes, labs and other research institution doing research in the field of health, or also hospitals, health centres, polyclinics or other institutions, if they do scientific research in the field of health or in biology.

The Director of the StP shall offer a placement site to the student in accordance with the concluded Agreement of Intent, which the RSU Faculty of Medicine has concluded with placement sites (see Annex 11). The student is entitled to offer another placement site, if the offered Placement Institution meets the requirements of the StP.

Agreements of Intent have been concluded with the following placement institutions:

- Institute of Food Safety, Animal Health and Environment "BIOR" (information available in Latvian and English);
- Latvian Biomedical Research and Study Centre (information available in Latvian and English).

Several RSU scientific institutions have conceptually agreed to welcome students of the StP to have placement and work with their research data:

- Institute of Oncology (information available in Latvian and English), incl. Laboratory of Molecular Genetics (information available in Latvian and English);
- Institute of Microbiology and Virology (information available in Latvian and English);
- Institute for Occupational Safety and Environmental Health (information available in Latvian and English), incl. Laboratory of Hygiene and Occupational Diseases (information available in Latvian and English);
- Institute of Public Health (information available in Latvian and English).

The Director of the StP and the representative of the placement institution – the placement supervisor – are responsible for the organisation of placement and will help to organise and supervise student's placement in the placement institution.

Two credit points can be obtained for placement, it lasts two weeks for English students and four weeks for the Latvian flow (4 CP).[1] The time of placement is semester 3.

During placement the student should agree with the placement supervisor about acquisition, statistical processing and analysis of results of one research dataset according to the placement task defined by the placement supervisor. Using the results obtained, the student shall draft a Master's thesis based on them in semester 4. A student can also draft a Master's thesis on a different topic, if they wish, using data obtained elsewhere.

The student should write a report on the fulfilment of the given task about his/her placement progress. The placement report is 5-10 pages. Defence of the placement report takes place within one month after the last day of the placement and may be equalised to pre-defence of the Master's thesis, if the student uses the data obtained from the placement institution for the Master's thesis. During the defence, the student informs the commission in writing about the matters described in the placement report.

Enclosed:

Annex 9 "Description of the student placement organisation".

[1] In accordance with Section 56(3)(1) of the Law on Institutions of Higher Education 2 CP of placement are replaced with "Latvian Language for Foreign Students".

3.2.5. Evaluation and description of the promotion opportunities and the promotion process provided to the students of the doctoral study programme (if applicable).

3.2.6. Analysis and assessment of the topics of the final theses of the students, their relevance in the respective field, including the labour market, and the marks of the final theses.

Since the implementation of the study programme has not started yet, there are no students, there are no graduation papers so far.

3.3. Resources and Provision of the Study Programme

3.3.1. Assessment of the compliance of the resources and provision (study provision, scientific support (if applicable), informative provision (including libraries), material and technical provision, and financial provision) with the conditions for the implementation of the study programme and the learning outcomes to be achieved by providing the respective examples.

In the process of planning and development of the StP, particular attention was paid to the analysis and provision of the study base needed to implement the StP. Such an approach identified elements of the study base necessary for the full implementation of the StP, which are fully provided by RSU.

Key elements are:

- modern and high-quality auditoriums with interactive boards, multimedia projectors with a sound system for lectures, seminars and student group work, for the implementation of joint study course projects and presentation of the results obtained;
- For teaching of the StP practical classes, there are three specially equipped computer classes at FMSL's disposal with 44 powerful computers and installed statistical software required for the StP such as *R*, *R Studio*, *SAS*, *IBM SPSS Statistics*, *STATA*. If necessary, other RSU computer classrooms, with more than 200 work stations that are used both for the

implementation of certain study courses in other academic structural units, as well as for provision of electronic examinations and other types of knowledge testing may also be adapted to the needs of the StP;

- Cooperation of RSU academic units, mainly in the implementation of study courses of the thematic block of medicine of semester 1, in the implementation of the study courses "Human Anatomy and Physiology", "Internal and Infectious Diseases" and "Biochemistry and Laboratory Diagnostics" with departments of RSU Faculty of Medicine, as well as cooperation with RSU Language Centre in compulsory mastering of the Latvian language for international students in semester 3;
- the e-learning environment, which includes full StP course information for both the study process and the achievement of learning outcomes, including practical tasks for the verification of knowledge in the e-environment, the assessment system in the e-environment, the provision of a platform for discussion in the e-environment, etc. (for details see Paragraph 2.2);
- RSU Library – appropriate for complete support of the modern study, scientific and research process in the field of social sciences on a global scale, including for convenient availability of study materials on-site and online, quick ordering of new materials in accordance with the needs of lecturers and content of study courses;
- RSU support structural units and general staff for ensuring the study process provide a significant and complete support during the entire study process (for details see Annex 10, paragraph 1.6);
- RSU management – an important study base support point in planning and implementation of, including, for example, university support and motivation in maintaining and improving qualifications of teaching staff using different support mechanisms.

Annex 23.1 "Evaluation of the informative and methodological base on library resources for the implementation of the study direction in accordance with guideline requirements".

The materials and technical provisions for distance learning were developed during the Covid-19 pandemic. While assembly restrictions were in force in the country, all the study process took place in the digital environment. All courses in statistics in other StPs were implemented remotely. The classes were held on *Zoom*, recorded and students had the opportunity to view the class again if there was any unclarity. Presentations of homework prepared independently by students, group discussions and also the exam took place on *Zoom*. Hybrid classes were also implemented as an experiment, with half of the group taking part in a face-to-face class in a computer classroom and the other half joining the class via *Zoom*.

Not only study courses, but also the process of development, pre-defence and defence of Master's theses took place fully online. This experience does not leave any doubts about the possibilities of implementing the new StP in distance learning.

3.3.2. Assessment of the study provision and scientific base support, including the resources provided within the framework of cooperation with other science institutes and higher education institutions (applicable to doctoral study programmes) (if applicable).

3.3.3. Indicate data on the available funding for the corresponding study programme, its

funding sources and their use for the development of the study programme. Provide information on the costs per one student within this study programme, indicating the items included in the cost calculation and the percentage distribution of funding between the specified items. The minimum number of students in the study programme in order to ensure the profitability of the study programme (indicating separately the information on each language, type and form of the study programme implementation).

It is planned to finance the StP from the resources of private and legal persons, setting the tuition fee for the Latvian flow of 2700 euro, but for the English flow – 3700 euro per year. 12 students are planned to be enrolled to the Latvian or English flow in the academic year 2022/2023. It is planned in the cost estimate of the study programme that the number of students in the second year of studies remains the same. Such a number of students per flow would be optimal to ensure a high-quality study process and to keep the programme cost-effective.

The funding should be used for staff remuneration, attraction of visiting university lecturers, taxes, maintenance of IT infrastructure, purchase of equipment and devices and study visit costs. In addition to the direct costs of the implementation of lectures and classes, the StP must cover the infrastructure maintenance costs (facilities, IT solutions) and other RSU common resources used in the StP (Student Services, Library, organisation of the study process, grant for the Student Union and other support and administrative functions).

Remuneration of the academic staff in the first year of the StP is planned to be approximately 10 thousand EUR in the Latvian flow and approximately 12 thousand euro in the English flow.

Table 2. Information on student costs in the Latvian flow

Name	Costs
Average income per student, euro	2700
Average cost per student, euro	2684
Academic staff, %	47
Department resources, %	3
Other direct expenditure, %	18
Fixed costs, %	6
Overheads, %	26

Table 3. Information on student costs in the English flow

Name	Costs
Average income per student, euro	3700

Average cost per student, euro	3647
Academic staff, %	50
Department resources, %	2
Other direct expenditure, %	17
Fixed costs, %	5
Overheads, %	26

Open access data processing software *R* (*The R Project for Statistical Computing*) and *R Studio*, as well as *SAS* (*Statistical Analysis System*) with a licence for academic purposes, which is free for universities, is used in the implementation of the StP content. The research management open-access programme *REDCap* is planned to be used in addition. There are no plans to purchase other software.

3.4. Teaching Staff

3.4.1. Assessment of the compliance of the qualification of the teaching staff members (academic staff members, visiting professors, visiting associate professors, visiting docents, visiting lecturers, and visiting assistants) involved in the implementation of the study programme with the conditions for the implementation of the study programme and the provisions set out in the respective regulatory enactments. Provide information on how the qualification of the teaching staff members contributes to the achievement of the learning outcomes.

The composition of teaching staff of the StP "Biostatistics" consists mainly of lecturers of the Statistical Laboratory of the RSU Faculty of Medicine (FMSL), as well as contains rather many visiting lecturers, whose qualification in mathematics and statistics has been appreciated and recognised. During the development of the StP, an agreement has been reached with the LU, the University of Tartu (UT), the Uppsala University (UU) and Chalmers University of Technology regarding the attraction of lecturers of these universities in the implementation of the StP for study courses in statistics or for research planning and clinical trials. Additionally, visiting lecturers would be involved 1-3 times a year for discussing other important content issues of the StP for a wider audience. Over time, new lecturers from among the StP graduates will be attracted, the StP ideas for further development of study courses and promotion of international cooperation for RSU to form a potential centre of biostatistical knowledge and competence in Latvia.

The language of implementation of the new StP is not only Latvian but also English, lecturers require high level of English, which they confirm by their experience of use of English in professional or academic environment and/or certificates of assessment of the level of knowledge of language. In order to ensure the StP language quality, RSU has actively and supportively

contributed to the improvement of knowledge of English and skills of lecturers, who have no previous assessment certification or evident experience.

In 2015, RSU started project for the improvement of English language skills of RSU staff as an additional motivation tool, and in the course of its implementation, language skills of the academic staff are audited, and training is provided to improve their English language proficiency. Full compliance of English language skills with the RSU's target – level B2 – allows for increased remuneration for work in English; sustainable development of English language skills is also implemented in the project "Strengthening the capacity of RSU academic staff" (No. 8.2.2.0/18/A/013) and in the project "Improvement of the management process and study content modernisation at RSU" (No. 8.2.3.0/18/A/011).

As a result of this support several lecturers have improved their knowledge of English and have received a relevant language assessment certificate. For example, in 2021, the Director of the programme Andrejs Ivanovs, as part of the programme mentioned here, improved his knowledge of English to level of C1.1 and in 2022 improved speaking skills to C1.2. Lecturer Olga Rajevska also improved her English proficiency to level C1.1 in 2021. All the StP lecturers are capable of fully teaching their study courses in English.

The following qualification requirements have been set in the teaching staff selection process:

- at least a Master's degree in mathematics, statistics, economics, medicine, natural sciences, public health or pharmacy, candidates with a doctoral degree in the respective sector are preferred;
- experience in pedagogical work in an international environment for at least two years is preferred;
- profound knowledge of statistics, epidemiology and implementation of clinical trials; for heads of study courses – profound knowledge in the respective study course field;
- practical experience in working with data processing software (at least *R* or *SAS*);
- knowledge of English at high level is necessary.

When developing the idea of setting up the StP, the following institutions were identified, with which cooperation was planned during the development and implementation of the StP:

- LU Faculty of Physics, Mathematics and Optometry, Department of Mathematics and Statistical Studies and Data Analysis Laboratory – planning and implementation of the content of study courses of the biostatistical block (representatives: Jānis Valeinis, Professor, Head of Laboratory; Māra Delesa-Vēliņa, researcher; Artis Luguzis, researcher);
- Estonia, UT Institute of Mathematics and Statistics (IMS) – planning and implementation of the content of study courses of the biostatistical block (representatives: Krista Fischer (Professor of Mathematical Statistics); Märt Möls (Associate Professor of Mathematical Statistics); Kaur Lumiste (lecturer of Mathematical Statistics); Reedik Mägi (researcher of Bioinformatics);
- Sweden, Chalmers University of Technology and University of Gothenburg, Department of Mathematical Sciences – planning and implementation of the content of study courses of the biostatistical and clinical research block (Ziad Taib, Adjunct Professor);
- Sweden, UU Department of Public Health and Caring Sciences – planning and implementation of the content of study courses of the research planning block (Ieva Reine, in 2020, she was elected to the Statistical Laboratory as the lead researcher, has an English language certificate for level C1.1).

A conceptual agreement was reached that lecturers from the aforesaid universities will take part in the development of the StP and in the preparation of study courses, and will be involved in the

implementation of the StP, as well as together with lecturers the following will be implemented in the course of development of the StP:

- measures for exchange of experience,
- work groups and discussions,
- attraction and mobility of foreign lecturers,
- attraction of additional experts and consultants.

When evaluating the compliance of qualifications of the teaching staff involved in the implementation of the StP corresponds to the conditions of implementation of the StP and the requirements of regulatory enactments, it can be concluded that the qualification of teaching staff helps to reach learning outcomes.

Enclosed:

Annex 24.7 "Analysis of the composition of lecturers".

3.4.2. Analysis and assessment of the changes to the composition of the teaching staff over the reporting period and their impact on the study quality.

Since the spring of 2020, when a StP licence was obtained, there have been no significant changes in the composition of the teaching staff. In 2021, lecturer Andris Avotiņš terminated his employment relationship with RSU FMSL, however, four new lecturers joined FMSL in the same year and one more lecturer in 2022. Since changes to personnel are minimal, they do not have a significant impact on the quality of studies.

3.4.3. Information on the number of the scientific publications of the academic staff members, involved in the implementation of doctoral study programme, as published during the reporting period by listing the most significant publications published in Scopus or WoS CC indexed journals. As for the social sciences, humanitarian sciences, and the science of art, the scientific publications published in ERIH+ indexed journals or peer-reviewed monographs may be additionally specified. Information on the teaching staff included in the database of experts of the Latvian Council of Science in the relevant field of science (total number, name of the lecturer, field of science in which the teaching staff has the status of an expert and expiration date of the Latvian Council of Science expert) (if applicable).

3.4.4. Information on the participation of the academic staff, involved in the implementation of the doctoral study programme, in scientific projects as project managers or prime contractors/ subproject managers/ leading researchers by specifying the name of the relevant project, as well as the source and the amount of the funding. Provide information on the reporting period (if applicable).

3.4.5. Assessment of the cooperation between the teaching staff members by specifying the mechanisms used to promote the cooperation and ensure the interrelation between the study programme and study courses/ modules. Specify also the proportion of the number of the students and the teaching staff within the study programme (at the moment of the submission of the Self-Assessment Report).

Mutual cooperation between lecturers started even before the StP "Biostatistics" received a licence. It started with visiting lectures organised by RSU FMSL by inviting Ziad Taib, a lecturer of the Chalmers University of Technology and Krista Fischer from the University of Tartu to Riga. The idea to create the new StP was initially discussed with these foreign colleagues, receiving a positive evaluation of the idea and the offer to help in creating the StP with their experience and competence. A bit later, colleagues of the Faculty of Physics, Mathematics and Optometry of the University of Latvia involved in the creation of the StP.

After the approval of the SO 8.2.1 project, foreign and LU colleagues started joint work on the development of the programme, during joint meetings considering proposals of each other with regard to potential goals of the StP, number of courses and structure, target audience, restructuring possibilities and later also on the content of topics for each course.

In addition to cooperation in creating the StP, colleagues participated in the organisation of the 31st International Biometric Conference. The Director of the StP together with Krista Fischer were co-chairs of the conference in the Local organising committee, while LU colleagues invited students to the conference as volunteers, who helped to organise the conference on site.

Annexes

III - Description of the Study Programme - 3.1. Indicators Describing the Study Programme		
Sample of the diploma and its supplement to be issued for completing the study programme	24.1_pielik_Diploms_Dipl_pielikums_2023_eng.pdf	24.1_pielik_Diploms_Pielikums_Biostatistika_2023_lv.pdf
For academic study programmes - Opinion of the Council of Higher Education in accordance with Section 55, Paragraph two of the Law on Higher Education Institutions (if applicable)		
Compliance of the joint study programme with the provisions of the Law on Higher Education Institutions (table) (if applicable)		
Statistics on the students in the reporting period	16_pielik_Statistikas_dati_eng.pdf	16_pielik_Statistikas_dati_lv.pdf
III - Description of the Study Programme - 3.2. The Content of Studies and Implementation Thereof		
Compliance with the study programme with the State Education Standard	Annex 17.1_ Compliance of Academic Master's Study Programme Biostatistics with the National Educational Standard.pdf	17.1_ pielik_ AMSP_atbilstiba valsts izglitibas standartam_Biostatistika.pdf
Compliance of the qualification to be acquired upon completion of the study programme with the professional standard or the requirements for professional qualification (if applicable)		
Compliance of the study programme with the specific regulatory framework applicable to the relevant field (if applicable)		
Mapping of the study courses/ modules for the achievement of the learning outcomes of the study programme	Annex 18.1_Mapping of study courses for the achievement of learning outcomes_StP Biostatistics.pdf	18.1_pielik_St_kursu_kartejums_AMSP_Biostatistika_lv.pdf
The curriculum of the study programme (for each type and form of the implementation of the study programme)	Annex 19_Plan of the StP Biostatistics.pdf	19_pielik_St_progr_planojums_AMSP_Biostatistika_lv_eng.pdf
Descriptions of the study courses/ modules	Annex 20.1_20.3_Study course descriptions StP Biostatistics tsk Distance learning.pdf	20.1_21.3_pielik_St_kursu_apraksti_AMSP_Biostatistika_tsk_Talmacibai_lv.pdf
Description of the organisation of the internship of the students (if applicable)	Annex 9_Placement regulations StP Biostatistics.pdf	9_pielik_Prakses_organizacija_AMSP_Biostatistika_lv.pdf
III - Description of the Study Programme - 3.4. Teaching Staff		
Confirmation that the academic staff of the doctoral study programme includes not less than five doctors, of which at least three are experts approved by the Latvian Council of Science in the branch or sub-branch of science in which the study programme intends to award a scientific degree (if applicable)		
Confirmation that the academic staff of the academic study programme complies with the requirements specified in Section 55, Paragraph one, Clause 3 of the Law on Higher Education Institutions (if applicable)	24.7_pielik_Docetaju_sastava_analize_lv.pdf	24.7_pielik_Docetaju_sastava_analize_lv.pdf