

## APPLICATION

Study field "Chemistry, Chemistry Technologies, and Biotechnology" for assessment

Study field	<i>Chemistry, Chemistry Technologies, and Biotechnology</i>
Title of the higher education institution	<i>Rīgas Tehniskās universitātes aģentūra "Rīgas Tehniskās universitātes Olaines Tehnoloģiju koledža"</i>
Registration code	<i>4347002316</i>
Legal address	<i>ZEIFERTA IELA 2, OLAINĒ, OLAINES NOVADS, LV-2114</i>
Phone number	<i>67962141</i>
E-mail	<i>olaineskoledza@omtk.edu.lv</i>

# **Self-evaluation report**

Study field "Chemistry, Chemistry Technologies, and  
Biotechnology"

Mechanics and Technology College of Olaine

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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,.

**Brief description of the university/college.** Riga Technical University Agency "Riga Technical University Olaine Technology College" (hereinafter - OTC) is a state-accredited professional higher education institution with a structural unit secondary vocational school. OTC is the only vocational education institution in Latvia that prepares specialists with the third and fourth professional qualification levels in the fields of chemistry, pharmacy, biotechnology and the environment.

The college was founded in 1964. It is located in Olaine - a city of chemists with industrial values, a tidy, business-friendly environment in terms of the specialties offered by the educational institution, and a rich cultural heritage in the development of the chemical industry, where young professionals can find employment, education and leisure opportunities.

On July 1, 2019, implementing the process of consolidation of higher education, Olaine College of Mechanics and Technology (OMTK) has officially become an agency of Riga Technical University (hereinafter RTU). College as an Agency was added to RTU in accordance with the decision of the Cabinet of Ministers of November 21, 2018. Its new name is Riga Technical University Agency "Riga Technical University Olaine Technology College". The decision on cooperation between RTU and OTC was made on a basis of the need to promote the concentration of resources and greater synergy between Latvian

higher education institutions that implement study programs in one field. The decision on closer cooperation was made by both the OMTK Science Council and the RTU Senate.

OTC is a modern institution of professional higher and vocational secondary education based on knowledge and quality. The legal basis of the College's activities is the Law on Education, the Law on Higher Education Institutions, the Law on Vocational Education, with the RTU Senate decision on 27 May 2019 meeting (Minutes No. 630) approved Regulation of the Olaine Technology College of Riga Technical University and other regulatory enactments.

### **OTC mission and vision.**

OTC mission: To prepare professional, high level specialists of chemistry, pharmacy, biotechnology, environment, food and their related industries in sustainable and qualitative educational process in modern technology environment education programs with high added value.

OTC vision: Excellence of the educational institution by targeted institutional development until reached a level appropriate to the center of excellence, implementing a sustainable supply of educational services.

**Implemented study field and number of study programs in them.** All study programs are implemented in person in Latvian.

Three study directions are implemented at OTC. The field of study "Chemistry, chemical technologies and biotechnology", which is accredited until April 10, 2023. One level 1 or short cycle professional higher education study program "Biotechnology" with the qualification "Biotechnologist" (hereinafter "Biotechnological process specialist") is implemented in this study direction, program code 41 526. The study direction "Environmental protection" is accredited until 2024 as of December 31 with one 1st-level or short-cycle professional higher education study program "Environmental protection technology" with the qualification "Environmental specialist",

program code 41 853. And the study direction "Production and processing", whose accreditation deadline is 2022 December 31 and which is currently in the accreditation process. One level 1 or short-cycle professional higher education study program "Food product quality control" with the qualification "Food quality specialist" program code 41 541 is implemented in this direction of study. The duration of studies for the study programs "Biotechnology" and "Environmental protection technology" is 2,5 years, and for the study program "Quality control of food products" - 2 years. All study programs are implemented face-to-face in full-time studies in the Latvian language.

OTC implements 1st level professional higher education study programs: "Biotechnology" with qualification "Biotechnologist", program code 41526, which is accredited until April 10, 2023, "Environmental protection technology" with qualification "Environmental specialist", programs code 41850, which is accredited until December 31, 2023, and the program "Food Quality Control" with the qualification "Food Quality Specialist" program code 41541, the expiration date of which is December 31, 2022. The duration of studies for the study programs "Biotechnology" and "Environmental Protection Technology" is 2.5 years, but for the study program "Food Quality Control" - 2 years.

**Dynamics of the number of students in the higher education institution / college during the evaluation period.** According to the Official Statistics Portal

"Number of students and academic staff (full-time) in higher education institutions and colleges", in OTC in the period from the 2015/2016 academic year to the 2020/2021 academic year, a sharp decline in students has been observed.

2015/2016 in the study year, the total number of students is 122 students, but in 2018/2019 in the study year - 66, 2020/2021 in the study year - 33 students.

2021/2022 during the study year, there is a positive trend in the increase in the number of students. The dynamics of the total number of students during the accreditation period is reflected in Figure 1.

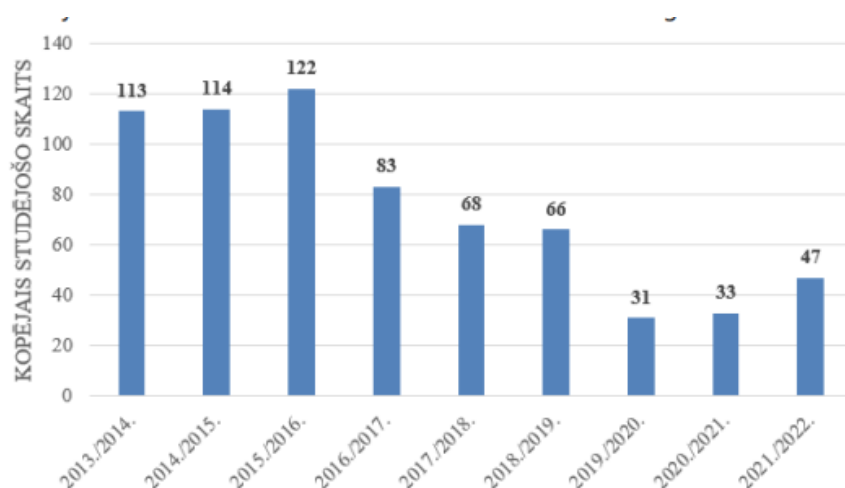


Figure 1. Dynamics of the total number of students during the accreditation period.

**College development strategy.** In developing its strategy, in 2021 the OTC has identified six strategic development directions for the period until 2027.

OTC raised priorities:

1. Development of a new offer of educational programs
2. Provision of human resources
3. Provision of practice places

4. Increase in the number of learners
5. Application of infrastructure and Technologies
6. High efficiency of economic activity

OTC strategical goals and tasks are a basis for further development and preparation of investment projects, attracting state of Latvia, European Union structural funds or other financial instruments.

1st priority: **Development of a new offer of educational programs.**

Goals:

1. Update and modernize existing educational programs promoting closer involvement of companies in the sector;
2. Develop new, modular educational programs that meet the requirements of the labor market;
3. Motivate self-education for life.

2nd priority: **Provision of human resources.**

Goals:

1. Attract highly qualified human resources;
2. Implement a common personnel policy;
3. Motivate and ensure staff growth opportunities;
4. Targetfully assess qualification and competences of employees by planning of their professional growth.

3rd priority: **Provision of practice places.**

Goals:

1. Cooperate with representatives of employers by coordinating traineeships;
2. In cooperation with food, chemistry and their related industries, metalworking, machine building and mechanical engineering industry and leading companies to provide internships for learners and high quality of practical training;
3. Encourage international exchange of experience within projects (Erasmus+, PoVE-Water etc.).

4th priority: **Increase in the number of learners**

Goals:

1. Create a positive image of institution, field of natural sciences and industry;
2. Improve the implemented OTC educational offer in modern infrastructure;
3. Popularize graduate success stories by giving an idea of future opportunities in the industry;
4. Increase in the number of students;
5. Encourage parental responsibility in the process of obtaining education in a vocational secondary school.

5th priority: **Application of infrastructure and technologies.**

Goals:

1. Make meaningful use of new, modern infrastructure and technologies and develop their interdisciplinary application;
2. Promote the improvement of practical scientific activity;
3. Identify potential growth opportunities and future perspectives by taking into account basic principles of "green course";
4. Improve IT applications and work on digitalization.

6th priority: **High efficiency of economic activity.**

Goals:

1. Resource effectively and sustainably optimize economic functions performed by the institution;
2. Improve the management of financial and administrative activities;
3. In cooperation with founder organize procurement of services necessary for ensuring operation of institution.

**Results to be achieved in implementing the objectives:**

1. accreditation of study fields for the maximum term;
2. high level of competence and involvement of employees;
3. a stable increase in the number of transnational and local cooperation projects and partners (including the mobilization of the ESF and other funding);
4. increase in the number of students by an average of 10% per study year.

*Electronic link to the website where the development strategy is available in both Latvian and English*

[https://otk.rtu.lv/wp-content/uploads/sites/29/2022/03/strategija\\_2021\\_12042021\\_3\\_isa\\_versija\\_ENG.pdf](https://otk.rtu.lv/wp-content/uploads/sites/29/2022/03/strategija_2021_12042021_3_isa_versija_ENG.pdf)

**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.**

The governance structure and division of functions of the OTC are formed by the processes for ensuring the strategic management, operational functions and support functions of the College. An outline of the College's governance is attached in Annex 2 to this report.

The OTK Council consists of 11 council members.

1 or 9% founder representative

4 or 37% lecturers

2 or 18% of the general staff

2 or 18% representatives of students self-government

2 or 18% representatives of employers and non-governmental organizations

The structure of the OTC consists of the College Council, the Director of the educational institution, the Deputy Director, the Study Division, the Head of the Laboratory, the Student Self-Government, the Director of Study Programs, academic staff and guest lecturers, as well as the Library, Archives, Accounting, Recordkeeping and Economy Division.

The implementation of the first level professional higher education study program "Biotechnology" is coordinated by the program director. The following structural units are involved in ensuring the study process:

Study division that plans the study process (lesson planning, lecturers' work, etc.) and lists the progress; responsible for software and technical means; provides students with information; offers students and lecturers to get involved in both college and Latvian and international projects, etc. The director of the study program is responsible for ensuring the fulfillment of the content of the study program, self-evaluation.

The academic staff performs teaching, methodological and scientific work, gives lectures within the study work, conducts seminars and practical classes, accepts examinations, reports, regular work (incl. Tests, etc.), organizes consultations, conducts and reviews qualification work, performs other work duties. related to the organization of study work.

Lecturers involved in the accredited program have the necessary skills to transfer their knowledge and experience to students and receive feedback on their work. All lecturers are provided with the opportunity to supplement their knowledge, participate in in-service training courses, study for a doctorate, develop scientific work and go abroad for an internship within the framework of exchange programs.

In ensuring the implementation of the study program, 18 % of all lecturers have a doctoral degree, 6 % study for a doctorate, 82 % have a master's degree.

Economy division that deals with material and technical support issues.

A library that provides students and lecturers with information.

Record keeping keep records of employees; introduces labor protection requirements; organizes the sending of employees for qualification improvement and training, etc.

The director of the college ensures the content and financial activities of the college, the deputy director ensures the management and course of the study process in the study and research work, as well as coordinates the issues of international relations and projects.

The Council is the highest representative and governing body and decision-making body for education and research. The council consists of the academic and administrative staff of the college, representatives of the founder and employers, as well as representatives of the students' self-government. The Council is chaired by the President of the Council. The college implements three study programs, currently has one director.

The task of the student`s self-government is to promote the formation of the social life of college students and to promote the efficiency of their study process.

In order to promote the efficiency of the study process, scientific conferences are organized that attract college students.

For several years now, the most active students of the college have had the opportunity to represent the college at the international educational exhibition "School". It is a great opportunity to share your experience with others, provide information about your college and at the same time promote your specialty.

Since July 1 2019, when OTC became an RTU agency, the cooperation between the two higher education institutions has become much closer and more productive. OTC has the opportunity to participate in various teaching, research and project activities, thus greatly expanding its horizons. There is a logical and simpler succession for students to study in college and then start RTU not from the first, but further courses. The saving of resources, as well as the increase in the number of students in recent years, should definitely be mentioned as a positive moment.

### **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.**



1. The quality policy OTC is focused on the implementation of OTC's mission, sustainable development and achievement of strategic goals - studies, research, infrastructure, organizational excellence and recognition.
2. The OTC quality system is based on Standards and Guidelines for Quality Assurance in the European Higher Education Area.
3. The sustainable development of OTC is based on the OTC Excellence approach, which ensures the planning, implementation, testing, evaluation of results and their further development.
4. Quality policy forms the framework for the implementation of the OTC strategy, the development and improvement of the study process, research and organization:
  - Development of OTC organizational culture based on the integration of studies, research and organizational management processes;
  - Increasing and improving the knowledge, skills and competencies of OTC staff;
  - Development and improvement of the quality management system, regularly evaluating the wishes and satisfaction of students, as well as other customers and stakeholders;
  - Responsibility of managers for the implementation of internal quality assurance procedures and processes in the structural units;
  - Efficient and effective use of resources based on regular analysis of OTC processes, activities, results of their evaluation and management reports;
  - Participation of OTC staff (including students) in quality assurance, encouraging them to get involved in improving the quality management system.
5. OTC identifies and provides the resources needed to establish, implement, maintain and continuously improve the quality management system.
6. OTC uses a risk-based approach to identify factors that may cause deviations from processes and the intended performance of processes.
7. OTC uses preventive management tools and methods to mitigate negative impacts and seize opportunities.
8. OTC quality policy and its implementation is based on the following basic principles:
  - Acting in the interests of the country's sustainable development - OTC works to help achieve the goals of the EU's single educational space, society, employers, students, graduates and other stakeholders;
  - Leadership and unity in achieving the goal - OTC management promotes the unity and cohesion of the staff in terms of the intended goals and strategic management; it creates an environment in which employees purposefully integrate into the successful achievement of the goals of the OTC;
  - Systematic and process-oriented approach - clear sequence of processes and their interaction, as well as criteria and methods for efficient process operation and management;
  - Continuous, developmental improvement - changes that are necessary to increase the value of processes, systems and achievements and to optimize the work of the college in a changing environment can be identified and implemented in accordance with priorities;
  - Evidence-based approach to decision-making - effective decisions based on objective data obtained, information analysis and monitoring;
  - Cooperation with partners - professional associations, student organizations, other higher education institutions, companies and organizations, etc.;
  - Staff involvement and competence - all OTC staff (including students) participate in the development of the quality system and policy implementation;

- Process analysis and management - OTC operation and use of resources is considered and managed as a set of processes to achieve the desired result more effectively;
- Addressing risks and opportunities - OTC management considers the external and internal circumstances that affect its processes and strategic direction in identifying risks and opportunities and how to deal with them.

9. The quality policy is implemented in all structural units of the OTC in accordance with the internal regulatory enactments of the OTC.

see <https://otk.rtu.lv/wp-content/uploads/sites/29/2022/04/KVALITATES-POLITIKA.pdf> "RĪGAS TEHNISKĀS UNIVERSITĀTES OLAINES TEHNOLOĢIJU KOLEDŽAS KVALITĀTES POLITIKA". The regulations attached to the website are available in Latvian.

At the end of each study semester, student surveys are conducted on various aspects of the study process quality, content, everyday life, etc. issues. Many of the recommendations and suggestions are taken into account and later implemented in the learning process.

The academic staff and the administration regularly communicate with each other with students, who have the opportunity to turn to the OTC administration and teaching staff at any time with any painful issues.

Cooperation with companies in the sector, in turn, takes place most regularly in the provision of internships for students. Representatives of companies in the sector also participate in the evaluation commissions of students' final examinations. There is an opportunity and it is often used - for teaching staff to conduct their classes with students in the form of an off-site seminar in one of the companies in the industry.

Cooperation with RTU also takes place relatively regularly. RTU Vice-Rector for Studies is a member of the College Council and also the closest contact person for any issues, especially those related to the study process. In matters of quality management process, OTC cooperates with the management of RTU Quality Management and Risk Management Department. Also, within the scope of its competence, OTC employees have close cooperation with the relevant RTU officials in the areas of personnel management, finance and accounting, libraries, projects, laboratories, economic and other fields.

**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.	see 1.3.
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2.	<p>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.</p>	<p>The development of OTC study programs, supervision of activities and periodic inspection are performed by program directors and methodological commissions, which are responsible for methodological work and its development in the institution.</p> <p>The College's new Development and Investment Strategy for 2021-2027 states that in OTC the 1st level professional higher education methodological work is done by program directors and three methodological commissions are working: methodological commission of general education subjects, methodological commission of professional subjects and methodological commission of upbringing work.</p> <p>Work goals of methodological commissions are:</p> <ol style="list-style-type: none"> <li>1. To rise the quality and effectiveness of learning process;</li> <li>2. To provide the necessary support to teaching staff for education process implementation;</li> <li>3. To promote comprehensive development of learners and formation of a creative personality;</li> <li>4. To promote learners creative work, research, motivation, participation in the implementation of the educational process.</li> </ol> <p>Work tasks of methodological commissions are:</p> <ol style="list-style-type: none"> <li>1. To implement the achievable results specified in the professional standard;</li> <li>2. To ensure interdisciplinary connection between general and professional education subjects;</li> <li>3. To promote and support creative activity and professional development of teachers;</li> <li>4. To analyse achievements of OTC students in learning/study work, causes of underachievement, as well as the results of the work of the teaching staff;</li> <li>5. To motivate learners to improve by developing skills to learn/study and inquire about processes in OTC, society and world;</li> <li>6. By cooperating with industry members evaluate each qualification and determine the optimal scope of practice and duration of the acquisition of qualification.</li> </ol>
3.	<p>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.</p>	<p>see <a href="https://otk.rtu.lv/nolikums/">https://otk.rtu.lv/nolikums/</a> "Studiju un pārbaudījumu nolikums". The regulations attached to the website are available in Latvian.</p> <p>Each study course has a description of the study course evaluation criteria, see the appendix "Study courses"</p>

4.	Internal procedures and mechanisms for assuring the qualifications of the academic staff and the work quality have been developed.	see 3.4.1.
5.	The higher education institution/ college ensures the collection and analysis of the information on the study achievements of the students, employment of the graduates, satisfaction of the students with the study programme, efficiency of the work of the academic staff, the study funds available, and the disbursements thereof, as well as the key performance indicators of the higher education institution/ college.	At the end of each study semester, student surveys are conducted on various aspects of the study process quality, content, everyday life, etc. issues. See the survey questionnaire in the appendix "Student survey questionnaire". Many of the recommendations and suggestions are taken into account and later implemented in the learning process. The annual report is prepared and approved at the council meeting. The annual report of the college provides information about the college, the structure of the administration, and details the number of students and staff. External users also have the opportunity to get acquainted with the distribution and use of the state budget, revenue from economic activities, own resources and use. Detailed information on international relations is provided. The report is available on the OTC website in Latvian <a href="https://otk.rtu.lv/koledzas-pasnovertejums/">https://otk.rtu.lv/koledzas-pasnovertejums/</a>
6.	The higher education institution/ college shall ensure continuous improvement, development, and efficient performance of the study field whilst implementing their quality assurance systems.	see 2.2.2.

## 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 goal of the study direction, which is also the goal of the study program and can be read in the parameters of the study program, corresponds and resonates with the mission of RTU OTC. The fulfillment of the purpose is important in the realization of the mission of the college. The field of study "Chemistry, chemical technologies and biotechnology" and its purpose are in accordance with the scope of activities and the direction of strategic development of the Olaine Technology College, as well as contribute to the achievement of the college's strategic goals, i.e. to offer a high quality of studies, to ensure that the theoretical knowledge acquired in the study program is maximally

effectively connected with practice, etc. The development strategy of the study direction is related to the OTC strategy - to prepare high-level specialists for Latvian companies.

OTC's vision is to become a center of excellence. OTC is the only educational institution in Latvia that implements the 1st level or short cycle professional higher education study program "Biotechnology" included in this field of study. This study program prepares qualified biotechnology process specialists in Latvia and is relevant to the study direction, which is proven by both the name, purpose, tasks, and the content of the study program, which broadly covers chemistry study courses, biotechnology directions and production technological solutions.

Please see the cover letter in the attachment.

In order to evaluate the content of the study program "Biotechnology" in the context of education in the field of biotechnology, a comparison of this program with four bachelor's study programs has been made. One of them "Biotechnology and bioengineering" is implemented in Latvia, in cooperation between the University of Latvia and Riga Technical University. See comparison and conclusions. in Annex "Comparison of the study program "Biotechnology" with other foreign and Latvian study programs in the field of biotechnology".

Compliance with the development needs of society and the national economy is described in more detail in chapter 3.1.3, analyzing the economic and social justification of the study program.

In the agency of Riga Technical University "Riga Technical University Olaine Technology College" in the field of study "Chemistry, chemical technologies and biotechnology" in the 1st level or short cycle study program "Biotechnology" during the reporting period, part-time correspondence studies were not implemented due to the lack of interest and demand of potential students.

Disinterest in part-time correspondence studies and their ineffectiveness are justified by the following circumstances:

- Part-time studies are a paid service. Study costs in the field of study "Chemistry, chemical technologies and biotechnology" are very high, compared to, for example, humanities and social sciences, due to the high proportion of laboratory work.
- Full-time face-to-face studies are funded by the state budget, however, the number of students is relatively small, as there is insufficient interest and preparation for chemistry studies, as well as a lack of desire to study a complex field oriented to production.
- The studies are practically oriented, there is a large proportion of practical and laboratory work, which must be devoted to enough contact hours so that the students achieve the knowledge, skills and competence corresponding to the qualification. But part-time studies would have a more limited amount of contact hours, so the professional preparation of students could be insufficient.
- The duration of part-time correspondence studies would be 3 years, but within three years you can get a bachelor's education in this field of study, for example, in the RTU study program "Biotechnology and Bioengineering".

Based on the aforementioned RTU OTC does not apply for accreditation of part-time absentee studies in the study direction "Chemistry, chemical technologies and biotechnology" in the 1st level or short cycle study program "Biotechnology" and will recommend removing this offer from the admission rules for 2023/2024. for the study year and the following study years already at the first meeting of the College Council in 2022/2023. in the study year.

## **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.**

The SWOT analysis of the study field was performed by the head of the study division in cooperation with the program director in 2021, gathering opinions from all interested parties: students (opinions obtained through questionnaires), lecturers (opinions obtained during individual negotiations), OTC management and staff (opinions obtained during individual negotiations), employers' representatives (opinions obtained through individual negotiations with employers' representatives), graduates (opinions obtained from a survey of graduates by telephone).

The results of the SWOT analysis performed in 2021 are shown in Table 1.

Table 1

**SWOT analysis of the study field**

INTERNAL FACTORS	
STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> <li>- Most students are satisfied with the quality of studies.</li> <li>- Professional teachers who regularly improve their professional knowledge.</li> <li>- Specialists of the field (academic staff and practitioners) are involved in the study process.</li> <li>- Regularly is insured updating of the study program and the content of resources.</li> <li>- Provision with modern laboratories and technologies.</li> <li>- Aesthetic study environment.</li> <li>- A service hotel for students is available next to the educational institution.</li> <li>- Individual approach to each student.</li> <li>- Provision of internships.</li> <li>- Teachers and student research conference is organized.</li> <li>- The only higher education institution in Latvia that implements such an accredited 1st level professional higher education program.</li> </ul>	<ul style="list-style-type: none"> <li>- Improve international cooperation.</li> <li>- Insufficient publicity of students' research works.</li> <li>- Insufficient access to databases of scientific articles.</li> <li>- Improve cooperation with employers.</li> <li>- Improve contact with graduates.</li> <li>- Insufficient knowledge of foreign languages for students and academic staff.</li> <li>- Large differences in the age and level of education of students make it difficult to acquire the content of study courses in the first semester, especially in general education courses.</li> <li>- Insufficient involvement of teachers and students in mobility programs.</li> </ul>
EXTERNAL FACTORS	
OPPORTUNITIES	THREATS

<ul style="list-style-type: none"> <li>- Extensive development opportunities for study field programs.</li> <li>- Study places financed from the state budget.</li> <li>- Qualified specialists are trained in demanded industries in Latvia and in the world.</li> <li>- Opportunities to improve and expand cooperation with foreign higher education institutions.</li> <li>- Opportunity to involve employers' representatives more in the study process and its improvement.</li> <li>- Opportunity to make more extensive use of social networking solutions to attract students.</li> <li>- Opportunity to take full advantage of international cooperation through active participation in the ERASMUS + program.</li> </ul>	<ul style="list-style-type: none"> <li>- Demographic situation - as the population declines, so does the number of potential students.</li> <li>- Due to global competition or the country's economic development, there may be unforeseen changes in the structure of economic sectors and the corresponding demand in the labor market for qualified specialists.</li> <li>- It is possible to create similar study programs in other higher education institutions and colleges, creating competition between HEIs and, consequently, a decrease in the number of students in certain programs.</li> <li>- Problems in attracting highly qualified lecturers for the implementation of study courses in the field, unable to offer competitive remuneration.</li> <li>- The low prestige in Latvia for the 1st level professional higher education.</li> <li>- OTC may not receive the state budget funding necessary for the provision and development of the study process.</li> </ul>
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The following measures are planned and implemented to address weaknesses, avoid threats and seize opportunities:

1. The College participates in the work of the Association of Colleges in order to influence the education policy in Latvia;
2. The publicity of the college scientific conference is being worked on;
3. The library is supplemented with the latest books, subscription options for new databases are being worked on;
4. There is regular cooperation with employers and with the relevant NEP, which should be continued;
5. After the mitigation of the consequences of the Covid 19 pandemic, the international cooperation of the academic staff should be renewed and the involvement of students in international activities should be promoted, incl. greater use must be made of mobility opportunities.

The development plan of the study field "Chemistry, chemical technologies and biotechnology" is included in the strategy of the study field "Chemistry, chemical technologies and biotechnology" of the OTC 2021-2027. year. The management and teaching staff of the OTC were involved in the development of the plan, thus ensuring that the strategy takes into account the needs of all stakeholders.

The main strategic goals are the continuous improvement of the quality of the study content and the improvement of the study content, the promotion of cooperation with employers and the development of international cooperation in order to improve the competitiveness of the study field.

**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.**

*Management structure in Annex no. 2.*

Several persons and institutions are involved in the management of the study field, the main responsibilities of which are stipulated in the table (see the appendix). The job descriptions indicate the subordination of each person's position, the positions of subordinate employees, the main job responsibilities, responsibilities and rights. The division of responsibilities allows to ensure purposeful development of the study field and the existing study programs in accordance with the OTC "Development and Investment Strategy for 2021-2027".

The college operates in accordance with the regulations of the OTC. The director of the college, together with the deputy study and research work, ensures the study process of the college, as well as the administrative and economic management. The College Council is the highest representative and governing body and decision-making body for education and research. The council consists of the academic and administrative staff of the college, representatives of students, employers and the founder. The Council is chaired by the President of the Council.

The main task of the management of the study field and the corresponding study program is to ensure high-quality study content in accordance with the regulatory enactments of the Republic of Latvia and a convenient study process that is understandable and accessible to students and teaching staff. The management process is organized providing two functions: substantive, methodological management and administrative management. Roles and responsibilities for the implementation of these functions have been delegated to the relevant departments and their staff.

Administrative meetings are held for the exchange of information and timely decision-making, as well as electronic means of communication are used. Issues regarding the organization of the study process (incl. Study methods), quality assurance (incl. Discussion of survey results), etc. are considered at the meetings of the administration. The efficiency of management is also promoted by a unified procedure in the study organization in all study fields and study programs, unified document samples and the availability of information on ongoing processes and current events. All the main activities at the college are planned before the new study year, preparing the study calendar, practice schedules, final work development schedules and the annual activity plan. One study program is implemented in the field, therefore the head of the field also performs the duties of the program director. The head of the field cooperates with the teaching staff, evaluating the strengths and weaknesses of the study field, planning the implementation of the study programs, reviewing the content of the study programs, etc.

The study program and at the same time also the management scheme of the study direction is attached in the appendix 4. It depicts that the head of the study program is the driver and main coordinator of the implementation of changes. The motivation for making changes is provided by the analysis of information sources (student surveys, faculty surveys, employer surveys, comparisons with other universities, expert evaluations and legislative requirements and changes in them). Proposals for improvements are made in close cooperation with the methodological commission. They are implemented in cooperation with teaching staff, study department, IT



specialist, library. The process is supervised by the deputy director of studies and research. If changes are made to the study plan, they are approved by the director by order.

Management of the study program is compact, the head of the study program cooperates with the methodological commission, teaching staff and students and the study department. As a small HEI, cooperation is close and collegial, decision-making is fast and flexible.

**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 requirements for starting students are determined in accordance with the procedures specified in the state legislation, in accordance with Articles 46 and 47 of the Law on Higher Education Institutions, as well as the regulations of the Cabinet of Ministers of the Republic of Latvia of October 10, 2006 No. 846 "On Requirements, Criteria and Procedures for Admission to Study Programs". Admission to the study program is regulated by the OTC "Regulations on the Admission Procedure for Learners". The study programs included in the study field can be acquired in the form of full-time (full-time) studies.

Selection criteria for applicants:

- secondary or secondary vocational education document - diploma or certificate of acquisition of education and transcript of records;
- certificates of centralized examinations (hereinafter "CE") in Latvian, foreign language and mathematics.

When registering for undergraduate studies, in accordance with Article 46 (3) of the Law on Higher Education Institutions of the Republic of Latvia, CE certificates are not taken into account in the following cases:

- persons who have completed secondary education before 2004;
- persons who have received education abroad;
- for persons with special needs, by submitting a confirmatory document on exemption from CE, on the basis of Cabinet Regulation no. 112 of 11.03.2003, "Procedures for Exempting Learners from the State Examinations". In these cases, the CE requirements are replaced by corresponding assessment mark of each subject from the graduation certificate.

At the beginning of the study process, after matriculation, students are offered introductory lectures, in which they are introduced to the college, its internal regulations, organization, material and technical base and the study process. In these introductory lectures, students and their range of interests are introduced, and mutual cooperation between students, faculty and staff is encouraged.

Application for studies in the later stages of studies takes place in accordance with Article 47 of the Law on Higher Education Institutions, Cabinet of Ministers 16.11.2004 Regulation No. 932 "Procedure for starting studies in the later stages of studies".

Studies in later study stages of OTC can be started:

1. transferring from another higher education institution;

2. transferring to another study program OTC;
3. resuming studies at OTC after a break.

Recognition of study courses acquired in other higher education institutions is regulated by the Regulations of the OTC "Riga Technical University Agency" Riga Technical University Olaine Technology College "on recognition of competencies acquired outside formal education or professional experience and study results achieved in previous education" (approved at the OTC Council meeting on 16 June 2021). OTC study programs may recognize courses successfully completed in accredited or state-recognized Latvian or foreign higher education institutions, except for the final examinations of the study program; courses of continuing education programs, if credit points are credited for the acquisition of the course in the Latvian higher education credit point or ECTS system study courses. Recognized study courses are included in the academic obligations fulfilled by the student, replacing the study courses of the compulsory (A) part, limited choice (B) part or free choice (C) part of the study program.

For applicants who start their studies at a later stage of studies, the recognition procedure is performed before matriculation. Study courses are not recognized if the content or scope of these courses or the knowledge and skills acquired do not meet the requirements of the program. One course of the OTC study program may be replaced by several acquired study courses and vice versa - the study courses of the OTC may be replaced by one acquired study course. When replacing an OTC study course with one or more courses, the total amount of these courses must be equal to or greater than the amount of the OTC study course.

Recognition of study courses takes place upon receipt of the student's application at the Study Division of the OTC. The applicant shall also attach to the application an academic certificate issued by the higher education institution. An academic transcript (original) with the signature of the relevant official and the seal of the educational institution is accepted for examination. Students who transfer to OTC from higher education institutions of other countries must submit a translation of the academic transcript of the respective higher education institution, which has been approved by the Academic Education Center (Latvian ENIC/NARIC). The study division submits the applicant's application and appendices for review to the Study Results Recognition Commission. The Commission for Recognition of Study Results, using the valid study program plan, makes a decision on the academic recognition of study courses. The head of the study division issues an order on the recognition of study courses.

2021/2022 4 applications

2020/2021 3 applications

The procedure for the recognition of knowledge, skills and competences acquired outside the study programs is determined by the Regulations "On the Recognition of Competences Acquired Outside Formal Education or Professional Experience and Learning Outcomes Achieved in Previous Education" (approved at the OTC Council meeting on 16 June 2021). The Regulations have been developed in accordance with the Cabinet of Ministers Regulations No. 505 of 14 August 2018 "Regulations on the Recognition of Competences Acquired Outside Formal Education or Acquired in Professional Experience and Learning Outcomes Achieved in Previous Education". It determines the procedure for the assessment of study results achieved in previous education or professional experience, the conditions of the recognition procedure, as well as determines the conditions for the formation of a study results recognition commission, their rights and obligations.

A person who wishes to have his/her study results achieved in his/her previous education or professional experience submitted an application to the Study Division of the OTC for recognition of the achieved study results. The person shall attach copies of documents to the application and present the original documents certifying the study results achieved in previous education or

professional experience. Program director, if necessary, conducts interviews with the person, as a result of which makes a resolution on the application of the person and makes a recommendation on possible recognition of study results achieved in previous education or professional experience to the study results recognition commission and informs the deputy director of study and research about the received application of a person regarding the recognition of the study results achieved in previous education or professional experience.

The decision on the recognition of study results achieved in previous education or professional experience is made by the study results recognition commission established by the OTC (hereinafter - the commission). The composition of the commission is approved by order of the director.

The commission shall examine the application and take a decision within one month after receipt of the application. The decision shall indicate the amount of the recognized achieved results in credit points (CP), as well as the name of the study course, where the recognized educational results are credited.

The study results achieved in professional experience are recognized:

1. in the part of the relevant study program that consists of practice, moreover, these study results must be achieved in the field of professional activity that corresponds to the thematic field of education of the study program;
2. in the study course of the study program, upon acquisition of which practical knowledge, skills and competence are acquired.

Learning outcomes achieved in previous education are recognized if they correspond to a higher education degree and are achieved:

1. in continuing vocational education programs, the acquisition of which gives an opportunity to obtain the fourth or fifth level of professional qualification;
2. in a separate course, study part or study module of the study program, which the person has acquired as a listener;
3. in other ways acquired outside formal education, except for study programs that correspond to the regulated professions (in this case, in order to recognize the achieved study results as corresponding to the study course of the study program, the person shall take the examinations specified in the relevant study course).

The study results achieved in professional experience may be recognized only in the amount specified in Section 59.2, Paragraph five of the Law on Higher Education Institutions from the study program. In order for the study results achieved in previous education or professional experience to be recognized, the documents presented by the person must contain clear, unambiguous and complete information about the achieved study results; the person's previous education must meet the requirements for admission to the relevant study program; as well as for the achieved study results it is possible to award at least one credit point. One credit point for study results achieved in previous education or professional experience may be awarded if they have been achieved in an educational process lasting at least one week (40 academic hours).

Admission and matriculation of students, academic recognition of study courses, recognition of study results obtained in previous education or professional experience, matriculation of students in later stages of studies take place in accordance with the process descriptions developed by the OTC (see appendix).

<https://otk.rtu.lv/wp-content/uploads/sites/29/2020/11/Uznemsanas-kartiba.pdf>  
<https://otk.rtu.lv/wp-content/uploads/sites/29/2021/09/par-arpus-formalas-izglitibas-apguto-vai-profesionalaja-pieredze-ieguto-kompetencu-un-iepriekseja-izglitiba-sasniegtu-studiju-rezultatu->

For part-time studies, see 2.1.1. point at the end.

In the event that the implementation of the study program should be stopped suddenly, without the opportunity for students to graduate, students are offered the opportunity to continue their studies in the RTU OTC study program "Food Product Quality Control" or the "Environmental Protection Technology" study program. These study programs have an almost identical block of general education study courses, as well as many chemistry study courses, and as a result of the studies, level 1 or short-cycle professional higher education is obtained, only with a different qualification.

Due to the fact that there are no 1st level or short-cycle professional higher education programs in other universities closely related to the "Biotechnology" study program in Latvia, no agreement has been concluded on the possibilities of continuing studies.

Riga Technical University, whose agency is OTC, implements the academic bachelor's 3-year study program "Biotechnology and Bioengineering". OTC is a structural unit of RTU, for now there is only a verbal agreement that the successful students of the study program "Biotechnology" can continue their studies in the study

program "Biotechnology and Bioengineering" most likely as fee-paying students, because it is based on a fee-based study program.

In the event that the study program is not accredited or the study program license is revoked and the student does not want to continue his studies in another study program, RTU OTC cannot guarantee material compensation, as the source of study financing is state budget funds that are not intended for this purpose. All students study at the expense of the state budget, there are no students who have paid tuition fees. Therefore, in a sense, it can be considered as compensation that in this case RTU OTC issues to each student a free academic certificate for the studied and successfully completed study courses, which can be used in the future both in the labor market and when continuing studies and using the academic recognition of what was learned in previous education.

#### **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.**

When organizing the study process, the study methods should promote the student's responsibility for self-study, they are oriented towards the acquisition of practical skills. Great attention is paid to practical and laboratory work. An integral part of studies is study practice.

The course of studies is determined by the Regulations "On the Procedure of Studies and Examinations" and other regulations and rules. At the beginning of each study course, the lecturer informs about the work to be performed and the evaluation criteria, i.e. intermediate examinations, laboratory work, practical work and independent work scheduled during the semester/semesters.

The study program determines the study courses to be acquired, their amount in credit points, examinations, the amount of study practice, the number of course papers, the type and conditions

of the final examination.

Assessment of students' achievements is based on several regulations: Regulations "On the Procedure of Studies and Examinations" (16.01.2020).

Students have the following examinations in each study course:

- mid-term examination, which promotes qualitative acquisition of the study course. Intermediate examinations are organized in the form of tasks and discussions - students have to prepare answers to specific tasks. The midterm exam is rated on a 10-point scale.
- final examination - this concludes the acquisition of the study course. The final test is a test or exam. The final examination is evaluated on a 10-point scale and can reach up to 50% of the final evaluation of the course. See Appendix 25 "Study Courses".

An integral part of the study program is an internship, as a result of which students submit an internship report to the college for evaluation, as well as present the results of the internship. The final evaluation of the internship consists of the average evaluation of three components: the evaluation from the internship company, the evaluation of the written part of the internship and the evaluation of the presentation of the internship and the student's ability to answer questions. Internships are rated on a 10-point scale.

At the end of the study program, a state final examination is obligatory - elaboration and defense of a qualification paper. The final test is evaluated on a 10-point scale. The knowledge of students in the final examination is assessed by the state final examination commission, the head of which is a specialist of appropriate qualification from another higher education institution or a representative of a relevant profession, as well as the majority of the commission are representatives of professional organizations or employers.

Students have the opportunity to regularly follow their progress at [www.mykoob.lv](http://www.mykoob.lv)

At the end of the semester, students are sent a summary of grades, see Figure 2.

Kursa nosaukums	Semestris	Reģ.datums	Atzīme	Kl	Kārtošanas datums	Pasniedzējs
Darba aizsardzība	I	28.12.2020.	7 (labi)	1	29.01.2021.	Tatjana Reznika
Fizika	I	28.12.2020.	4 (gandrīz viduvēji)	3	29.01.2021.	Ilze Pelēce
Vispārīgā un neorganiskā ķīmija	I	28.12.2020.	7 (labi)	3	29.01.2021.	Anastasija Jēgermane
Inženiergrafika	I	28.12.2020.	7 (labi)	3	29.01.2021.	Svetlana Pomožova
Analītiskā ķīmija	II	21.04.2021.	6 (gandrīz labi)	2	21.05.2021.	Anastasija Jēgermane
Mikrobioloģija	II	21.04.2021.	8 (ļoti labi)	3	21.05.2021.	Laura Zorža
Svešvaloda (Angļu valoda)	II	19.04.2021.	7 (labi)	4	21.05.2021.	Abdelmajid El Hadri
Datorika	II	21.04.2021.	10 (izcili)	2	21.05.2021.	Dainis Katcens
Augstākā matemātika	II	10.03.2021.	7 (labi)	5	08.04.2021.	Elita Kazakēviča
Organiskā ķīmija	II	21.04.2021.	4 (gandrīz viduvēji)	3	21.05.2021.	Māris Utināns
Biokīmija	II	21.04.2021.	8 (ļoti labi)	3	21.05.2021.	Viktors Vibornis
Prakse	II	21.05.2021.	7 (labi)	6	02.07.2021.	Tatjana Reznika
Procesi un aparāti	II	21.04.2021.	6 (gandrīz labi)	3	21.05.2021.	Tatjana Reznika
Kursa darbs Procesi un aparāti	II	21.04.2021.	6 (gandrīz labi)	3	21.05.2021.	Tatjana Reznika
Rūpnieciskā biotehnoloģija	II	21.04.2021.	7 (labi)	3,5	21.05.2021.	Jeļena Pīsarjonoka
Vides aizsardzība	III	04.01.2022.	7 (labi)	1,5	28.01.2022.	Ivars Pēkainis
Ekonomika	III	04.01.2022.	7 (labi)	3	28.01.2022.	Terēza Korsaka
Fizikālā un koloidālā ķīmija	III	04.01.2022.	7 (labi)	3	28.01.2022.	Anastasija Jēgermane
Pārtikas biotehnoloģija	III	04.01.2022.	6 (gandrīz labi)	2	28.01.2022.	Jeļena Pīsarjonoka
Fermentpreparātu iegūšanas tehnoloģija	III	04.01.2022.	7 (labi)	2	28.01.2022.	Jeļena Pīsarjonoka
Sūnu bioloģija	III	04.01.2022.	6 (gandrīz labi)	2	28.01.2022.	Laura Zorža
Toksikoloģija (izvēles kurss)	III	04.01.2022.	4 (gandrīz viduvēji)	1	28.01.2022.	Laura Zorža
Ģenētika un DNS tehnoloģijas	IV			2		
Vides biotehnoloģija	IV			2		
Tehnoloģisko procesu automatizācijas pamati	IV			3		
Kvalitātes nodrošināšanas sistēmas un normatīvi	IV			2		
Likumdošanas pamati	IV			1		
Instrumentālā analīze	IV			3		
Civilā aizsardzība	IV	04.01.2022.	nav vērtējuma	1	28.01.2022.	Andrejs Kotovs
Zāļu preparātu iegūšanas tehnoloģija	IV			4		
Uzņēmējdarbības pamati	IV			2		
Psiholoģijas pamati	IV			1		
Kvalifikācijas prakse	IV			10		
Kvalifikācijas darbs	IV			10		

**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.**

The college pays great attention to academic integrity by informing students about it on the first day of study. The regulation of academic honesty is the Regulations on the Procedure of Studies and Examinations (16.01.2020).

See "Latvian only": [https://otk.rtu.lv/wp-content/uploads/sites/29/2020/05/studiju-un-pa\\_rb.-nolikums-2020-1.pdf](https://otk.rtu.lv/wp-content/uploads/sites/29/2020/05/studiju-un-pa_rb.-nolikums-2020-1.pdf)

The teaching staff's commitment to the basic principles of academic integrity in their attitudes and behavior, even in the face of challenges, is based on the following core values: honesty, dignity, justice, trust, responsibility and courage.

The student observes the principles of academic honesty in the study process. The following acts in particular are considered a breach of academic integrity:

- offering any material value, property or other benefit for the performance or non-performance of an activity in the academic interests of the student or another person;
- participation in a breach of academic integrity, i.e. sk. transferring the results of one's individual work to other persons or submitting the results of a team's work on one's own behalf, if it has been defined as teamwork, taking a test on behalf of another student, signing a site on another student's site or other documents, etc .;
- giving false information about yourself and your work;
- unauthorized acquisition of test questions or test tasks;
- use of unauthorized aids in the study process or plagiarism.

Plagiarism is considered to be:

- transformation of another job or part of a job into one's own job;
- changing the words but copying the structure and idea of the source sentence without using a reference.

To date, no cases of academic integrity and plagiarism have been reported at the College.

The originality and plagiarism of the qualification papers are checked using [www.plag.lv](http://www.plag.lv)

## **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.**

A number of procedures are used to ensure quality (see Part I, Section 1.3 of the self-assessment), which aim to ensure compliance of the study process, study programs, scientific and creative activities, as well as the activities of the higher education institution with the requirements of

regulatory enactments, students and the labor market needs.

Example:

During the reporting period, it was found that several students had difficulties with the development of the course paper and, insufficient results were presented due to insufficient understanding of the research design. Analyzing the reasons at the faculty meeting, it was concluded that it is necessary to change the approach to the development of studies, projects and final theses:

- the procedure for elaboration of works was clarified (incl. structure of works, choice of methodology, principles of using bibliographic sources, etc.);
- careful selection and application of research methodology has been introduced at the beginning of the development of study papers;
- more individual consultations were also provided during the development of the course paper.

The direction of study and the study program included in it are improved according to the demand of the national economy, recommendations of experts, development trends of the industry and science. Improvement and its mechanisms are described more precisely in chapters 2.6.1. on the implementation of expert recommendations and 3.1.1. on changes in the study program, 3.2.1., where the study program content analysis.

**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 study program is evaluated by the head of the study program and the methodological commission, which consists of 3 teaching staff, including 2 elected assistant professors, the head of the study program and the deputy director of studies and research. The methodological commission meets once every two months and examines issues that have arisen during the course of studies in connection with methodological work. Thus, the study program is continuously improved in the daily methodical work.

The study program as a whole is reviewed once a year in the spring, when the results of the surveys of students, teaching staff and employers have been obtained. Expert evaluations, if any, and legislative changes, if any, are identified, and the program's compliance with all requirements and opportunities to improve it accordingly by the beginning of the new academic year are judged. However, no significant changes are made to the study program every year. Rather, the content of study courses, the requirements for the development of study papers or the requirements for internship reports are refined so that they are relevant to the needs of students and the labor market. Major changes in the study program have been made in the run-up to accreditation, so that these changes have been evaluated and approved by experts, or after accreditation, based on expert recommendations.

In accordance with current trends in the industry and employers' requirements, the content of study courses is being improved. It is carried out by the teaching staff responsible for the study course, incorporating changes in the study course description when they have been discussed in the methodological committee and coordinated with the head of the study program. The inclusion

of new study courses in the study plan, changing or removing study courses from the study plan has been considered based on the recommendation of the experts of the accreditation commission or based on the new requirements of a new professional standard, which must adjust the study content accordingly. Significant changes in the study program, such as reducing the duration of studies, as was the case in the "Food Quality Control" study program, have been initiated at the college, based on the study of the labor market situation and the recommendations of employers. In this case, all the above-mentioned involved parties cooperate. Changes are prepared and forwarded for discussion in the methodological council by the head of the study program in cooperation with leading teaching staff. When an agreement is reached on making changes, they are approved at a meeting of the methodological council. Significant changes are submitted for evaluation to the AIC, which engages an expert, and only then are they approved and can be implemented. The changes are described in the annual and self-assessment reports submitted to the accreditation commissions. The changes made in the "Biotechnology" study program during the accreditation period, including in connection with the approval of the new Biotechnological process specialist profession standard, are specifically described in Chapter III 3.1.1. in the subdivision.

**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.**

Basically, students express complaints and suggestions by submitting questionnaires. To ensure that complaints and suggestions do not escalate into conflict, student surveys are always carefully reviewed and responses provided when information is received. Information exchange and correspondence with students takes place orally and on the platform [www.mykoob.lv](http://www.mykoob.lv)

If a situation has arisen that the student is not satisfied with the quality of the lecturer's work or the organization of the study process, then in this case the program director or head of the study department conducts discussions with the lecturer, emphasizing the letters. After the interview, the program director informs (in writing or orally) the student about the conversation and asks to report it immediately if similar situations are repeated. If students submit proposals on the improvement of the study process in a conversation with the director of the study program or the Student SelfGovernment, then the recipient of the proposal applies to the Director. Proposals are considered at the administration meeting, evaluating the feasibility of their implementation, the amount of resources required, etc.

The submitter of the decision proposal is informed in writing to the e-mail address indicated in the application.

Students are informed orally about the proposals and complaints mentioned in the student survey.

**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.**

In order to make informed management decisions, OTC regularly collects, analyzes various data, which serve as a basis for the development and implementation of measures to improve the field of study and is an integral part of the internal quality assurance of the college:

- proposals and complaints submitted by students are analyzed. On the basis of it, innovative solutions are selected, developed and implemented in the study process, which allows to adapt the study forms and content to the needs of students and to achieve the intended study results as effectively as possible. For example, during the reporting period, thanks to the research of students' profiles, possible options for the provision of laboratory work have been sought, i. e. Covid-19 unvaccinated students receive information using the zoom platform.
- Regulations of study practices have been revised.
- Once a month, study progress and success indicators are analyzed, which helps to ensure an individual approach to serving students and providing the necessary support.
- Student satisfaction indicators are analyzed: once a year for satisfaction with the program; at the end of each study course on satisfaction with the study course. The indicators obtained in the survey and the students' recommendations serve as a basis for the improvement of the study content and process, support and allow to evaluate the solutions implemented in the previous period and their efficiency. See Appendix 21 "Study Course Questionnaire".
- Graduate satisfaction indicators are analyzed once a year. Based on them, the content of the study program, its compliance with the needs of the labor market and the career paths of graduates are evaluated.
- They also serve as a basis for the evaluation and improvement of the service provided by the college.
- Performance evaluation is performed in the college: once a year with administrative staff, once a year with teaching staff.

**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).**

In 2020, OTC developed a new website - <https://otk.rtu.lv>. The website has been developed in accordance with the Cabinet of Ministers Regulations No. 445 "Procedures for Institutions to Post Information on the Internet", data security and protection requirements. The website is used for the formal provision of the institution's functions. The information is supplemented and updated as necessary. New sections "Library" and "Laboratories" have been developed and are available on the website.

Information about OTC can also be found on the websites of several cooperation partners, for example, <https://www.rtu.lv/> , <https://www.lifescience.lv/> , <https://www.olaine.lv/lv#gsc.tab=0> etc. Through the websites of cooperation partners, OTC provides information about the educational institution and the study programs offered.

The Director of the College is responsible for the compliance of the information available on the College's website with the information available in the official registers.

## 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.**

Memorandum of Understanding between the Ministry of Education and Science and Riga Technical University The agreement of 4 February 2019 states:

- Cabinet Regulation No. 1316 of 12 November 2013 "Procedures for Calculating and Granting Basic Funding to Scientific Institutions

- MES annual order "On the allocation of basic funding to scientific institutions IUU. year "

Data on available funding for research and/or artistic creation, its sources and their use for the development of the study field and corresponding study programs - 32 170

euros, project "Pilot Platform of Vocational Excellence Water" (PoVE Water) 612632-EPP-1-2019-NLEPPKA2-SSA-P collaboration with Friesland College, The Netherlands.

An online training platform was set up during the Pilot PoVE Water project, where leading experts from the participating institutions prepared training materials on various topics related to water supply and quality control. The lecturer of RTU Olaine Technology College participated in the creation and maintenance of the virtual training platform, developing the study material "Microbiological Control of Drinking Water". One of the sections of the theoretical material was devoted to potential disease-causing microorganisms that spread through water. The practical part (laboratory work protocol and video material) is dedicated to microbiological testing of water using the membrane filter method. All study materials are available to college students and faculty and can be used as additional teaching aids/study support and are available at: <https://resources.povewater.eu/pvle/>

The project strengthened international cooperation with various partners from the European Union, resulting in an increase in various activities, such as the opportunity for students and teachers to participate in online exchange events organized by Glasgow Clyde College in the UK and Friesland College in the Netherlands.

The source of funding for the study program - *a grant from the state budget from general revenues for the provision of studies*

### **Analysis of financing for the reporting period from 2013 to 2018 Olaine College of Mechanics and Technology**

<i>Year</i>	<i>Funding in total</i>
2013	158 963

2014	191 244
2015	315 086
2016	323 648
2017	346 881
2018	311 889

**Years 2019 - 2021 Riga Technical University agency "Riga Technical University Olaine Technology College"**

<i>Year</i>	<i>Total number of study places</i>	<i>Funding in total</i>	<i>Number of study places for the biotechnology program</i>	<i>Funding for the biotechnology program</i>	<i>Basic costs of study places at opt. coefficients</i>
2019	102	328 872	44	142 144	3 230,54
2020	72	386 938	31	141 651	4 405,04
2021	72	362 732	31	151 641	4 727,31
2022	71	372 956	31	184 734	4 727,31

**Based on the study costs of 2022 in the thematic area "Manufacturing and processing", available funding is 184,734 euros, including 9,323.26 scholarships.**

Costs per student are 4,992.81 euros, divided:

- The basic cost of a study place is 1,630.11 euros (one thousand six hundred and thirty euros and 11 cents), at the optimal coefficients "2.9" in 2022 and 100% provision - 4,727.31 euros, or 94.68%
- Estimated funding for the social security of study places in professional study programs - 251.98 euros, or 5.05%
- sports, culture, service hotel costs 13.52 euros, or 0.27%

The number of study places financed from the state budget in 2022 in the program is 31 and this is the minimum number of students to ensure the rehabilitation of the study program.

**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.**

Laboratory works take place in OTC laboratories. Until 2020, they took place in a separate building, a laboratory building. In the autumn of 2020, 11 new, modern laboratories with equipment suitable for the implementation of educational programs were opened, which are located in the main

building of the college. Of these 11 new laboratories, 9 are also intended for the Biotechnology study program.

Laboratories are used and planned to be used in the future in accordance with the following objectives:

1. the study environment of the 1st level professional higher education STEM study at OTC has been improved;
2. equipment has been installed so that students can fully acquire the skills needed in the labor market, as well as promote new innovations and technological progress in the future, thus strengthening Latvia's competitiveness at the regional, European and global levels;
3. Laboratories that meet the requirements of the labor market have been established and are directly contributing to the achievement of the goal of SAM,  
as students in innovative laboratories acquire professional competencies that meet the requirements of companies in the sector;
4. Laboratories and their equipment corresponds to the areas of smart specialization mentioned in the Latvian Smart Specialization Strategy - biopharmacy, biotechnology, information and communication technologies, smart materials and technologies and engineering systems.

#### 1. Inorganic and organic chemistry study laboratory

The inventory, equipment and furniture necessary for the study process in the study subjects in which the laboratory work is performed in the laboratory of organic and inorganic chemistry have been installed.

In the laboratory you can learn the most important regularities of chemistry, knowledge about chemical elements, their compounds, as well as the transformation and properties of substances. While working in laboratories, students synthesize inorganic and organic compounds, identify them and study their properties.

The laboratory is used in OTC study programs: Biotechnology, Environmental Protection Technology, Food Quality Control. Professional secondary education programs: Chemical Technology, Environmental Protection, Food Quality Control.

The main equipment that is installed: fume cupboard, rotary evaporator with vacuum pump, water deionizer, analytical balance, ultrasonic bath, hand conductivity meter, oven, etc.

#### 2. Analytical chemistry study laboratory

Equipment and furniture have been purchased, which are necessary for the study process in the study subjects in which laboratory work must be performed in the laboratory of analytical chemistry. The laboratory is used in OTC study programs: Biotechnology, Environmental Protection Technology, Food Quality Control. Professional secondary education programs: Chemical Technology, Environmental Protection, Food Quality Control.

Main equipment installed: fume cupboards, muffle furnace, water bath for butyrometers, milk freezing point detector, infrared spectrometer, Karl Fischer titrator, centrifuge with cooling, spectrophotometer, melting point detector, etc.

#### 3. Chemical process study laboratory

The inventory, equipment and furniture necessary for the study process in the study subjects in which laboratory work is to be performed in the laboratory of chemical processes was installed.

The laboratory is intended to be used for OTC study programs: Biotechnology and Environmental Protection Technology, and planned study programs according to specialties: chemistry specialist, pharmaceutical process specialist and chemical process specialist.

The main equipment to be installed: chemical reactor feed plant, stirred reactors, tube reactor, series stirred reactors, batch stirred reactor, flow reactor, laminar flow reactor, chemical catalysis equipment, oxidation and rectification training benches, etc.

#### 4. Pharmaceutical form technology study laboratory

Installed inventory, equipment and furniture necessary for the study process in study subjects in which laboratory work must be performed in the pharmaceutical form technology laboratory. The laboratory is used in the OTC study program: Biotechnology and planned programs with specialties: chemistry specialist, pharmaceutical process specialist and chemical process specialist. For the vocational secondary education program: Chemical technologies.

Main equipment installed: tablet press, tablet tester, tablet abrasion tester, tablet disintegration tester, bulk density tester for powder products, analytical balance, sieve shaker, fluidized bed granulator, gas chromatograph, etc.

#### 5. Study laboratory of biotechnology and renewable energy processes

The inventory, equipment and furniture necessary for the study process in the study subjects in which laboratory work is to be performed in the laboratory of biotechnology and renewable energy processes were installed.

The laboratory is used for OTC study programs: Biotechnology and Environmental Protection Technology. Vocational secondary education programs: Chemical technologies and Environmental protection.

Fermentation and inoculation of microorganisms are carried out in the biotechnology laboratory using molecular methods, the use of molecular methods in the systematics of living organisms.

Main equipment installed: laboratory-scale bioreactors, spectrophotometer, climatic testing chamber, bioethanol, biogas production station, homogenizer, high-capacity centrifuge, cooling heating thermostat, miniature centrifuge, electrophoresis system, etc.

#### 6. Viscous mass preparation study laboratory

The inventory, equipment and furniture necessary for the study process in study subjects in which laboratory work must be performed in the viscous mass preparation laboratory have been installed. The laboratory is used in study programs planned by OTC with specialties: chemistry specialist and chemical process specialist. Vocational secondary education programs: Chemical technologies and Engineering mechanics.

The main equipment installed: draft cabinet, laboratory disperser, water deionizer, viscometer, applicator, impact tester, gloss meter, color meter, laboratory mill, combined planetary - dissolver mixer, adhesion measuring machine, non-contact coating thickness meter, hand-held pH meter etc.

#### 7. Food technology study laboratory

The inventory, equipment and furniture necessary for the study process in the study subjects have been installed, in which laboratory work in food production technology and quality control laboratory must be performed. The laboratory will be used by OTC study programs: Biotechnology, Food Processing and Production Technology and Food Quality Control. Professional Secondary Education Programs: Chemical Technology and Food Quality Control. Main equipment installed: pastry and baking oven, kettle, combi oven with drying/smoking function, ice generator, meat

cutter, meat mincer, sausage syringe, clipper for closing the ends of the sausage, ice cream/sorbet machine, multifunctional pot, universal fruit and berry additive making machine, pasteurizer, planetary mixer, electric stove, etc.

#### 8. Study laboratory of water purification and treatment processes

The inventory, equipment and furniture necessary for the study process in study subjects in which laboratory work must be performed in the laboratory of water purification and treatment processes have been installed.

The laboratory is used in the OTC study program: Environmental protection, and for the planned program with the specialty: industrial equipment maintenance specialist. Vocational secondary education programs: Environmental protection and Engineering mechanics.

Main equipment installed: Separation sedimentation tank, ion exchange training bench, absorption, reverse osmosis training bench, advanced oxidation, water treatment station, etc.

#### 9. Microbiology study laboratory

The laboratory is used in OTC study programs: Biotechnology, Environmental Protection Technology, Food Quality Control. Professional secondary education programs: Chemical Technology, Environmental Protection, Food Quality Control. Modern equipment and furniture are installed in the study subjects, where laboratory work related to microbiological testing, DNA extraction and research, water testing (total number of microorganisms, E. coli, coliforms, and enterococci) and other microbiological examinations must be performed. Students can perform water testing as well as microbiological testing of food, cosmetics and environmental samples, as well as plant tissue and cell culture research. Professional secondary education programs: Chemical Technology, Environmental Protection, Food Quality Control. Main equipment installed: fume hood, water deionizer, laminar air flow cabinet, incubator with heating and cooling function, automatic vertical autoclave, trinocular microscope with video camera, laboratory mixer, microscope, orbital shaker, electrophoresis equipment, etc. Lecturers also have portable projectors and tablets for laboratory use. Laboratories have all the necessary material and technical support for the development of practical skills and competencies required for the profession of food quality specialist. Students are given the opportunity to use study laboratories, to develop their research work outside of classes. In connection with the rapid development of food technology, it is necessary to continuously improve and perfect the material and technical base of the study field in order to ensure the quality of education that meets the requirements of the modern labor market.

*See the material and technical base in the appendix "Study course resources and provision"*

**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.**

At the beginning of the study course, the lecturers and the librarian acquaint the students with the descriptions of the study courses and the study and additional literature mentioned in them, which is available in the OTC library. The library has general literature, audiovisual and periodicals in Latvian, English, Russian and German.

The library collection consists of a total of 9755 items, 30% of the collection items are educational literature related to the Biotechnologies program. ISO standard licenses are also offered to interested students.

At OTC, the librarian recommends the following open access databases to students, which are not specific to this program, but contain topics on any current field and are helpful in translating and understanding terms and foreign words in any field. These links to databases are also posted on the College's website for students to use during distance learning:

Academia.edu. <https://www.academia.edu/>

Thesaurus <https://tezauris.lv/>

Terms <https://termini.gov.lv/atrast/t%C4%93zaurs>

NLL portal books Indb <https://gramatas.lndb.lv/> - here you can find and read many textbooks in the digital environment, not only the most recent, but there are many books related to biotechnology.

Zenodo <https://zenodo.org/>

Latvian encyclopedia <https://enciklopedija.lv/>

The Academia.edu database is a multidisciplinary scientific database where you can retrieve scientific publications in all fields, including biotechnology and chemical technology. Many are paid.

In the Tezaur database, you can find explanations and definitions of words and concepts in any field.

on the LNB portal gramatas.lnb.lv you can read the given books, here you can find and read freely books in the fields of chemistry and biotechnology.

On the academic terms website, students can familiarize themselves with explanations and translations of scientific terms.

Zenodo is a multidisciplinary scientific research publication database (thus including research in chemical technology and biotechnology), where many studies are free and open access.

Basic scientific explanations and descriptions of chemical technology and biotechnology can also be found on the Latvian encyclopedia portal.

Statistics on the use of these databases and websites cannot be provided, as they are open access resources for anyone and anywhere with Internet access.

The RTU Olaine Technology College has signed a multidisciplinary database EBSCO national electronic resource package - Academic Search Complete subscription agreement for 2023 with the Cultural Information System Center (therefore, the multidisciplinary package includes biotechnology and chemical technology industries).

The package - Academic Search Complete: <https://www.ebsco.com/products/research-databases/academic-search-complete> is one of the world's largest comprehensive collections of multidisciplinary full-text research publications. It covers indexed and annotated full-text journals, publications in PDF format from 1887.

Thanks to the project "Improvement of the study environment of the Riga Technical University Agency "Riga Technical University Olaine Technology College" 967 books have been purchased,

which include both sources of study information in Latvian and English for university students and cultural and historical literature.

The library, in cooperation with the ILL (interlibrary loan), subscribes to the study literature required for any branch and field, which is missing from the library. On the part of the teaching staff and management, the College evaluates and considers the possibility of subscribing to the necessary databases for the specified program and direction. Every academic year the lecturers of the study courses submit to the RTU OTC librarian the list of necessary information sources to improve the library collection with the latest information sources in the fields of study, the library evaluates the existing collection every year, outdated sources of teaching and other literature.

The library reading room is available to 20 visitors at a time. The library has 6 computers with Internet connection, as well as 2 copiers, 2 printers and 3 scanners, which students use in the study process.

The library provides for issuing and studying existing scientific literature on site, as well as for takeaway. The library helps students in their search for information by telling them about relevant websites and databases and introducing them to information search options.

The total number of active users in the library in 2021 was - 198, the total number of physical visits - 7223.

The library has 2 rooms - a reading room and a storage room. The total area of the reading room is 80 m<sup>2</sup>, the total area of the storage room is 60 m<sup>2</sup>.

The use of electronic materials retrieved by teachers from databases and other websites is used as a practice in the College to ensure the quality of the study process.

The library offers study materials prepared by lecturers in a digital environment, as well as standards for designing study courses and qualification papers. If necessary, the librarian advises students on the resources available in the library and their use, as well as helps to search for quality information on websites and open access databases.

The library is open for information retrieval. The working hours of the library allow you to easily use the services of the library - 5 times a week its working hours are from 8.30 am to 5.00 pm. The library's working hours are subordinated to the needs of students, 3 days a week from 8.00 - 17.00, twice a week from 9.00 - 18.00, with lunch from 12.00 - 13.00, you can also agree to subordinate the working hours to the needs of students. RTU OTC website has a section "Library", which provides information about library services and introduces the latest news and digital information resources.

**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.**

An e-environment is available for the needs of the study process: OTC website, Mykoob and Moodle. Mykoob is used as a communication platform and students have transparent topics and assessments. Moodle is used as a website for study course materials, independent work, practical work and midterms (tests). At the beginning of the study course, each teacher/lecturer introduces



the student to the Moodle environment and the placed materials and their availability. On the Moodle website, lecturers enter all the independent work and their completion times, as a result of which students have transparent completion times in the calendar.

During the Covid-19 pandemic (distance learning process), lecturers used Zoom, Skype platforms to conduct lectures, but the materials were posted in Moodle or sent to Mykoob e-environment. Practical work (including laboratory work) was recorded by teachers/lecturers in the laboratory and sent to students, in other study courses such as chemistry, biochemistry, microbiology, etc. virtual labs were used: labster.com, chemcollective.org, etc. platforms, as well as simulations and entries available on youtube.com.

### **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.**

OTC has full-time lecturers and visiting lecturers, see Annex 9. "Composition of the academic staff"

A job advertisement is placed on the website to attract teachers. Due to limited resources, ads are not placed on paid platforms. However, in recent years, the response to job postings has been low. In order to address the issue of the involvement of the teaching staff, the lecturers, in cooperation with other higher education institutions, are addressed in person, who mostly establish a positive cooperation for more than one academic year.

Regardless of the status of a lecturer in a college, the evaluation of candidates is based on the following criteria:

- Acquired education;
- Pedagogical work experience;
- Professional work experience;
- Achievements in science and/or creative work;
- Communication skills.

When starting work at the university, each lecturer is introduced to the organization of the study process, work safety and fire safety instruction is given, the lecturer's profile is created [www.mykoob.lv](http://www.mykoob.lv), information about work and opportunities to provide support in the e-environment is provided, etc. induction activities.

Information about the organization of the study process, scientific and creative activities, internal regulations is available on the college's website or the information is sent to the platform [www.mykoob.lv](http://www.mykoob.lv). The quality of the work of the teaching staff is assessed by analyzing the results of the student survey (twice a year), scientific and creative activities (once a year), adherence to the schedule, communication with the administration and students and the number of complaints submitted (if applicable). Teachers are informed about the results of the evaluation of the quality of their work, introducing them to the results of the survey, etc. If shortcomings are identified, they are discussed individually with each teacher, highlighting actions to address the shortcomings. Interviews are organized by the director of the study program.

see

[https://otk.rtu.lv/wp-content/uploads/sites/29/2021/01/Nolikums\\_-par\\_akademiskajiem\\_amatiem\\_20\\_10\\_2020.pdf](https://otk.rtu.lv/wp-content/uploads/sites/29/2021/01/Nolikums_-par_akademiskajiem_amatiem_20_10_2020.pdf) "Par akadēmiskajiem amatiem". The regulations attached to the website are available in Latvian.

**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.**

Upgrading the qualification of the teaching staff of the study field OTC organizes the following events for raising the qualification of the teaching staff:

- 1) Scientific seminars. Their aim is to promote the involvement of teachers in research, as well as to provide support for the preparation of publications in internationally cited databases;
- 2) Methodological seminars;
- 3) Methodological conferences;
- 4) Participation in international scientific conferences in Latvia;
- 5) Courses according to the defined learning needs.

In-service training activities are organized taking into account the development priorities of the university and current events in the industry.

#### **Staff motivation and development improvement**

<i>Remuneration element</i>	<i>Activity</i>	<i>Justification</i>

Improvement of the monetary remuneration system	Evaluation of results. A fair and adequate remuneration system for the country's economic situation	<p>Regular evaluation of employees - remuneration is directly related to work results. Depending on the results of the evaluation, the employee's training and development needs, professional development opportunities and goals for the next period are identified. Staff evaluation takes place in accordance with 10.07.2012. Cabinet Regulation No. 494 "Regulations on Performance Evaluation of Employees in State Direct Administration Institutions", which prescribes the procedure for evaluating the professional development of employees and individual contribution to achieving the goals of the institution once a year or more often. The selection and operation of the academic staff at the College is regulated by the Regulations of the OTC, which have been developed in accordance with the Law on Higher Education Institutions and the Law on Vocational Education. Requirements have been set for applicants for academic and elected positions (assistant professor, lecturer), professional experience and performance of applicants is assessed. It is planned to establish an internal quality evaluation commission, which will develop criteria for the improvement of teachers' salaries in accordance with the results of the evaluation of the quality of pedagogical work. Adherence to and evaluation of personnel selection procedures ensures that OTC teaching staff are academically educated, professional specialists with excellent pedagogical competencies. General staff are professionals in their field. The aim of the evaluation is to work more qualitatively with a higher sense of responsibility, to get involved in research activities.</p>
	Career and growth opportunities	By developing the employee's professional skills, the result is achieved faster, added value is created - efficiency, daily routine is reduced. Opportunities for professional development are created by fulfilling one's own and the institution's mission. It is necessary to interest teachers in active participation in the activities offered by ERASMUS +, international seminars and conferences, internships in industry companies.
	Safe working environment	Safe, aesthetic work environment, ensuring good working conditions - premises (warm, ventilated, sufficiently lit), inventory and equipment in working order, ICT equipment. Sufficient raw materials, substances, etc. If necessary, to provide user support in working with ICT technologies.
	Social protection (guarantees)	Statutory mandatory contributions are made. The person is socially insured. Compulsory annual health examinations are paid for. We strive for the possibility to provide a health insurance policy, if necessary, the purchase of glasses.

Improvement of the non-monetary remuneration system	Employment contracts in accordance with the law. Job descriptions	Clear, understandable working conditions and responsibilities. Acceptable scope and policy of the institution. Trust has been given and authority given.
	Motivation	<ul style="list-style-type: none"> <li>● Setting goals, identifying needs. A conversation about the results to be achieved and the competencies to be developed.</li> <li>● Task setting - focus on what needs to be developed.</li> <li>● Attitude building. Increase employees' confidence in their abilities by providing positive feedback on their achievements, on the efforts made, indicating the progress towards the desired success.</li> <li>● Recognition for quality work done.</li> <li>● Satisfaction with what has been done.</li> </ul>
	Support for "young people"	Adaptation package. A support plan with a goal and objectives is defined. Scheduled work schedule. An assessment has been made as to whether the expected result has been achieved. It is necessary to develop a support program, including the attraction of graduates of OTC college study programs to work at OTC.
	Formal events	Information meetings, gatherings, sittings. Progress in fulfilling tasks and responsibilities. Information about the processes taking place in the institution, involving employees in the planning and execution of important tasks.
	Informal events	Promoting a sense of belonging to the OTC family, the chemical, pharmaceutical, biotechnology, environmental and food and related industries. Free and pleasant atmosphere. Creating and maintaining traditions. Regular events to strengthen team spirit and loyalty.
	Needs assessment	Questionnaire with the aim to put forward proposals for the improvement of the staff motivation system and its development

We use the general motivation model in staff motivation and development improvement planning:

1. Identify needs;
2. We are looking for opportunities to meet needs;
3. Choose actions to meet needs;
4. Evaluate the result achieved in meeting the needs;
5. We are looking for new needs.

### **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.**

17 lecturers are involved in the implementation of the study field, see 9. in the Annex. "Composition of the academic staff". 2 lecturers from 2022/2023 have been elected to the college, and 15 lecturers are guest lecturers. Appendix 10 includes lecturer`s CV`s in Latvian and English, which include work experience, education, seminars and courses, projects and references to scientific publications. Processing the information included in the tables, it can be observed that the qualification of the academic staff employed in the study program of the study field corresponds to the implementation of the goals and tasks of the higher school, because. In Appendix 11 "Certificate" there is an indication of the lecturer`s national language skills.

The workload of the teaching staff includes the following elements of academic work: management of study courses, updating of study courses, methodological work, scientific research and creative activities (participation in conferences, projects, research and preparation of publications, etc.). During the reporting period, no teaching staff was provided full-time. Faculty members have the opportunity to participate in the Erasmus + mobility program. The number of outgoing teachers is limited by the number of mobilities required and the amount of funding allocated.

**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.).**

In the study process, OTC provides students with the following support:

1. Information support. Information about the organization of the study process is available on the OTC website, information about the most important news, conferences, events, internship opportunities, job opportunities is regularly sent to mykoob.lv.

2. Methodological support:

- the teaching staff introduces the study course materials, course acquisition requirements, links to freely available bibliographic sources. All this facilitates access to the necessary information for study courses;
- consultations on the acquisition of the study course in person and electronically (e-mail, Skype, Whatsapp);
- consultations on the development of studies and final theses;

3. Career support:

- guest lectures with industry professionals on the challenges of specific professions;
- study tours in companies and organizations;
- participation in professional competitions,
- support for internships is provided where necessary.

4. Financial support:

- opportunity to receive a budget study place;
- apply for a budget and a one-time scholarship.

5. Technical support: prevention of e-environment malfunctions, requirements for devices used in the study process.

Students of RTU system and subordinate institutions have the opportunity to receive psychological support in the Student Service of Riga Technical University in the following areas:

- feel difficulties in planning time for study work and rest;
- unable to cling to tasks and overcome laziness;
- experience prolonged stress and anxiety or experience significant changes in your life.
- as well as in cases of crisis (losing a loved one, experiencing violence, fighting suicidal thoughts, etc.).

Psychologist support for students and employees of RTU system and subordinate institutions is free of charge.

The purpose of the psychological support program is:

- to help students develop new strategies for managing study-related stress and time planning;
- to help see a solution to communication difficulties, lack of motivation, long-term malaise, burnout syndrome, etc. t. t .;
- to promote the psychological well-being of students and employees of the RTU system and subordinate institutions.

All rooms in the college (including classrooms, laboratories, utility rooms, toilets) are regularly cleaned and ventilated.

The surroundings correspond to functional aesthetics. The environment and facilities are also adapted for persons with disabilities.

## **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).**

The closest cooperation is with the institute BIOR, where the largest number of practice places is realized and study tours are organized regularly. The practical training of students is highly valued in the laboratories of production companies. Specialists of biotechnologies employers are invited to get involved in the development and defense of students' qualification papers, as well as to participate in the qualification examination commission.

In the investment and development strategy of OTC for the next period, one of the main strategic goals is to promote the improvement of practical scientific activities in the institution. This is to be achieved through the following activities:

- linking education and research and thus improving the quality of studies;
- conducting research on the development of new products and technologies;
- creating topical educational programs in the field of STEM;
- as well as conducting a feasibility study for commercialization of the planned research projects.

### **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.**

With the establishment of the new, modern 11 laboratories in the premises of OTC, the activities of scientific research and their connection with the study process must increase significantly. The use of scientific research results in the study process should be especially encouraged.

In order for companies in the industry to be able to use the latest technologies, create new products and collaborate effectively with research organizations, they need their own highly qualified specialists. Such professionals will significantly increase productivity and product value by

creating and using innovative products and technologies to improve the profitability of companies. High-quality provision of specialists in the fields of specialization of OTC, incl. biotechnology is one of the basic preconditions for the sustainable growth of the sector. Carrying out research of common interest OTC will carry out the necessary applied research for the industry. Certain groups of researchers will make a positive contribution to the productivity of companies in the sector and increase the value of their products by working with companies on projects of common interest.

The teaching staff not only publishes the results of their research in the annual collection of scientific articles of the college, but also uses the results of the research in improving the content of their taught study courses

The OTC will focus on quality and research challenges in basic science, which studies, analyzes and explains general patterns regardless of their practical application. This will promote competition between OTC pupils and students in the labor market and increase the quality of education received.

Several teaching staff members include elements and conclusions of their scientific articles and research in their lectures and practical work for students. Teaching staff also mostly compile their course descriptions on the basis of various scientific studies in their subject areas.

The lecturer, who teaches the study course Microbiology, has conducted, for example, research on the following topics: "Possibilities of using *Kluyveromyces Marxianus* in biotechnological production processes", "Beneficial role of microbial biofilm in biodegradation processes" Docent, who is a co-author of the study "Recycled polypropylene based blends With Ethylene octene copolymer and nanocomposites with zinc oxide" leads the qualification practice and qualification works, as well as teaches the study course "Processes and devices". Another assistant professor has solved didactics and teaching methodology issues in her studies in her taught study courses: "Using of virtual laboratory works in Physical and General chemistry with works examples", "Promoting the acquisition of Physical chemistry in distance learning", The lecturer of the study courses "Industrial Biotechnology" and "Food Biotechnology" has conducted a study "Investigation of the growth and reproduction process of *Saccharomyces cerevisiae* in various liquid media", on the basis of which the methodologies of laboratory work/practical work are being developed so that students can work on the relevant topics. The lecturer has developed a study and then adapted the methodology of laboratory work for the study course "Industrial biotechnology" phytopreparations technology on "the process of obtaining tinctures with different separation methods".

#### **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 2019-2021, OTC continued its activities in the international project Pilot Platform of Vocational Excellence Water (Pilot PoVE Water). At the beginning of 2020, 2 participants in the OTC project participated in a joint project activity in Brussels. Subsequent meetings, seminars and other activities took place remotely for the rest of the year. We think that in the future the activities will be able to take place again in person.

Pilot PoVE Water aims to develop existing and emerging professional competencies and skills in the

water sector, transforming them into a form of professional excellence and ensuring a vertical integration of vocational education with the knowledge triangle and a sustainable link with regional economic and social systems.

The project aims to create the infrastructure needed to strengthen professional excellence in the water sector in Europe, laying the foundations for the development of vocational education programs and the development of competences in vocational education and training (VET) students.

OTC teaching staff will continue to look for opportunities to participate in international projects.

**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.**

Every two years, the OTC holds a scientific-practical conference.

2014/2015 The 4th scientific-practical conference took place in the academic year 2017/2018. 5th scientific-practical conference in the academic year and 2020/2021. 6th scientific-practical conference in the academic year, which was attended by students, academic staff and industry professionals.

Conference papers are compiled in collections of scientific articles available in the OTC library. In 2015, the 3rd volume of the collection of scientific articles of the Olaine College of Mechanics and Technology was published, in 2017 the 4th volume and in 2020 the 5th volume of the collection of scientific articles of Riga Technical University Olaine Technology College. The research activity of the academic staff of the study program “Biotechnology” is related to the content of the course. The list of the main scientific publications, creative activities and prepared study literature of the academic staff involved in the implementation of the study field is given in the Appendix.

**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 main goal of the first level professional higher education is to prepare students for the profession, therefore the study program envisages the acquisition of knowledge and skills required for a professional qualification. Consequently, the study program has a proportionately smaller amount of academic knowledge than the academic study programs.

The involvement of students in research activities is mainly related to the development of term papers, independent work and final qualification papers. In the process of developing works, students get acquainted with the latest literature in the field to develop projects, the implementation of which would increase production efficiency. During the elaboration of these



works, students acquire the professional competencies necessary for further academic and professional growth - independence, use of correct scientific terminology, critical evaluation of literature and obtained data.

In recent years, the involvement of students of the "Biotechnology" study program in scientific and applied research has increased. For example, two recent graduates of this study program, while still in the study process, developed two very interesting and rare scientific studies, about which they also wrote articles in the OTC Scientific Articles Collection and will present the summary and results of these studies at the Scientific Conference. In both of these studies, there was close cooperation with two OTC partner institutions - AS Grindex on wastewater and ZPI Silava on the spread of tapeworms in the wolf population.

The positive aspect should also be taken into account, that after the restrictions of the Covid pandemic, more intensive use of the modern material and technical base of OTC, especially the laboratories, will resume. This will definitely promote student engagement and participation in various scientific researches.

**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.**

The main emphasis in the direction of various forms of innovation in OTC is and will continue to be focused, mainly in the direction of the basic principles of the "green course". The main task is to identify potential growth opportunities and future prospects in accordance with the basic principles of the "green course", for example, by ensuring the utilization of raw materials for practical research work in accordance with the basic principles of the "green course".

It is intended to integrate all the UN Guiding Principles for Sustainable Development into teaching, learning, science and governance processes, using resources in a sustainable and efficient way, thus minimizing negative impacts on the environment.

The competence and understanding of the teaching staff of the UN Guiding Principles for Sustainable Development is regularly strengthened, and an inclusive teaching and learning environment that promotes sustainable development is created and improved

## **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.

In recent years, one of the College's priorities has been to promote cooperation with employers and other higher education institutions with the aim of improving the quality of studies. In order for the professional study program to be sustainable and relevant in the rapid development of modern technologies, it is necessary to continuously improve it in accordance with the demand of the industry. In order to maintain a high-quality study process and receive information about the necessary changes in the study program as soon as possible, close cooperation with companies and organizations related to the field should be implemented.

OTC has close co-operation with the Latvian Chemical and Pharmaceutical Association and the Latvian Biotechnology Association, as well as with the Council of Experts on Food and Agriculture (NEP), which is under the auspices of the Latvian Employers' Confederation (LDDK). The Association of Latvian Chemical and Pharmaceutical Industry (LAĶĪFA) consists of companies active in the production and distribution of pharmaceuticals, chemicals and reagents, rubber products, coating materials, detergents and cleaning products, cosmetics and consumer goods. The aim of the association is to represent the interests of the industry's entrepreneurs, and one of them is to obtain qualified industry professionals. OTC in cooperation with LAĶĪFA ensures the updating of programs in accordance with the needs and trends of the labor market. In cooperation with LAĶĪFA, opportunities for the development of the study field and introduction of new programs are planned in accordance with the demand of the labor market. LAĶĪFA has launched advertising campaigns to attract young people to the chemical and pharmaceutical industry, which can successfully promote OTC one of the development strategy plans - to increase the number of students in the program.

Cooperation with various companies in the field ensures the interconnection and interaction of education and practical skills, as well as the compliance of students' professional competence with the requirements of the labor market, ensuring an essential and integral part of professional higher education study programs - quality study practice. The most important social partners are: JSC "Grindeks", JSC "Olainfarm", JSC "BAO", Ltd. "Bauskas ūdens", JSC "Latvijas balzams", JSC "Rīgas Piena kombināts", Ltd. „EKO Osta”, Ltd.„Jelgavas ūdens”, Pārtikas drošības, dzīvnieku veselības un vides zinātniskais institūts "BIOR", SIA„ Silvanols”, JSC „Madara Cosmetics ”, Ltd. “Kivi Cosmetics”, Ltd. “Stenders”, JSC “Rīgas farmaceitiskā fabrika”, Ltd. „Lyngson", Ltd. „Biotehniskais centrs”, JSC „Olaime Chemical Plant BIOLARS”, JSC “Aldaris”,Ltd. “VK Terminal Services”, Ltd. “SCHWENK Latvija”, Latvian State Forest Research Institute “Silava”, “Latvian Biomedica and other companies throughout Latvia. As a result of the cooperation, students are offered study tours in companies and internship opportunities. Leading specialists in the field are involved in conducting professional training courses, giving guest lectures, reviewing study qualification papers and as members of state qualification examinations.

The mechanisms for attracting partners are mainly personal contacts, participation in various joint conferences, seminars, training courses and other activities, as well as mutual talks on students' opportunities for internships, excursions and other similar issues of mutual cooperation.

Within the field of study, the closest cooperation is directly with pharmaceutical companies - especially, Olainfarm and Grindex. Especially with Olainfarm, which is located here in Olaime. OTC students regularly go to these companies for their internships and, in turn, company representatives regularly participate in final examination commissions. The time of Covid slowed down a little, but there are also relatively frequent study tours to companies, while representatives of companies have been on a familiarization visit with the new laboratories of OTC.

It should be noted that students mostly highly value the opportunity to get training and do their internships in the mentioned and other companies of the sector. In the next period, the main attention should be paid and work will be done on expanding and improving the network of cooperation partners, looking for and involving other companies of the sector in the study process.

**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.**

OTC's international strategy focuses on the development of the College as a whole in order to raise and improve education and training standards based on the latest developments in higher education in Europe, as well as to develop and strengthen international cooperation and academic staff mobility.

Due to the lack of related colleges in Latvia, the college aims to make the most of the opportunities offered by the Erasmus + program by promoting cooperation and increasing the number of the college's international partners with higher education institutions in the European Union. As a result of the mobility of Erasmus academic staff, a bilateral cooperation agreement was concluded with the Aarhus Business Academy in Denmark at the end of 2015. The bilateral cooperation agreement provides an opportunity for the teaching staff to exchange pedagogical and scientific experience, as well as to conduct guest lectures or practical work. As a result, several mobility of OTC lecturers and staff to the Aarhus Business Academy has taken place over the years, and representatives of the academic staff from the Aarhus Business Academy have also given guest lectures to OTC students. OTC has a similar cooperation with the Pyramid in Maribor, Slovenia. It is planned to expand the network of partner universities in the coming years.

**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.**

In order to start implementing international cooperation in the field of studies, the college in 2013/2014. set the goal of obtaining an Erasmus + student charter in the 2014/2015 academic year it was obtained; in the academic year it was obtained. The principles of Erasmus Higher Education Charter 2014-2020 awarded by the OTC were developed for the quality organization of international mobility and the selection of students, giving everyone the opportunity to study abroad in the form of an exchange.

It should be noted that on 26 May 2020, the OTC developed and submitted a new draft ERASMUS

Charter for Higher Education in English for the period 2021-2027, which incorporates the same principles. The new Charter was approved by the European Commission on 22 December 2020.

At present, the College's policy of international cooperation and internationalization seeks to make the most of the opportunities offered by Erasmus + mobility in higher education. The involvement of lecturers and staff in mobility programs is motivated, with the aim of concluding new interinstitutional cooperation agreements on student, staff and teacher mobility. Many mobilities have taken place during these years, resulting in a number of cooperation agreements for the mobility of teachers and staff. Within the framework of staff mobility, significant pedagogical and professional experience is gained, cooperation agreements are formed, and ideas for the improvement of study programs and the study process are found.

International experience is also important for the personal development of college students. No outgoing and incoming student mobility has taken place in the past period. Currently, the goal is to look for new potential partner universities that implement related study programs, with the aim of creating cooperation agreements on student mobility. After concluding the cooperation agreement, it will be possible to promote and ensure student mobility in accordance with their interests. However, it should be noted that currently students have little interest in study mobility, but there is interest in the possibility to go abroad for an internship. The reason for the low interest in opportunities to study abroad within the exchange program is, according to the students, insufficient knowledge of foreign languages. Thus, the internationalization policy of the college envisages improving the study course "Foreign Language" and motivating students to participate in mobilities.

Mobility of the academic staff of the study field takes place within the framework of the "Erasmus +" project. As part of the Erasmus mobility program, a number of OTC lecturers and staff have visited Slovenia in the last years before the Covid pandemic to exchange experiences with the Aarhus Business Academy in Denmark and The education center pyramid Maribor in Slovenia. During the mobility, the education system in Denmark and Slovenia was introduced, companies in the field were introduced, participation in the study process and laboratory work took place, and the work of foreign colleagues was promoted, promoting professional development. As a result of the mobilities, bilateral cooperation agreements were concluded.

This is the first year that Erasmus + will be used for student mobility. The results of the mobility are also positively reflected in the work of the assistant professors, therefore OTC is interested in using the opportunities provided by the program and 6 applications were submitted for the next period, 3 of which will be implemented soon. , as well as to create new opportunities for cooperation with related colleges in Europe.

## **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.**

Iepriekšējā studiju virziena "Ķīmija, ķīmijas tehnoloģija un biotehnoloģija" programmas "Biotehnoloģija" akreditācija tika veikta 2017. gada 11. aprīlī.

1) Clear information about the study program has been published on the website of OTC, so that future students understand what to expect from the Biotechnology program before applying for admission to the program on the website. The information also includes a list of lectures and study courses that are taught and their content. See Latvian Language <https://otk.rtu.lv/studiju-programmas/#toggle-id-1>

2) The study program has continued to be improved, incl. according to the new professional standard. The program includes courses related to modern biotechnologies such as DNA protein identification and the cell as a factory. New courses of this type include, for example, Cell Biology, Genetics and DNA Technology.

3) A quick and efficient system for notifying students about independent changes in the lecture list has been developed. Since there were frequent online classes during the COVID pandemic, special rules were even developed to deal promptly with such cases of lecture changes.

4) The OTC website contains lists of study courses, as well as information about study programs and study courses in English. See [https://otk.rtu.lv/wp-content/uploads/sites/29/2022/08/Studiju\\_plans\\_angl.pdf](https://otk.rtu.lv/wp-content/uploads/sites/29/2022/08/Studiju_plans_angl.pdf)

5) The questions of student surveys are reviewed regularly, involving the students themselves in this process. Students can also complete surveys online.

6) OTC has expanded contacts with companies to increase its horizons, incl. for securing internships. Examples include - Latvian State Institute of Forestry "Silava", group of food industry companies "Food Union", SIA "Stenders"; JSC "Biotechnological Center" etc.

7) OTC academic staff has activated their involvement in academic staff development programs, including English language classes. The number of international mobility of academic staff has also increased in recent years, before the COVID pandemic. OTC has become more regular and intensive cooperation with Olaine county business support center.

8) Cooperation agreements have been concluded with LU, LLU and Rēzekne Academy of Technology, creating better opportunities for Biotechnology students. For the third year now, OTC is under the auspices of RTU, as an agency that also strongly promotes the further benefits of OTC Biotechnology students.

**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).**

Not applicable. Because on 26.07.2019 for the study program "Biotechnology" license No. 041034-01 has been issued in connection with the change of the name of the university, when Olaine College College acquired its current name and became an agency of RTU. At the same time, the study program code 41526 is confirmed in the license, so we did not consider it possible to change it arbitrarily now. There are no recommendations or other changes related to the license.

# 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	Regulations_1.docx	Noramativie_akti_1.docx
The management structure of the higher education institution/ college	Administration_structure_2.xls	Parvaldes_struktura_2.xls
II - Description of the Study Field - 2.1. Management of the Study Field		
Plan for the development of the study field (if applicable)	DEVELOPMENT_AND_INVESTMENT_STRATEGY_3.docx	Attistibas_un_investiciju_strategija_3.docx
The management structure of the study field	ANNEX 4_Studiju_virziena_pārvaldības_struktūra.docx	4_pielikums_Studiju_virziena_pārvaldības_struktūra.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.	Appendix_5.docx	NR_5_pielikums.docx
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.	appendix_6.docx	NR_6_pielikums.docx
Standard sample of study agreement	Study_AGREEMENT_7.doc	Studiju_līgums_7.doc
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	Student_surveys_and_their_analysis_8.docx	Studejoso_aptaujas_un_to_analize_8.docx
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	Composition_of_the_academic_staff_9.docx	Akademiska_personala_sastavs_9.docx
Biographies of the teaching staff members (Curriculum Vitae in Europass format)	Teaching_staff_CV_10.zip	NR_10_pielikumCV.zip
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.	ACKNOWLEDGMENT_11.edoc	Apliecinājums_11.edoc
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)		
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.	Data_collection.docx	Datu_apkopojums.docx
List of the publications, patents, and artistic creations of the teaching staff over the reporting period.	NR_12_pielikums.docx	NR_12_pielikums.docx
II - Description of the Study Field - 2.5. Cooperation and Internationalisation		
List of cooperation agreements, including the agreements for providing internship	NR_13_pielikums_30_0-e.docx	NR_13_pielikums_30_09.docx
Statistical data on the teaching staff and the students from abroad	NR_14_pielikums_ENG.docx	NR_14_pielikums.docx
Statistical data on the incoming and outgoing mobility of students (by specifying the study programmes)	NR_15_pielikums_ENG.docx	NR_15_pielikums.docx
Statistical data on the incoming and outgoing mobility of the teaching staff	Mobility of teaching staff abroad_16.docx	Mācībspēku mobilitāte ārvalstīs_16.docx
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.	6_2_1-ENG.docx	6_2_1_papildinājums.docx
An application for the evaluation of the study field signed with a secure electronic signature	Iesniegums_1908.edoc	Iesniegums_1908.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
Studiju virziena resursi un nodrošinājums	Studiju virziena resursi un nodrošinājums.docx
Study course resources and provision	Study course resources and provision.docx
Sadarbības līgumu	Sadarbibas ligumi.zip
Information on the processing of personal data	Information on the processing of personal data.doc
Informēšana par personas datu apstrādi	Informēšana par personas datu apstrādi.doc
Amatu_apraksti	Amatu_apraksti.zip
Metodisko_komisiju_uzdevumi	Metodisko_komisiju_uzdevumi.docx
Tasks_of_methodological_commissions	Tasks_of_methodological_commissions.docx
Studiju_kursu_aptaujas_anketa	Studiju_kursu_aptaujas_anketa.docx
Student survey questionnaire	Student survey questionnaire.docx
Studentu aptaujas anketa	Studentu aptaujas anketa.docx
Job description	Job_description.zip
Rakstu apkopojums	Zinatniskie_raksti.zip
Articles collection	Scientific_articles.zip
Studiju programmas “Biotehnoloģija” salīdzinājums ar citām ārvalstu un Latvijas studiju programmām biotehnoloģijas virzienā	Studiju programmas “Biotehnoloģija” salīdzinājums ar citām ārvalstu un Latvijas studiju programmām biotehnoloģijas virzienā.docx
Comparison of the study program Biotechnology with other foreign and Latvian study programs in the field of biotechnology	Comparison of the study program Biotechnology with other foreign and Latvian study programs in the field of biotechnology.docx
Pavadvēstule	Vestule_OTK_Biotehnologija_21_10_2022.edoc
Par zaudējumu kompensāciju_OTK_ķĪMIJA_2023_4S-173_18 13 31032023.edoc	Par zaudējumu kompensāciju_OTK_ķĪMIJA_2023_4S-173_18 13 31032023.edoc



# Biotechnology (41526)

Study field	<i>Chemistry, Chemistry Technologies, and Biotechnology</i>
ProcedureStudyProgram.Name	<i>Biotechnology</i>
Education classification code	<i>41526</i>
Type of the study programme	<i>First level professional higher education study programme</i>
Name of the study programme director	<i>Ilze</i>
Surname of the study programme director	<i>Apsīte</i>
E-mail of the study programme director	<i>programmas@otk.lv</i>
Title of the study programme director	<i>Mag.paed.</i>
Phone of the study programme director	<i>25623747</i>
Goal of the study programme	<i>The aim of the study program is to prepare 5th level professional qualification biotechnology process specialists for the companies of the biochemical industry and related industries, food industry companies where biotechnological techniques are used in the production of products, as well as for the biochemistry and microbiology laboratories of the mentioned companies, where biotechnological methods and techniques are used in the development or testing of products . To prepare biotechnological process specialists who organize, manage and improve biotechnological production processes, improve the application of technologies and participate in the development of new biotechnological products and production processes.</i>
Tasks of the study programme	<i>1. To ensure high-quality, modern study content and implementation that meet the current trends of the biotechnology industry, the requirements of the labor market and the standard of the profession of a specialist in biotechnological processes.</i> <i>2. To implement a study process oriented towards the development of the necessary professional knowledge, skills and competences, paying special attention to practical and laboratory works, which are carried out in modern and modernly equipped laboratories suitable for the study content.</i> <i>3. To ensure the targeted acquisition of professional skills, in response to employers' requests and in accordance with the requirements of the chemical and biotechnology industry, in close cooperation with employers within the framework of study practices.</i> <i>4. To encourage and support students in the development of research skills and research activities in independent studies, during the development of coursework and qualification work.</i> <i>5. To ensure the quality of education so that graduates can continue their education in educational programs of the 6th professional qualification level and other higher education programs. To inspire and interest in continuous professional development.</i>

Results of the study programme	<p><b>Knowledge</b></p> <p>1.1. Knows biotechnological production processes and technologies.</p> <p>1.2. Knows and understands how to plan and manage the biotechnological production process.</p> <p>1.3. Knows the regulatory framework in the biotechnology sector.</p> <p><b>Skills</b></p> <p>2.1. Able to create, read, use biotechnological production process scheme for securing equipment and technical equipment.</p> <p>2.2. Able to ensure the bio-technological production process, selection of energy carriers and raw materials, separation of the product, purification, transfer to further development.</p> <p>2.3. Can evaluate the bio-technological production process.</p> <p><b>Competence</b></p> <p>3.1. Able to implement, manage and optimize the biotechnological production process.</p> <p>3.2. Able to control and ensure the performance quality of the bio-technological production process, observing the binding quality requirements of the industry.</p>
Final examination upon the completion of the study programme	Qualification work

## Study programme forms

### Full time studies - 2 years, 6 months - latvian

Study type and form	Full time studies
Duration in full years	2
Duration in month	6
Language	latvian
Amount (CP)	100
Admission requirements (in English)	<p>Clear information about the study program has been published on the website of OTC, so that future students understand what to expect from the Biotechnology program before applying for admission to the program on the website. The information also includes a list of lectures and study courses that are taught and their content. See Latvian Language</p> <p><a href="https://otk.rtu.lv/studiju-programmas/#toggle-id-1">https://otk.rtu.lv/studiju-programmas/#toggle-id-1</a></p>
Degree to be acquired or professional qualification, or degree to be acquired and professional qualification (in english)	-
Qualification to be obtained (in english)	Biotechnological process specialist

### Places of implementation

Place name	City	Address
Mechanics and Technology College of Olaine	OLAINE	ZEIFERTA IELA 2, OLAINES NOVADS, LV-2114

### 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.**

OTC implements the first-level, or short-cycle professional higher education study program "Biotechnology" in the study direction "Chemistry, chemical technologies and biotechnology", which was accredited on April 10, 2017 for six years, i.e. until April 10, 2023 (Accreditation page No. 2019/08).

The accreditation evaluation commission gave recommendations for improving the program. Based on these recommendations, in the study program 2017/2018 changes were made during the academic year. Studies

- two new mandatory courses of the sector were included:

- 1) Cell biology 2 CP and 2) Genetics and DNA technologies 2 CP;

- two new field elective study courses were included:

- 1) Plant biotechnology 1 CP; 2) Toxicology 1 CP;

- the study course "Biotechnology", which was previously 6 CP, was divided into three courses:

- 1) Industrial biotechnology 3.5 CP; 2) Food biotechnology 2 CP; 3) Environmental biotechnology 2 CP;

- the industry optional course "Genetically modified organisms" was removed from the course offer of the study program and was integrated into the course "Genetics and DNA technologies";

- the course "Technologies of obtaining antibiotic substances" was removed from the study program, the content of which was included in the study course "Industrial biotechnology";

- 0.5 CP was added to the study course "Civil Defense", 1 CP was removed from the study course "Analytical Chemistry".

As a result of these changes, it was basically achieved that the directions of the biotechnology industry are covered more deeply and more fully in the studies.

At the end of the academic year 2021/2022, in preparation for the accreditation process, in connection with the approval of the new "Biotechnological process specialist professional standard" on August 11, 2021, the name of the qualification to be obtained and the content of the study program have been changed in the study program.

The standard is available online:

<https://registri.visc.gov.lv/profizglitiba/dokumenti/standarti/2017/PS-159.pdf>

Table 1

**A summary of the changes planned as part of the study course evaluation procedure**

<i>N.p.k.</i>	<i>Type of change</i>	<i>Previous edition</i>	<i>The new edition</i>	<i>Implementation</i>
1.	Qualification to be obtained	Biotechnologist	Biotechnological process specialist	In the diploma in the study year 2023/24
2.	Changes in the study program content		Study program plan and descriptions of study courses	In the 1st and 2nd course from the 1st of September of the study year 2022/23

In accordance with the basic tasks and responsibilities of professional activity, as well as the necessary knowledge, skills and competences defined in the new "Professional Standard of Biotechnological Process Specialist", the following changes have been made to the study program plan of the first-level, or short-cycle, professional higher education program "Biotechnology":

- the current field optional study courses Plant biotechnology 1 CP and Bioenergy 1 CP will henceforth be mandatory courses of the field;
- the following new study courses have been developed: 2 industry mandatory study courses 1) Planning of biotechnological experiments 1 CP and 2) Introduction to the biotechnology sector 1 CP, one new field optional study course ICT use in the biotechnology sector 1 CP, 2 new optional study courses 1) Applied communication 1 CP and 2) Sports 1 CP;
- study courses, the content of which was thematically very close and overlapped, have been combined by correcting the name and scope:

<i>Current study courses</i>	<i>Study courses in the new edition</i>
Analytical chemistry 2 CP Instrumental analysis 3 CP	Instrumental testing methods 4 CP
Industrial biotechnology 3.5 CP Technology of obtaining enzyme preparations 3 CP	Industrial biotechnology 3 CP

- slightly adjusted name and/or scope of individual study courses

<i>Current study courses</i>	<i>Study courses in the new edition</i>
Environmental lesson 1,5 CP	Environmental protection 1 CP
Physical and colloidal chemistry 3 CP	Physical chemistry 2 CP
General and inorganic chemistry 3 CP	General and inorganic chemistry 2,5 CP
Organic chemistry 3 CP	Organic chemistry 2,5 CP

Engineering graphics 3 CP	Engineering graphics 2 CP
Quality assurance systems and regulatory acts 2 CP	Quality systems 2 CP
Basics of automation of technological processes 3 CP	Automation of technological processes 3 CP

According to the regulations of the Cabinet of Ministers of March 20, 2001 No. 141 "Regulations on the state standard of first-level professional higher education": <http://likumi.lv/doc.php?id=6397> , the study program includes the industry's mandatory course Business professional competences module 6 CP, the scope and partly also the content of which would be formed by combining in the previous study courses: Basics of Entrepreneurship 2 CP, Economics 3 CP and Basics of Legislation 1 CP.

With the changes made in the framework of the evaluation procedure, the study program not only meets the requirements of regulatory acts, but also constantly improves the quality of the education of future biotechnological process specialists, strengthening and deepening the knowledge, skills and competence in the field of biotechnology.

**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 compliance of the study program "Biotechnology" with the field of study "Chemistry, chemical technologies and biotechnology" is confirmed by the name of the program, its purpose, tasks, achievable results and content, as well as the qualification obtained as a result of the studies. The relevance of the study content to the study direction is indicated by the biotechnology and chemistry study courses included in the study plan, such as: "General and inorganic chemistry", "Organic chemistry", "Physical chemistry", "Instrumental testing methods", "Biochemistry", "Industrial biotechnology", "Food biotechnology", "Environmental biotechnology", "Plant biotechnology", "Bioenergy", "Genetics and DNA technologies", etc.

Applicants who have obtained general or vocational secondary education are accepted into the study program, according to its type and level. In accordance with the regulations of the Cabinet of Ministers of June 13, 2017 No. 322 "Regulations on the Classification of Latvian Education" <https://likumi.lv/doc.php?id=291524> , the first 2 digits (41) of the study program code confirm that it is, or short-cycle professional higher education study program, which leads to a which corresponds to fourth-level professional qualifications (corresponding to the fifth level of the Latvian qualifications framework (LKF)), can be implemented after general or vocational secondary education. The 3rd digit of the code (5) indicates compliance with the educational thematic group Engineering, production and construction. The combination of the 3rd and 4th digits of the code (52) shows the correspondence to the thematic field of education Engineering and Technology. Code 3, 4, 5. the combination of numbers (526) indicates compliance with the group of educational

programs Other engineering sciences, as Biotechnology is not separated out in the classification.

The qualification to be obtained as a result of learning the program is appropriate for the type, level and name of the program. According to the Vocational Education Law, the Vocational Education Law (likumi.lv): "The fifth level of professional qualification – theoretical and practical preparation, which gives the opportunity to perform complex work as an executor, as well as to organize and manage the work of other specialists" <https://registri.visc.gov.lv/profizglitiba/dokumenti/standarti/2017/PS-159.pdf> Biotechnological process specialist profession standard Professional education. Professional standards from 2017 (visc.gov.lv), PS-159.pdf (visc.gov.lv) determine the basic tasks, duties and necessary knowledge, skills and competence of professional activities, which are reflected in the study program's aim, tasks, and achievable results, in the study plan and in the content and descriptions of study courses.

According to the regulations of the Cabinet of Ministers of May 23, 2017 No. 264 "Regulations on the Classifier of Professions, Basic Tasks Corresponding to the Profession and Basic Qualification Requirements" Regulations on the Classifier of Professions, Basic Tasks Corresponding to the Profession and Basic Qualification Requirements (likumi.lv) is the profession Biotechnologist (No. p.k. 390.15, code 314126), which corresponds to both the name of the study program and the qualification to be obtained in essence, as it belongs to the separate profession group "3141 Natural sciences (except medicine) specialists", where the relevant basic tasks are described: "to develop, organize and manage biotechnological processes in the company, conduct research and consultations in this field, ensure the operation of biotechnological equipment, participate in biotechnological production process research and collect their results." Therefore, there is a good correspondence between the field of study, the name of the study program, the code, the goals, the results to be achieved, the qualification to be obtained, the content, the admission requirements.

The scope of the program corresponds to the type and level of the program, where the duration of studies in full-time studies is set at two to three years. The study program "Biotechnology" is realized only in full-time face-to-face studies, lasts 2 years and 6 months its amount is 100 CP, which is optimal, because 16 CP or 16 weeks consists of practice, 10 CP qualification work. The knowledge, skills and competences to be acquired in the program are large enough so that the volume of study courses is not smaller, besides this is a practically oriented study program, where a large proportion of the studies are practical and laboratory works. The study program should also not be longer, because then it could not be competitive compared to bachelor's study programs that are studied in 3 years.

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

The college or first-level (short-cycle) professional higher education program provides opportunities to obtain practice-oriented higher education in a relatively short time. As a result, it is the shortest path to the labor market, which is especially beneficial for those who graduated from high school several years ago, but feel a lack of knowledge and qualifications. On average, about half of the students at OTC graduated from high school several years ago and want to get a higher education to strengthen their position and move up the career ladder at the company they already work for, or they want to get a higher education in a new field to change their career direction.

The EM 2020 Informative report on medium and long-term forecasts of the labor market analyzes

that the fastest growth of jobs is expected in high- and medium-high-tech industries, such as ICT, chemistry, pharmaceuticals, electronics, etc. and in highly qualified professions, such as the demand for managers, senior specialists. A shortage of highly qualified natural sciences, ICT and engineering specialists (up to ~14 thousand employees in the STEM (science, technology, engineering, and mathematics) industries) is predicted in 2027. Taking into account the acquired knowledge in various fields of natural sciences, graduates have and will have ample job opportunities in biotechnological and related companies.

The study program "Biotechnology" with the acquired qualification Biotechnological process specialist is a significant investment to solve the workforce problem now and especially in the future. Because according to the qualification and the basic tasks of the profession, the graduates are and will be ready to develop, organize and manage biotechnological processes in the company, participate in biotechnological production process research and collect their results, provide consultations.

Employers appreciate the professional preparation of students and graduates of the OTC, both by providing student characteristics during internships and by participating as experts in qualification exams, including the evaluation of qualification papers. As well as employers in 2022 have ranked OTC in 10th place among the most recognized and recommended colleges in the study conducted by the Confederation of Latvian Employers (LDDK) and the career portal Prakse.lv. This year, 2,654 companies from all sectors of the economy were surveyed in the top of educational institutions and studies most recommended by employers.

Analyzing the employment of graduates, it should be noted that some students already work during their studies or start working at the final stage of their studies and continue to work at the same workplace after their studies. A significant number of graduates make careers in pharmaceutical companies - AS "Olainfarm", AS "Grindeks", SIA "Pharmidea", etc., as well as in laboratories. Graduates also work in cosmetics industry companies, for example SIA "Stenders", SIA "Kiwi Cosmetics". Even those graduates who, having just finished their studies, do not yet know where they will work, are sure that they will work in the specialty they have acquired. A third of the graduates expressed their desire and readiness to continue their studies to obtain a bachelor's degree and/or a fifth-level professional qualification. Graduates and students often emphasize in surveys that they have chosen to study biotechnology because they are interested in this field and they see wide and promising job opportunities in this sector.

#### **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.**

Statistical data on students, as can be seen in APPENDIX 5, shows that the number of admitted students has even increased in the last 3 years, compared to the previous two years. This could be explained by the fact that in 2019/2020, 2020/2021 and 2021/2022 during the study years, the group in the study program "Environmental protection technology" was not completed, therefore those who wanted to study, who expressed their desire to change their choice and were ready to start their studies in the study program "Biotechnology", did so.

The total number of students tends to decrease. However, this can be explained by general demographic and economic trends. The number of the population in Latvia continues to decrease

for a long time, and the most significant decrease in the population view over the last 10 years is observed in the working age. In the period from 2010-2020 at the beginning of the year, the number of inhabitants in Latvia decreased by 10% or 211.6 thousand, while in the age group from 15-64 years, the decrease in the number of population reaches 223.7 thousand (15% decrease). Although there is no significant decrease in the number of matriculated students in the reporting period, compared to the previous period, the number of students matriculated in the 1st year has also decreased, which refers to the total number of students. If in 2015/2016 in the study year, 26 students of the "Biotechnology" study program were matriculated, then the number of matriculated students in the following 6 study years varies from 6 to 17, and the average is 14.

The problem is a high student dropout rate. On average, 46% of the enrolled students graduate from the "Biotechnology" study program, so the dropout rate ranges from 40% to 60%. This can be explained by the fact that studies are not easy, the study plan includes higher mathematics, physics, a lot of chemistry - study courses that traditionally cause difficulties. Also, in the 2020 Informative Report of the Ministry of Education on medium and long-term forecasts of the labor market, it is noted that there is still a dropout rate of students in STEM fields, which significantly limits the potential increase of the workforce in these fields. Approximately 30% of students in STEM education programs drop out every year. Analyzing why the OTC dropout rate is higher than the average in the country, several factors should be noted:

- The number of people who want to study is less than the number of study places, so there is no competition and anyone who wants to can start studies, regardless of their previous academic achievements. Therefore, students may have difficulty coping with the study load and demands.
- On average, about half of the study starters graduated from high school several years ago. For these students, it is often difficult to return to the "school bench", and it also turns out to be problematic to combine work with studies.
- It is possible that those who originally wanted to study Environmental Protection Technology are not motivated enough. However, it may not be.
- Taking into account the demand expressed by employers and the lack of employees in STEM industries, it may be problematic for students who start working during their studies to combine their studies with full-time work, as a result of which their studies are not continued.

Despite the demand for labor from employers in the industry, and active promotion of the study program in general, interest in Biotechnology studies is growing very slowly. This echoes trends at the national level. Regarding the proportion of students in natural and engineering sciences (the thematic group of natural sciences, mathematics and information technology and the thematic group of engineering sciences, production and construction), the goal has been set to reach 27% of the total number of graduates in 2020. However, graduates of the target group in 2019 made up only 19.2% of all graduates. This indicator has not changed significantly in recent years. In order to achieve the goal, it is necessary to more actively implement targeted measures to attract secondary education graduates to these fields of study. (Informative report on mid- and long-term labor market forecasts. Ministry of Economics. Riga, 2020. Available: Informative report on mid- and long-term forecasts of the labor market (em.gov.lv)) Therefore, in the future, OTC will also have to work more and more actively, creatively and persistently in popularizing the study program and in getting potential students interested in studies. Especially since the OTC is located outside the big cities, which however slows down the interest of potential students, and it seems that not enough recognition has been achieved, despite active promotion.

### **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).**

not 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 study content in the study program covers the topics of chemistry and biotechnology, so that students acquire the necessary knowledge, skills and competences. Thus, compliance with the goals and tasks of the program, the achievable results and the fulfillment of the requirements defined in the Biotechnological Process Specialist profession standard are ensured.

For example, table 3 analyzes the compliance of one study course with the aim of the study program and the achievable results:

Table 3

**Example - comparison of the goal and achievable results of the study course "Industrial Biotechnology" with the goal and achievable results of the study program to illustrate the formation of compliance**

Study program	Study course Industrial biotechnology
Aim	

<p>The aim of the study program is to prepare 4th level professional qualification biotechnology process specialists for the companies of the biochemical industry and related industries, food industry companies where biotechnological techniques are used in the production of products, as well as for the biochemistry and microbiology laboratories of the mentioned companies, where biotechnological methods and techniques are used in the development or testing of products. To prepare biotechnological process specialists who organize, manage and improve biotechnological production processes, improve the application of technologies and participate in the development of new biotechnological products and production processes.</p>	<p>The aim of the study course is to create a deep understanding of the basic principles of industrial biotechnology and skills in the use of microorganisms in the production of bioproducts.</p>
<p>Achievable results. Knowledge</p>	
<ul style="list-style-type: none"> <li>• Knows biotechnological production processes and technologies.</li> <li>• Knows and understands how to plan and manage the biotechnological production process.</li> <li>• Knows the regulatory framework in the biotechnology sector.</li> </ul>	<ul style="list-style-type: none"> <li>- Knows bioproduction extraction technologies and equipment.</li> <li>- Knows microorganisms, explains their classification and application in obtaining bioproducts.</li> <li>- Knows bioproducts (organic acids, vitamins, enzymes, amino acids, lipids, antibiotics, etc.), their extraction technologies.</li> <li>- Describes the composition of biotechnological production raw materials.</li> <li>- Understands and determines the consumption norms of biotechnological production raw materials.</li> <li>- Knows and describes the composition of the medium.</li> <li>- Describes the seed material.</li> <li>- Provides post-processing of the intermediate product and the final product.</li> <li>- Manages methods of purification of biotechnological production products.</li> <li>- Knows the methods of obtaining the finished form of the biotechnological production product (granulation, dragging, tableting, encapsulation, ampoule, etc.).</li> <li>- Understands production quality control and data analysis of bioproducts.</li> </ul>
<p>Achievable results. Skills</p>	

<ul style="list-style-type: none"> <li>• Able to create, read, use biotechnological production process scheme for securing equipment and technical equipment.</li> <li>• Able to ensure the bio-technological production process, selection of energy carriers and raw materials, separation of the product, purification, transfer to further development.</li> <li>• Can evaluate the bio-technological production process.</li> </ul>	<ul style="list-style-type: none"> <li>- Reads biotechnological production process diagrams.</li> <li>- Provides equipment and technical equipment according to the scheme of the biotechnological production process.</li> <li>- Prepares raw materials, materials and equipment for the industrial biotechnology production process.</li> <li>- Microorganism cultures are used in obtaining bioproducts.</li> <li>- Verifies the availability of energy carriers and raw materials and compliance with the biotechnological production process.</li> <li>- Performs bioproduction production process.</li> <li>- Ensures transfer of intermediate product and final product to further processing.</li> <li>- Provides separation of intermediate/product.</li> <li>- Ensures obtaining the finished forms of the biotechnological final product.</li> <li>- Ensures purification of the end product of biotechnological production.</li> <li>- Monitors the progress of the technological process of production of bioproducts.</li> <li>- Able to manage and control the biotechnological production process.</li> <li>- Analyzes the data obtained during the production process of industrial biotechnology.</li> <li>- Evaluates the biotechnological production process.</li> </ul>
Achievable results. Competences	
<ul style="list-style-type: none"> <li>• Able to implement, manage and optimize the biotechnological production process.</li> <li>• Able to control and ensure the performance quality of the bio-technological production process, observing the binding quality requirements of the industry.</li> </ul>	<ul style="list-style-type: none"> <li>- Ensures extraction of bio-production of industrial biotechnology production.</li> <li>- Ensures transfer of intermediate product and final product to further processing.</li> <li>- Ensures purification of the end product of biotechnological production.</li> <li>- Ensures obtaining the finished forms of the biotechnological final product</li> </ul>

Analyzing the example shown in Table 3, comparing the aim and achievable results of the study course "Industrial Biotechnology" with the aim and achievable results of the study program, it can be concluded that the results of the study course are aimed at testing the knowledge and skills necessary to achieve both the aim of the study program and results, as well as the requirements set forth in the Biotechnological Process Specialist profession standard.

Taking into account that the new professional standard has been in force since August 11, 2021, all study course programs have been updated in the time period up to the preparation of this self-

evaluation report in order to ensure that the requirements specified in the standard are met in the study program as a whole.

When developing, improving or updating study course descriptions, each teaching staff must take into account the new professional standard of the Biotechnological Process Specialist, as well as the purpose, tasks and achievable results of the program. The author of the study course is a teaching staff who works at OTC and has developed the description of the study course and most often leads the study course lessons. In order to improve the content of the study courses and to understand whether the corresponding topic is not learned in another study course, as well as whether there are any topics that are important but not sufficiently reflected in the study courses, the teaching staff cooperates with each other.

The head of the study program provides proposals, advice to the teaching staff, as well as checks the compliance of the content of the study course and the results to be achieved with the professional standard and compiles them in a table to analyze the acquisition of knowledge, skills and competences.

Feedback is regularly obtained from employers about the students' preparation - employers write the characteristics of the students in practice, which also reflects the assessment of the compliance of the acquired knowledge with the requirements of the labor market. 96% of students' knowledge has been assessed in the range from good to excellent. 69% received a rating ranging from very good to excellent. The interns received the following characteristics: "Good theoretical and practical preparation, well oriented in their specialty and production technologies, good previous knowledge in performing methods and working in the laboratory, professional preparation suitable for work, proved themselves as perspective specialists and knowledgeable work colleagues, etc." The positive assessment of the employers is the result of the fact that the programs are regularly updated, actualized in accordance with the trends and actualities of the industry.

Employers have emphasized the need to further develop students' analytical thinking, reasoning, critical thinking, as well as to manage an even wider range of equipment that is not available at our institution. Therefore, the teaching staff improves the teaching content with excursions to production companies, so that students get more extensive and versatile information about the technologies of the biotechnology industry and their role. Practices and the development and defense of qualification work play a significant role in the development of analytical and argumentation skills.

**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).**

not applicable

**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 organization of the study process and the choice of methods are related to the purpose and tasks of the program and ensure the acquisition of both theoretical and practical knowledge, skills and competencies.

The study process of the study program consists of the acquisition of theoretical knowledge in person, the acquisition of practical skills in OTC laboratories, independent work, which is analytical and research work, including coursework and qualification work, practices in which the acquired knowledge and gained practical work experience in production companies are consolidated and/or laboratories.

Learning takes place from general to specific knowledge, with an emphasis on independent work and student project work in a team. Various teaching methods and forms are used in the study process: lectures, seminars, practical work, laboratory work, study tours, discussions, work in groups, consultations, independent work of students, which is realized as course work, searching for information on the Internet and creating a database, as well as practice reports and qualification work.

At the beginning of the study course, the teaching staff introduces students to the requirements for obtaining credit points, explains the progress and conditions of practical, independent and laboratory work.

The system for evaluating students' knowledge, abilities and skills meets the requirements of section IV of the Cabinet of Ministers Regulation No. 141 of March 20, 2001 "Regulations on the standard of first-level professional higher education" Regulations on the state standard of first-level professional higher education (likumi.lv). The assessment of knowledge takes place in accordance with the "REGULATIONS of the Riga Technical University agency "Riga Technical University Olaine Technology College regarding study and examination procedures" "APSTIPRINU": (rtu.lv), which was approved on January 16, 2020 at the OTC Council meeting.

The basic forms of evaluation of learning the program are an exam and a test. Examination of students' knowledge and skills is also carried out by evaluating the developed independent works, the amount of which corresponds to the credit points of the study course. Independent works include reading compulsory (study) and additional literature, preparing for seminars and coursework, creating laboratory work protocols and evaluating the results. The requirements for student knowledge assessment are formulated in the description of each study course. In the exams, students must demonstrate good knowledge of the theoretical material of the courses and the understanding of the courses, the ability to creatively apply the knowledge in independent works. The main evaluation criteria are:

- understanding and depth of knowledge;
- creative approach, linking theory and practice;
- systematicity;
- the quality of seminars, mid-term exams and coursework performance.

At the end of each semester, according to the evaluations obtained during the study process, the students' knowledge is evaluated in a 10-point system, and the final evaluation after completing the course:

- very high learning level (10 – “excellent”, 9 – “excellent”);
- high learning level (8 - "very good", 7 - "good");
- average learning level (6 – “almost good”, 5 – “average”, 4 – “almost average”).

Credit points are counted for each study course and internship, if a rating on a 10-point scale was received and it was not less than 4 - "almost average". The quality of practice performance is determined by evaluating the practice report and its presentation on a 10-point scale.

To test knowledge, teaching staff use several forms, such as tests, reports, course work development and defense, tests, exams, situation analysis tasks, as well as participation in scientific practical works.

At the end of the program, there is a national final exam, which is evaluated on a 10-point scale and consists of 2 parts: theoretical knowledge test (test) and qualification work and its defense. The qualification thesis is developed and completed in accordance with the regulations developed by the OTC academic staff. The qualification work is defended and evaluated with a grade at the meeting of the qualification commission, in which industry specialists participate, who evaluate the knowledge and skills acquired by the students.

A student who has completed the program and passed the qualification exam, obtaining a rating of no less than "4" - "almost mediocre" receives a diploma for first-level professional higher education.

In the surveys, students highly appreciate the considerable number of laboratory works and their organization, as a result of which it is possible to learn and understand the material very well. So it can be concluded that this is one of the ways in which the principles of student-centered education are implemented. Excursions are an interactive form of learning, when students have the opportunity to enrich their experience by getting to know the production plants, learning about the latest news, asking interesting questions and getting answers to them. Students have the opportunity to make their own choices regarding the course work, the topics of the qualification papers and the places of practice. Students most often choose the topic of the qualification work so that they can study the appropriate range of questions instead of practice. In seminar discussions, students learn to present, argue and defend their opinion, analyze problems, and delve into different experiences and opinions. Defending coursework, practicals and qualification work is a good experience to speak in front of an audience and present your performance, as well as to concentrate and be able to answer questions.

**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 study program includes two internships, the first internship is in the 2nd semester of the 1st year (6 CP), the duration of the internship is 6 weeks, and the second internship takes place in the 5th semester of the 3rd year (10 CP), the duration of the internship is 10 weeks.

The student chooses an internship related to the biotechnology industry, informs the program manager, and the study department contacts companies about possible internships and informs the student if the company agrees to offer an internship. In situations where the student needs the college's help in finding and securing an internship, the OTC internship manager, in cooperation with the head of the study program and the study department, provides support to the student in order to secure an internship based on the student's wishes.

For example, internships where students do internships in the field of food biotechnology are AS "Food Union", SIA "Latvijas piens", AS "Cēsu alus", etc. Practice also takes place in cosmetics companies, for example SIA "Kivi Cosmetics", SIA "Stenders". Students often practice in pharmaceutical companies AS "Olainfarm", AS "Grindeks", AS "Rīgas farmaceitiskā fabrika", SIA "Silvanols". Internships have also been provided to students by laboratories at the Institute of Food Safety, Animal Health and Environmental Science "BIOR", the Latvian State Forestry Institute "Silava", APP Latvian Biomedical Research and Study Center, etc.

The internship company, the director of OTC and the intern conclude an internship contract. For the successful completion of the practice, the practice leader develops and each student receives a PRACTICE ASSIGNMENT, which includes the purpose, tasks and content of the practice, as well as information about the duration of the practice and the development of practice documents.

During the internship, students are provided with the opportunity to improve theoretical and practical skills in companies, to create and develop independent professional competences in the company's laboratories, production stages and documentation analysis.

When learning an internship, students have two internship supervisors: in a company and in an educational institution. Internship supervisors help students to understand the nature of the internship tasks and direct them, through counseling, to the correct execution of these tasks. The practice manager from OTC also provides advice on general practice organization issues and the defense of the practice report.

The practice program and the execution of the tasks included in it allow to improve practical knowledge and real work skills in biotechnology companies, develop analytical thinking, the ability to use mathematical thinking to make forecasts (in the sector, field, profession) and compare the proposed solutions in order to be able to express reasoned opinions and justifications .

OTC administration and practice managers regularly meet with representatives of the industry in order to find out current affairs in the industry and the needs for training new employees and improving the qualifications of existing employees. Internship locations are identified together with company managers, the necessary skills and abilities for interns are discussed, as well as the desired time for attracting interns. Actualities are taken into account, study programs are brought to life, including in the implementation of internships.

The relevance of the qualification practice tasks to the achievable results of the study program is analyzed in "Linking the student internship tasks included in the study program with the study results to be achieved in the study program". It can be seen that the execution of practice tasks and the creation of a practice report according to the tasks ensure the achievement of the results of the study program.

### 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).

not 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.

The student of the "Biotechnology" program develops the qualification thesis in the 5th semester of the 3rd year (10 CP). The qualification thesis is the student's independent work, defending which he obtains a professional qualification in the relevant sector. By developing the qualification work, the student deepens, systematizes and strengthens the acquired knowledge. It is developed in accordance with the rules for the design of student works of OTC.

The student usually chooses the topic of the qualification thesis based on the possibilities of the internship, discusses it with the supervisor of the qualification thesis from OTC and also agrees with the head of the study program. The supervisor of subject qualifications from OTC coordinates together with the supervisors of internships in students' internship companies, in accordance with the most current trends of the industry and the labor market. The qualification work is the final stage of obtaining a professional qualification. A first-level professional higher education diploma is awarded on the basis of the defense of the qualification work. The performance of the qualification work is based on the knowledge, skills and competences acquired during the study program. The assignment of the qualification practice includes a point on the collection of specific materials on the topics relevant to the work. The content and scope of the qualification work must correspond to the standard sections of the profession and their requirements. The qualification work (research work) consists of a literature review, a practical part (technological or research), a work and environmental safety part.

Table 4

**Topics of qualification papers in a 3-year period**

<i>N.p.k.</i>	<i>Title of qualification work</i>
Study year 2021/2022	
1.	Characterization of inflow wastewater according to its biodegradation capacity and degree of evaporation
2.	Rapeseed acceptance, processing and quality control
3.	Identification of parasite species using the Sanger sequencing method
4.	Mebicar production project
5.	Development of a quality control method: Hardness of bath bombs



6.	Kefir production project
Study year 2020/2021	
7.	Technical thioguanine production project
8.	Mint production project of medical device "Faringospray"
9.	Curd cheese "Kārumš" production project
10.	Cow spongiform encephalopathy detection project
11.	Biodiesel production project
Study year 2019/2020	
12.	Medical Mildronate acquisition project
13.	Y-Buterine betaine second stage production project
14.	Project for production of diethyl ester of L-cyanobenzylmalonic acid

Table 5

#### Evaluations of qualification papers in a 3-year period

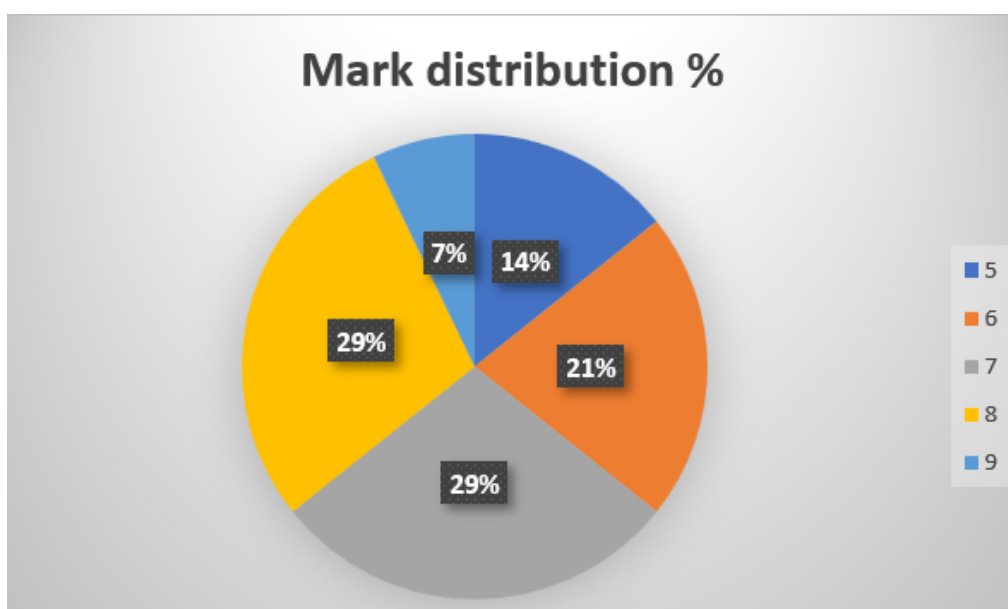
A student	Rating
Study year 2021/2022	
Student Nr. 1	8
Student Nr. 2	7
Student Nr. 3	8
Student Nr. 4	6
Student Nr. 5	6
Student Nr. 6	7
Study year 2020/2021	
Student Nr. 7	5
Student Nr. 8	8
Student Nr. 9	8
Student Nr. 10	9
Student Nr. 11	6

Study year 2019/2020	
Student Nr. 12	5
Student Nr. 13	7
Student Nr. 14	7

Analyzing the topics of qualification papers, it should be concluded that the variety of topics has a tendency to expand. If in the 2019/2020 academic year, all subjects were in the field of pharmaceuticals, then in the 2021/2022 academic year, a large variety of fields is represented: pharmacy, cosmetics, food, forestry, and environmental biotechnology. This can be considered a positive trend. During the defense of the qualification papers, the other students also get to know the topic on which each applicant has developed their qualification paper, thus gaining an even wider impression of the possibilities of using biotechnology. It can help students in their future career choice and direction.

The evaluations of qualification papers are excellent (9) – for one paper, very good (8) – for four papers, good (7) – for four papers, almost good (6) – for three papers, average (5) – for 2 papers. The average score is good (7), which shows that the works are mostly well developed and defended, and that there is still room for growth for young specialists, as the qualification works are evaluated by an expert panel, which mainly consists of industry practitioners, who evaluate based on to the requirements of the labor market strictly enough. Figure 1 shows the percentage distribution of marks. The majority, or 65%, of qualification papers are rated good, very good and excellent.

**The percentage distribution of the marks of the qualification papers for the 3-year period**



### 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.

Part II, Items 2.3.1. - 2.3.3.

**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).**

not 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).**

The source of funding for the study program - *a grant from the state budget from general revenues for the provision of studies*

**Analysis of financing for the reporting period from 2013 to 2018 Olaine College of Mechanics and Technology**

<i>Year</i>	<i>Funding in total</i>
2013	158 963
2014	191 244
2015	315 086
2016	323 648
2017	346 881
2018	311 889

**Years 2019 - 2021 Riga Technical University agency "Riga Technical University Olaine Technology College"**

Year	Total number of study places	Funding in total	Number of study places for the biotechnology program	Funding for the biotechnology program	Basic costs of study places at opt. coefficients
2019	102	328 872	44	142 144	3 230,54
2020	72	386 938	31	141 651	4 405,04
2021	72	362 732	31	151 641	4 727,31
2022	71	372 956	31	184 734	4 727,31

**Based on the study costs of 2022 in the thematic area "Manufacturing and processing", available funding is 184,734 euros, including 9,323.26 scholarships.**

Costs per student are 4,992.81 euros, divided:

- The basic cost of a study place is 1,630.11 euros (one thousand six hundred and thirty euros and 11 cents), at the optimal coefficients "2.9" in 2022 and 100% provision - 4,727.31 euros, or 94.68%
- Estimated funding for the social security of study places in professional study programs - 251.98 euros, or 5.05%
- sports, culture, service hotel costs 13.52 euros, or 0.27%

The number of study places financed from the state budget in 2022 in the program is 31 and this is the minimum number of students to ensure the rehabilitation of the study program.

### 3.4. Teaching Staff

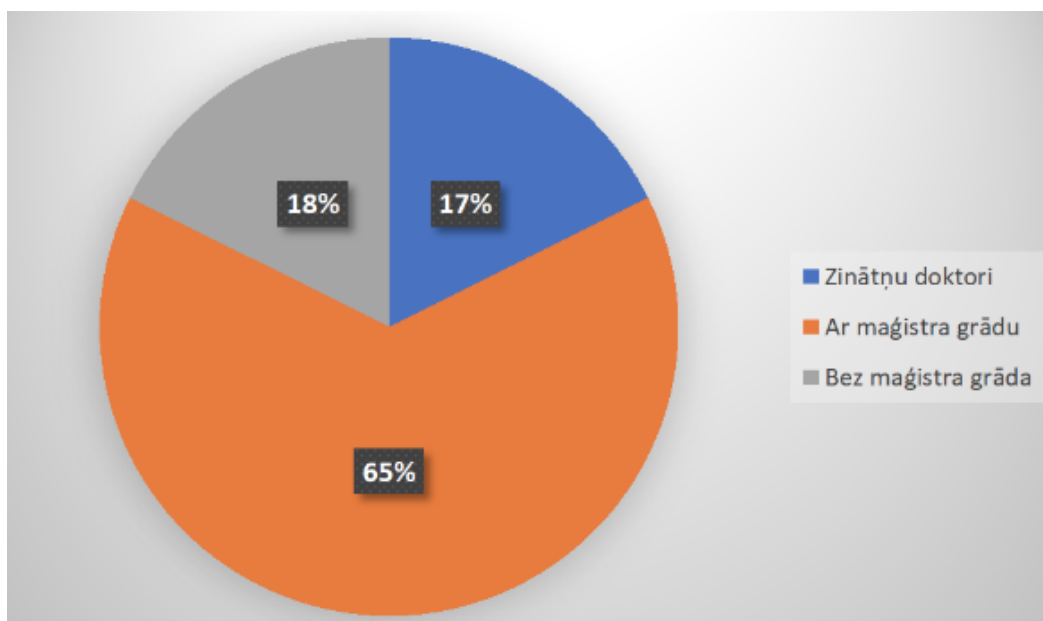
**3.4.1. Assessment of the compliance of the qualification of the teaching staff members (academic staff members, visiting professors, visiting associate professors, visiting docents, visiting lecturers, and visiting assistants) involved in the implementation of the study programme with the conditions 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.**

A total of 17 lecturers are involved in the implementation of the study program, of which 3 lecturers or 12 % and 15 visiting lecturers or 88 % are employed in the main work of OTC.

3 doctors of sciences and 11 lecturers with a master`s degree participate in the implementation of the study program. The percentage distribution of teaching staff involved in the study program "Biotechnology" according to scientific qualification can be seen in Figure 2.

Figure 2

### Scientific qualification of teaching staff involved in the study program "Biotechnology"



The academic staff performs teaching, methodological and scientific work. Within the framework of the study work, he gives lectures, conducts seminars and practical classes, accepts examinations, reports, regular assignments (incl. Tests, etc.), organizes consultations, conducts and reviews qualification papers, performs other work duties related to the organization of the study paper.

Lecturers involved in the accredited program have the necessary skills to transfer their knowledge and experience to students and receive feedback on their work. All lecturers are provided with the opportunity to supplement their knowledge, participate in in-service training courses, study for a doctorate, work in research and practice abroad, within the framework of exchange programs, as well as publishing their articles in collections of scientific articles.

The implementation of the study program is ensured by 17 lecturers with whom an employment contract has been concluded. During the reporting period, there have been qualitative changes in the composition of the teaching staff. Changes in the composition of the teaching staff have had a positive effect on the quality of studies, as evidenced by the results of the survey of students and graduates, providing a positive assessment of the lecturer's work.

The policy of the College is to ensure that all study courses are taught by qualified, scientifically and methodically trained teachers who use modern teaching methods. Most lecturers, including lecturers of specialized courses, have significant practical experience in the relevant field of activity, thus ensuring the compliance of the specialized knowledge, skills and competencies acquired in the study program with the acquired qualification and use in further professional activities. The main criteria for the selection of lecturers are education (degree), professional experience, research and creativity and communication skills. The knowledge of the state language of the academic staff employed in the study program complies with the regulations on the amount of knowledge of the state language and the procedure for testing the state language proficiency for professional and official duties and allows any course of study to be taught in the state language.

#### 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, several teachers have changed. Teachers of branch study courses have terminated their employment with OTC, and new, professional and qualified teachers have been found instead.

In the period from 2020/2021 until 2022/2023 The change of lecturers has taken place under the influence of two factors. One of the factors has been personal reasons, the main lecturers indicated the distance from one workplace to another and low workload. The second factor for the turnover of lecturers was the Covid-19 pandemic, during which lecturers had to be able to adapt to doing quality work remotely, but not all of them could, as a result of which the College had to invite other lecturers.

Study courses "Higher mathematics", "Physics", "Organic chemistry", "Fundamentals of automation of technological processes" 2020/2021 academic year. g. started to be managed by other lecturers, as the previous lecturers terminated their employment for personal reasons.

In 2021/2022 academic year the study course "Environmental Biotechnology" was started by another lecturer, which can be explained by updating the study course, as a result of which the experience of the previous lecturer did not correspond to the content of the study course. On the other hand, the study course "Physics" started to be taught by another lecturer, because the previous lecturer terminated her employment for personal reasons. The study course "Computer Science" was started by another lecturer, because the previous lecturer was not able to carry out the work remotely, while the study course "General and Inorganic Chemistry" was replaced by another lecturer, because the previous one had too much workload.

In 2022/2023 academic year the study course "Organic Chemistry" was started by another lecturer, because the previous lecturer at the end of the study course (in the questionnaires) the students indicated that the lecturer was insufficiently involved in the performance of laboratory work, which is an important part of the work in this study course. On the other hand, the study course "Computer Science" was started by another lecturer, because the previous lecturer terminated his employment for personal reasons.

OTC concludes that these changes have had a positive effect on the quality of studies - firstly, it has been possible to balance the workload and find a suitable lecturer for each study course, and secondly, new professionals with extensive previous experience have been involved in teaching OTC study courses. The attraction of new lecturers has allowed to improve the quality of the respective study courses, as well as to give students more knowledge based on the previous professional and academic experience of the lecturers.

**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).**

not 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).**

not 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).**

The teaching staff of the study program cooperates by preparing descriptions of study courses, creating e-courses in the e-environment, working in research directions and projects. For example, if some teachers lead one study course for different groups, they agree on the course content, course requirements, bibliographic sources and description of independent work.

In order to promote the co-operation of the teaching staff in the organized in-service training events, international events and also informal events, a study of common tasks is organized. Teachers are also invited to take part in ERASMUS + experience exchanges by going to ERASMUS + Member States, getting to know the experience of other universities, as well as participating in the learning process.

As previously mentioned, 17 teaching staff members are involved in the implementation of the "Biotechnology" study program and 33 students are studying in the program. The ratio is 1:2, i.e. one teaching staff per 2 students. However, it should be emphasized again that the teaching staff are not employed full-time and the majority, or 82%, are guest teaching staff who lead one or two study courses. Full-time teaching staff lead several study courses.

See point 1.4.

The cooperation of teaching staff is also reflected in the scheme on the management of the study program, see appendix "Management structure of the field of study".

Methodical commission is a mechanism through which cooperation of teaching staff takes place. Involved teaching staff are invited to meetings of the methodological commission and questions are discussed, for example, about practice or qualification work requirements, about the content of study courses, so that the content required for the standard is provided, but so that there is no overlap.

# 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	Diploma.zip	Diploms.zip
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	Statistical data about students in the study program Biotechnology_5.docx	5_pielikums_statistika_par studejoso skaitu.docx
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 study program Biotechnology with the national education standard_6.docx	6_pielikums_atb_valsts_izgl_standartam_L.docx
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)	ANNEX 7.docx	7_pielikums_atb_standartam_Biotehnologija_2022.docx
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 8.docx	8_pielikums_kartējums_Biotehnologija_2022.docx
The curriculum of the study programme (for each type and form of the implementation of the study programme)	Study_plan.xlsx	Studiju_plans.xlsx
Descriptions of the study courses/ modules	Study_courses.zip	Studiju_kursi.zip
Description of the organisation of the internship of the students (if applicable)	REGULATION_on_the_organization_of_practice.doc	Nolikums_prakse.doc
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)	NR_11_pielikums_ENG_16_08.edoc	NR_11_pielikums_16_08.edoc