



**STUDIJŲ KOKYBĖS VERTINIMO CENTRAS
CENTRE FOR QUALITY ASSESSMENT IN HIGHER EDUCATION**

CHEMISTRY FIELD OF STUDY
Kaunas University of Technology
EXTERNAL EVALUATION REPORT

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4. Social partner representative: Renaldas Rimkus;
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I. INTRODUCTION

1.1. OUTLINE OF THE EVALUATION PROCESS

The field of study evaluations in Lithuanian higher education institutions (HEIs) are based on the following:

- Procedure for the External Evaluation and Accreditation of Studies, Evaluation Areas and Indicators, approved by the Minister of Education, Science, and Sport;
- Methodology of External Evaluation of Study Fields approved by the Director of the Centre for Quality Assessment in Higher Education (SKVC);
- Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG).

The evaluation is intended to support HEIs in continuous enhancement of their study process and to inform the public about the quality of programmes within the field of study.

The object of the evaluation is all programmes within a specific field of study. A separate assessment is given for each study cycle.

The evaluation process consists of the following main steps: 1) Self-evaluation and production of a self-evaluation report (SER) prepared by an HEI; 2) A site visit by the review panel to the HEI; 3) The external evaluation report (EER) production by the review panel; 4) EER review by the HEI; 5) EER review by the Study Evaluation Committee; 6) Accreditation decision taken by SKVC; 7) Appeal procedure (if initiated by the HEI); 8) Follow-up activities, which include the production of a Progress Report on Recommendations Implementation by the HEI.

The main outcome of the evaluation process is the EER prepared by the review panel. The HEI is forwarded the draft EER for feedback on any factual mistakes. The draft report is then subject to approval by the external Study Evaluation Committee, operating under SKVC. Once approved, the EER serves as the basis for an accreditation decision. If an HEI disagrees with the outcome of the evaluation, it can file an appeal. On the basis of the approved EER, SKVC takes one of the following accreditation decisions:

- **Accreditation granted for 7 years** if all evaluation areas are evaluated as exceptional (5 points), very good (4 points), or good (3 points).
- **Accreditation granted for 3 years** if at least one evaluation area is evaluated as satisfactory (2 points).
- **Not accredited** if at least one evaluation area is evaluated as unsatisfactory (1 point).

If the field of study and cycle were **previously accredited for 3 years**, the re-evaluation of the field of study and cycle is initiated no earlier than after 2 years. After the re-evaluation of the field of study and cycle, SKVC takes one of the following decisions regarding the accreditation of the field of study and cycle:

- To be accredited for the remaining term until the next evaluation of the field of study and cycle, but no longer than 4 years, if all evaluation areas are evaluated as exceptional (5 points), very good (4 points) or good (3 points).
- To not be accredited, if at least one evaluation area is evaluated as satisfactory (2 points) or unsatisfactory (1 point).

1.2. REVIEW PANEL

The review panel was appointed in accordance with the Reviewer Selection Procedure as approved by the Director of SKVC.

The composition of the review panel was as follows:

1. Panel chair: Prof. Dr. Jan Lundell, professor chemistry at Department of Chemistry at University of Helsinki and Director LUMA Centre (Finland);
2. Academic member: Prof. Dr. André RTS Araujo, professor at Department of Pharmaceutical Sciences Politécnico da Guarda (Portugal);
3. Academic member: Prof. Dr. Polonca Trebše, professor of chemistry at Department of Sanitary Engineering Faculty of Health Sciences the University of Ljubljana (Slovenia);
4. Social partner representative: Renaldas Rimkus, Joint-Stock company "Sanobiotec";
5. Student representative: Vėjas Strelčiūnas, First-year Master's student in the Nanobiotechnology study programme, Faculty of Fundamental Sciences at the Vilnius Gediminas Technical University.

1.3. SITE VISIT

The site visit was organised on 27th of October, 2025, on-site in Kaunas.

Meetings with the following members of the staff and stakeholders took place during the site visit:

- Senior management and administrative staff of the faculty(ies);
- Team responsible for preparation of the SER;
- Teaching staff;
- Students;
- Alumni and social stakeholders including employers.

There was no need for translation and the meetings were conducted in English.

1.4. BACKGROUND OF THE REVIEW

Overview of the HEI

Kaunas University of Technology (KTU) is an internationally competitive, interdisciplinary university dedicated to creating and transferring knowledge and innovations. Established in 1922 as part of the University of Lithuania in Kaunas, KTU has evolved into a leading state higher education institution. Its scientific traditions continued through 1950–1990, and after regaining university status in 1990, KTU embarked on rapid educational and scientific reforms. Since its founding, the University has graduated more than 157,000 students, contributing to technological and societal progress.

Over the past decade, KTU has achieved significant breakthroughs in developing a nationally and internationally competitive portfolio of study programmes, modernising the learning process, and advancing research and experimental development to address global challenges. The University's vision is to be a technological institution competitive on the international stage, interdisciplinary, and actively engaged in knowledge and innovation transfer. Its mission is to build a cohesive society, create value-driven technologies, and collaborate with scientific and business leaders to pursue ambitious goals.

Overview of the study field

The University aims to serve diverse stakeholders by maintaining high-quality studies and research, creating a sustainable society, and offering students modern academic and recreational

environments. It actively strengthens collaboration between students and faculty, involves business and public sector practitioners in the study process, and expands partnerships with local and international institutions. As a research-driven university, KTU assumes responsibility for educating future innovators and entrepreneurs, ensuring its role as a catalyst for technological progress and societal development.

KTU's core values include responsibility to society, academic integrity, social responsibility, cooperation, and continuous improvement. These principles guide strategic priorities until 2025: improving study quality through programme development and modernisation, strengthening faculty competencies, fostering international partnerships, achieving breakthroughs in research and innovation, and ensuring organisational coherence through effective communication and an attractive academic environment.

Kaunas University of Technology (KTU) continues to strengthen its collaboration with key industrial organizations, including the Lithuanian Confederation of Industrialists (LPK), the Kaunas Regional Association of Industrialists and Employers, the Kaunas Chamber of Commerce, and the Lithuanian Engineering Industry Association (LINPRA). These partnerships ensure alignment between academic activities and industry needs, fostering innovation and practical engagement. Kaunas University of Technology (KTU) actively strengthens its global presence through cooperation with more than 400 research and academic institutions in 50 countries, as well as international business entities. A major milestone in internationalisation was achieved in 2019, when KTU joined the European University Networks Initiative under Erasmus+, as part of the European Consortium of Innovative Universities (ECIU). This initiative aims to establish the ECIU University by 2030, creating a joint European academic platform where researchers, students, businesses, and society collaborate to develop flexible educational models and innovative solutions to societal challenges. In 2024, KTU signed 25 cooperation agreements with Lithuanian and international business enterprises at both University and departmental levels. Each active partner participated in an average of three initiatives annually, such as guest lectures, event participation, internship placements, and mentorship programs. These activities enhance the relevance of academic programs and strengthen student employability.

KTU's study programmes in the Chemical Technology Faculty (CTF) are strategically designed to meet the needs of modern industry and science. Programs such as Biomedical Materials Industries focus on sustainable production technologies and interdisciplinary competences in chemistry and engineering, preparing graduates for roles in biomedical material development and international markets. The Applied Chemistry programme equips students with advanced knowledge of chemical synthesis, analysis, and modern instrumental techniques, ensuring readiness for careers in pharmaceuticals, cosmetics, high-tech industries, and materials engineering. The joint Medicinal Chemistry programme with LSMU integrates chemistry, biology, and pharmacy, training specialists in drug design and development for the pharmaceutical sector.

These programmes emphasize practical skills, numerical modelling, and digital competencies, aligning with global industry demands and the World Economic Forum's digital skills framework. Graduates are prepared to contribute to innovation in sustainable technologies, biomedical materials, and pharmaceutical development, reinforcing KTU's strategic goal of producing highly skilled professionals for international markets.

Previous external evaluations

The Applied Chemistry study programme (state code 621F10002) at Kaunas University of Technology underwent an external assessment in 2014. It was initiated by the Centre for Quality Assessment in Higher Education of Lithuania (SKVC) with the involvement of an expert evaluation group. The 2014 assessment acknowledged significant progress compared to previous reviews but concluded that further improvements were necessary in three topical areas being industry engagement, competency assessment methodologies, and internal quality assurance.

The evaluation emphasized the need for curriculum revision to ensure that programme aims and learning outcomes are aligned with market needs and international standards. It recommended the integration of modern equipment and competitive modules into teaching to provide graduates with relevant and practical skills. The assessment also highlighted the importance of enhancing transparency in quality assurance by introducing mechanisms such as peer evaluations, annual staff reviews, and a clear system for assessing Bachelor thesis projects.

Furthermore, the report stressed the necessity of adopting a student-centered approach by placing greater emphasis on research-based learning at the Bachelor level and involving stakeholders, including industry partners, in curriculum design and assessment processes. Expanding interdisciplinary activities and inquiry-based industrial training was identified as essential for strengthening practical skills and broadening student capabilities.

The programme continues to play a vital role in Lithuania's scientific and industrial sectors, supported by motivated students and strong faculty expertise. Strategic unification of related programmes and modernization of teaching methods will ensure graduates possess competitive skills aligned with European standards. The Expert Team also noted that Lithuania's four-year Bachelor structure differs from the Bologna 3+2 model, which may affect international mobility, although this remains a national regulation beyond the University's control.

Documents and information used in the review

The following documents and information have been provided by the HEI before or during the site visit:

- Self-evaluation report and its annexes
- Final theses
- Lists of participants and their scientific affiliations during the site visit
- Tour of the educational and research facilities on campus

Additional sources of information used by the review panel:

No additional sources of information have been used by the review panel.

II. STUDY PROGRAMMES IN THE FIELD

First cycle/LTQF 6

Title of the study programme	Applied Chemistry	Biomedical Materials Industries (dual programme: Chemistry, Natural Resource Technologies)
State code	6121CX011	6122FC002
Type of study (college/university)	University	University
Study cycle	First cycle	First cycle
Mode of study (full time/part time) and nominal duration (in years)	Fulltime Studies (4 yr.)	Fulltime Studies (4 yr.)
Workload in ECTS	240	240
Award (degree and/or professional qualification)	Bachelor of Physical Sciences	Bachelor of Technological and Physical Sciences
Language of instruction	Lithuanian, English	Lithuanian, English
Admission requirements	High school education	High school education
First registration date	19-05-1997	18-05-2023
Comments (including remarks on joint or interdisciplinary nature of the programme, mode of provision)		Dual programme

Second cycle/LTQF 7

Title of the study programme	Applied Chemistry	Medicinal Chemistry (joint KTU – LSMU programme)
State code	6211CX014	6281CX001
Type of study (college/university)	University	University
Study cycle	Second cycle	Second cycle
Mode of study (full time/part time) and nominal duration (in years)	Full time Studies (2 yr.)	Full time Studies (2 yr.)
Workload in ECTS	120	120
Award (degree and/or professional qualification)	Master of Physical Sciences	Master of Physical Sciences
Language of instruction	Lithuanian, English	Lithuanian, English
Admission requirements	Higher (Bachelor's degree or equivalent) Bachelor's qualification *	Higher (Bachelor's degree or equivalent) Bachelor's qualification *
First registration date	30-01-2009	21-04-2016
Comments (including remarks on joint or interdisciplinary nature of the programme, mode of provision)		joint KTU – LSMU programme)

III. ASSESSMENT IN POINTS BY CYCLE AND EVALUATION AREAS

The **first cycle** of the *chemistry* field of study is given a **positive** evaluation.

No.	Evaluation Area	Evaluation points ^{1*}
1.	Study aims, learning outcomes and curriculum	4
2.	Links between scientific (or artistic) research and higher education	4
3.	Student admission and support	4
4.	Teaching and learning, student assessment, and graduate employment	4
5.	Teaching staff	4
6.	Learning facilities and resources	4
7.	Quality assurance and public information	4
Total:		28

The **second cycle** of the *chemistry* field of study is given a **positive** evaluation.

No.	Evaluation Area	Evaluation points ^{2*}
1.	Study aims, learning outcomes and curriculum	4
2.	Links between scientific (or artistic) research and higher education	4
3.	Student admission and support	4
4.	Teaching and learning, student assessment, and graduate employment	5
5.	Teaching staff	4
6.	Learning facilities and resources	5
7.	Quality assurance and public information	4
Total:		30

1* 2*

1 (unsatisfactory) - the area does not meet the minimum requirements, there are substantial shortcomings that hinder the implementation of the programmes in the field.

2 (satisfactory) - the area meets the minimum requirements, but there are substantial shortcomings that need to be eliminated.

3 (good) - the area is being developed systematically, without any substantial shortcomings.

4 (very good) - the area is evaluated very well in the national context and internationally, without any shortcomings.

5 (exceptional) - the area is evaluated exceptionally well in the national context and internationally.

IV. STUDY FIELD ANALYSIS

AREA 1: STUDY AIMS, LEARNING OUTCOMES AND CURRICULUM

1.1.	Programmes are aligned with the country's economic and societal needs and the strategy of the HEI
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FACTUAL SITUATION

The Faculty of Chemical Technology (CTF) at Kaunas University of Technology is a leading academic unit comprising eight second-level divisions, including Environmental Technology, Physical and Inorganic Chemistry, Food Science and Technology, Organic Chemistry, Polymer Chemistry and Technology, Silicate Technology, the Bioprocess Research Centre, and the Institute of Synthetic Chemistry. The faculty employs 125 academic staff members, including professors, associate professors, and lecturers, supported by 54 non-academic personnel such as engineers, laboratory assistants, and administrative staff.

In 2024, the faculty enrolled 536 students, with 287 of them in bachelor's programmes, 170 students in master's programmes, and 79 students pursuing doctoral studies. Among these, 111 students were international students. CTF offers four accredited programmes in Chemistry: Applied Chemistry and Biomedical Materials Industries at the bachelor level, and Applied Chemistry and Medicinal Chemistry at the master level, the latter delivered jointly with the Lithuanian University of Health Sciences. Teaching is provided by faculty members, visiting academics, and industry practitioners, ensuring a strong link between theory and practice.

The faculty's strategic plan for 2020–2025 focuses on promoting excellence in world-class research, integrating doctoral studies into research to strengthen quality, and fostering science-business synergies. Research activities align with KTU's four strategic directions: chemical and environmental technologies, functional materials and technologies, food systems and biotechnology, and applied and medicinal chemistry. Through these initiatives, CTF aims to advance scientific knowledge, develop innovative technologies, and maintain its position as a leader in chemical research and education.

Current research activities are in-line with KTU's strategic directions mentioned above. Faculty researchers demonstrated strong scientific output with research outcome and practices adapted also for educational purposes. Additionally, CTF researchers are involved in international and national research and innovation projects, which reinforce the commitment to advancing high-quality research and fostering international collaboration by large.

All four study programs have undergone positive evaluation and accreditation by the Centre for Quality Assessment in Higher Education (SKVC). Accreditation milestones include:

- Applied Chemistry (Bachelor's) – accredited in 2014 (Order No. SV4-341-1, 16 June 2014);
- Applied Chemistry (Master's) – accredited in 2014 (Order No. SV4-341-2, 16 June 2014);
- Medicinal Chemistry (Joint Master's with LSMU) – accredited in 2016 (Decision No. SV2-23, 15 April 2016);
- Biomedical Materials Industries (Bachelor's) – accredited in 2023 (Decisions No. SV6-29 and SV2-7, 30 May 2023).

KTU prepares annual self-evaluation reports (SER) for study and research activities in the field of chemistry. These reports are comprehensive and data-rich, though at times challenging to navigate. The faculty management recognizes the importance of self-evaluation as a key instrument for internal improvement and demonstrates a strong commitment to quality assurance by systematically collecting data and verifying the effectiveness of implemented measures. The external expert group

confirmed that the faculty consistently monitors the quality of its study programmes, identifies areas for improvement, and strives to implement changes effectively. The expert group noted that while students were unfamiliar with the term SER, they were well aware of changes introduced for courses and study modules based on their feedback provided during mid-term evaluations. This indicates that student input is considered in decision-making, even if communication about formal processes could be improved. Moreover, there appears to be a distinction between the staffs' and students' conceptualisation of need and frequency of feedback, both formal and non-formal possibilities of giving feedback were valued.

1.1.1. Programme aims and learning outcomes are aligned with the needs of the society and/or the labour market

The Applied Chemistry programmes at KTU (Bachelor and Master) has been updated to ensure continuity with the first-cycle programme and alignment with national and international standards. Objectives, learning outcomes, and competencies are formulated to correspond to the study type, cycle, qualification level, and the requirements of the Chemistry field description, including dual-track programmes where coherence with Natural Resource Technologies is maintained. Programme conformity and structure are systematically reviewed under the Rector's orders and guided by KTU's annual development plan. Learning outcomes are implemented through modules and mapped across five outcome groups: knowledge application, research skills, special skills, social skills, and personal skills.

To support these objectives, classrooms and laboratories have been modernized with upgraded furniture and advanced equipment. Laboratory workflows have been optimized to provide students access to chromatographic and spectroscopic instruments, while early involvement in research groups ensures practical experience with modern technologies. These measures strengthen the integration of theoretical knowledge with hands-on research, preparing graduates for competitive roles in science and industry. The wide involvement of industry stakeholders in planning, realisation and feedback practises for educational development, besides collaborative final thesis projects are valuable for the students to transfer from the academic surroundings to the labour market.

The Biomedical Materials Industries bachelor programme, a two-track curriculum in Chemistry and Natural Resource Technologies, is designed to meet the growing needs of the biomedical sector and society. Its primary aim is to develop integrated competences in chemical sciences and natural resource technologies essential for researching, designing, and producing biomedical materials using sustainable technologies, while critically assessing their application potential and societal and environmental impact. The programme equips graduates with labour-market-relevant skills, including synthesis for biomedical applications, extraction and characterisation of natural resources, instrumental and chemical analytics, biological systems analysis, technology modelling and digitalisation, quality and safety assurance, and socially responsible decision-making. Developed in response to the rapid expansion of the biomedical materials industry in Lithuania and globally, the programme ensures strong employer engagement through internships, product development projects, and continuous feedback loops, thereby aligning its outcomes with real-world professional requirements.

The Medicinal Chemistry master's programme, jointly implemented by KTU and LSMU, is tailored to meet the needs of the pharmaceutical sector and healthcare industry. Its aim is to provide advanced knowledge in drug design, development, and practical significance assessment, while fostering research skills essential for work in high-tech scientific and industrial companies producing pharmaceutical preparations. Graduates acquire competencies to develop new drug substances, conduct biological, microbiological, and quality studies, design research methods, and solve complex problems in pharmaceutical development and improvement. The programme was established in response to the rapid growth of Lithuania's pharmaceutical sector and the demand for highly qualified medicinal chemistry specialists. It leverages the combined academic resources of both universities and maintains strong links with leading employers such as Thermo Fisher Scientific Baltics, Teva, Aconitum, and Biomapas, ensuring that its content and outcomes remain aligned with real-world professional requirements.

1.1.2. Programme aims and learning outcomes are aligned with the HEI's mission, goals, and strategy

The aims and learning outcomes of the four evaluated programmes being Applied Chemistry (Bachelor and Master), Biomedical Materials Industries (Bachelor), and Medicinal Chemistry (Master, joint KTU–LSMU), are fully consistent with Kaunas University of Technology's mission to create and transfer interdisciplinary knowledge and innovative technologies, and its strategic goals of delivering high-quality, research-based studies that meet international standards. Each programme integrates advanced scientific knowledge, sustainability principles, and digital competencies, fostering graduates' ability to contribute to technological progress and societal well-being. Applied Chemistry programmes emphasize chemical design, analysis, and research skills for high-tech industries, while Biomedical Materials Industries focuses on sustainable development and interdisciplinary competences in chemistry and natural resource technologies. The Medicinal Chemistry programme reflects the University's commitment to health technologies and biotechnologies, preparing specialists for pharmaceutical innovation through interdisciplinary collaboration. All programmes promote creativity, leadership, and cooperation with industry and research partners, aligning with KTU's strategic priorities of internationalization, innovation, and societal impact.

The learning outcomes of programmes are structured to ensure alignment with the type and cycle of study, qualification level, and the official description of the Chemistry field together with Natural Resources Technologies field. They emphasize systematic coherence between objectives, programme structure, and module content, reviewed annually under KTU's development plan. This approach prioritizes academic rigor, practical competence, and integration of modern laboratory-based education.

KTU's vision and mission, on the other hand, present a broader institutional ambition: to be an internationally competitive technological university fostering innovation and interdisciplinary knowledge. The University seeks to build a cohesive society through partnerships with science, business, and industry, aiming for global leadership in research and education. Its core values - responsibility, integrity, cooperation, and continuous improvement - underpin strategic priorities such as enhancing study quality, promoting internationalization, and driving breakthroughs in research and innovation.

Both perspectives share a commitment to quality education, practical skills, and responsiveness to market needs. The programme-level focus is operational and competency-driven, ensuring graduates meet professional standards in chemistry and related fields. The institutional vision is strategic and aspirational, emphasizing interdisciplinary collaboration, societal impact, and global competitiveness. Together, they complement each other: programme-level learning outcomes operationalize the University's mission by equipping students with the skills and knowledge necessary to contribute to innovation and sustainable development.

ANALYSIS AND CONCLUSION (regarding 1.1.)

The Chemistry programmes at KTU fully comply with Lithuanian and EU regulations, field descriptors, and established quality standards. Programme aims, learning outcomes, teaching methods, and assessment strategies are constructively aligned, ensuring coherence and relevance throughout all study cycles. This alignment guarantees that objectives, outcomes, and assessments are well integrated, supporting both academic rigor and industry expectations.

Competency development is systematically organized across five areas: knowledge application, research skills, special skills, social skills, and personal skills. These competencies are reinforced through interdisciplinary modules, practical training, and rigorous evaluation of final projects. Graduates acquire both specialized expertise in chemistry and transferable skills such as entrepreneurship, foreign language proficiency, and socio-economic awareness, enabling successful integration into scientific, industrial, and interdisciplinary environments.

Quality assurance processes are robust and systematic, encompassing plagiarism checks, methodological reviews, and multi-stage evaluations of final degree projects. Continuous improvement is maintained through annual programme reviews and collaboration with industry partners, ensuring that the curriculum remains relevant and competitive at both national and international levels. This commitment to quality education reflects KTU's strategic goal of global competitiveness and innovation.

Finally, the programmes emphasize flexibility and personalization, allowing students to tailor their learning pathways through elective modules, entrepreneurship courses, and foreign language options. Combined with strong research integration and opportunities for international collaboration, this structure ensures graduates are well-prepared for professional practice, lifelong learning, and compliance with all legal and regulatory requirements.

1.2.	Programmes comply with legal requirements, while curriculum design, curriculum, teaching/learning and assessment methods enable students to achieve study aims and learning outcomes
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FACTUAL SITUATION

1.2.1. Programmes comply with legal requirements

The structure of all four evaluated study programmes in the study field of chemistry complies with laws and regulations of the Government of Lithuania. They are designed in accordance with the laws and directives applicable in Lithuania and the European Union (EU) and they formally meet these requirements. The programmes comply with the Field Descriptors about the content and competences to acquire in the field of study. According to the documentation provided for this evaluation, chemistry professionals apply scientific knowledge and modern tools to analyze, model, and interpret chemical phenomena. They demonstrate proficiency in research design, data evaluation, and experimental work, ensuring safety and accuracy in laboratory practices. Their expertise includes chemical analysis, material characterization, and product development, supported by strong communication, teamwork, and ethical standards. Adaptable and self-directed, they continuously update their skills to meet evolving scientific, industrial, and societal needs.

The duration of undergraduate study programmes Applied Chemistry and Biomedical Materials Industries is 4 years with a total volume of 240 ECTS credits. In the period 2021-2024, 67 students were enrolled in the programme Applied Chemistry, while admission to the first-cycle Biomedical Materials Industries programme in period 2021-2024 has not yet been conducted (officially runs from 2023).

The duration of both MA study programmes Applied Chemistry and Medicinal Chemistry is 2 years with the total volume of 120 ECTS credits. The MA study programme Medicinal Chemistry is KTU - LSMU joint graduate study programme. In the period 2021-2024, 36 students were enrolled in the programme Applied Chemistry, while 28 students were enrolled in the MA programme Medicinal Chemistry in the same period.

The objectives, expected results, and module structure of the Applied Chemistry and Biomedical Materials Industries programmes are fully aligned with the concepts and definitions of the Chemistry study field (C01) and, in the case of the two-track programme, with Natural Resource Technologies (F01). Both programmes comply with general and specific requirements for learning outcomes and adhere to the principles of interdisciplinary integration, ensuring that study activities and methods foster new knowledge and competence development.

The Applied Chemistry programme is a full-time first-cycle programme spanning four years, with a total of 240 ECTS credits (6,400 hours of student work), distributed evenly across semesters. Graduates earn a Bachelor's degree in Physical Sciences. Similarly, the Biomedical Materials Industries programme follows the same structure and credit allocation, awarding a Bachelor's degree

in Technology and Physical Sciences. Programme compliance with national regulations, including internship and final project requirements, is ensured through systematic review under the Rector's orders.

Competency development is structured across five outcome groups: knowledge application, research skills, special skills, social skills, and personal skills. The Applied Chemistry programme allocates 165 credits (69%) to core and advanced modules in Chemistry, including internships and thesis preparation, supported by 51 credits (21%) in physical sciences, engineering, and mathematics. An additional 24 credits (10%) are dedicated to optional competencies such as foreign language proficiency (C1 level), entrepreneurship, socio-economic awareness, and general skills (Section 1.3.1). The two-track bachelor's programme in Biomedical Materials Industries integrates Chemistry and Natural Resource Technologies to prepare specialists for biomedical material development. Of the total 240 ECTS credits, 156 credits (65%) are allocated to core modules in these fields, including internships and thesis preparation. To support interdisciplinary knowledge, 60 credits (25%) cover physical sciences and engineering fundamentals, while 24 credits (10%) are dedicated to optional competencies such as foreign language proficiency (C1 level), entrepreneurship, socio-economic awareness, and general skills. This structure ensures graduates acquire both specialized and cross-disciplinary expertise essential for sustainable biomedical material production and innovation.

The second-cycle Applied Chemistry programme consists of 120 ECTS credits, with 72 credits (60%) devoted to advanced modules in Chemistry, focusing on research, synthesis, and analysis of chemical substances. A significant portion, 30 credits, is allocated to the Master's thesis, reflecting the programme's strong research orientation. The remaining 18 credits (15%) allow students to choose optional modules that enhance interdisciplinary competencies, such as project management or leadership. This design equips graduates with deep theoretical knowledge and practical research skills, preparing them for high-level roles in chemical industries and scientific research. The joint KTU–LSMU Medicinal Chemistry programme also totals 120 ECTS credits, with 78 credits (65%) dedicated to specialized modules in drug design, development, and quality assessment. Like the Applied Chemistry MSc, 30 credits are reserved for the Master's thesis, ensuring substantial engagement in research activities. Students can further personalize their studies through 12 credits (10%) of optional modules, which may include advanced topics in biomedical chemistry or synthetic medicinal chemistry. This programme combines chemistry, biology, and pharmaceutical sciences, fostering interdisciplinary skills crucial for careers in pharmaceutical research and development.

Final projects undergo rigorous quality control at multiple stages, including topic approval by programme committees, supervision by qualified faculty, and evaluation by reviewers and qualification committees. Projects are carried out in KTU's specialized departments, research centers, and industry settings, with additional opportunities for collaboration with international institutions. Research themes reflect active faculty research areas, such as polymer technology, bioactive compound synthesis, and medicinal chemistry.

The programme design emphasizes flexibility and individualization, allowing students to tailor their studies through elective modules and specialized competencies, including foreign language proficiency and entrepreneurship. This systematic structure ensures coherence between objectives, outcomes, and assessment methods, enabling graduates to meet industry expectations and international standards. Continuous improvement is supported by annual reviews under KTU's development plan, reinforcing the University's commitment to quality education and global competitiveness.

1.2.2. Programme aims, learning outcomes, teaching/learning and assessment methods are aligned

The study programmes in the field of Chemistry at KTU are designed using a systemic approach that ensures coherence between programme aims, learning outcomes, teaching methods, and assessment strategies. Programme objectives are directly linked to expected learning outcomes, which form the basis for module design and the selection of appropriate teaching and assessment

methods. This alignment guarantees that the outcomes of first- and second-cycle programmes are achieved through structured module content and integrated learning activities.

Learning outcomes are organized into five competency groups: knowledge and its application, research skills, special skills, social skills, and personal skills. These are developed through a combination of general university subjects, basic field-specific modules, and advanced modules. Classical teaching methods such as lectures, exercises, and laboratory work are complemented by modern approaches, including problem-based learning, case studies, and experiential learning. Modules like the Product Development Project exemplify applied, interdisciplinary learning by engaging students in real-world challenges through design thinking and collaborative teamwork with industry partners.

Assessment methods are constructively aligned with teaching strategies to ensure validity and reliability. Traditional forms such as examinations, reports, and oral defences are supplemented by innovative techniques like peer assessment, reflective portfolios, and performance evaluations. Each assessment method corresponds to the learning activity employed. For example, laboratory work is assessed through detailed reports, while case studies are evaluated through problem-solving exercises and presentations. This integrated framework promotes active learning, critical thinking, and professional competence, ensuring graduates meet both academic standards and industry expectations.

1.2.3. Curriculum ensures consistent development of student competences

The programme structure is deliberately sequenced to support progressive learning. In the initial semesters, students study general university subjects alongside mathematics, physical sciences, and engineering fundamentals, which provide a strong intellectual and technical foundation. Basic chemistry modules are introduced early and gradually intensified until the fourth semester, after which advanced modules are incorporated from the fifth semester onward. This progression ensures that students acquire fundamental knowledge before engaging with specialized topics such as polymer chemistry, biomedical materials, and instrumental analysis.

Competence development is further reinforced through elective modules, interdisciplinary projects, and internships. Students gain socio-economic awareness, entrepreneurial skills, and foreign language proficiency, while practical experience is embedded through two professional internships and a final bachelor's project. Each module is aligned with specific programme outcomes, and the curriculum design guarantees coherence between learning objectives, teaching methods, and assessment strategies.

This systematic arrangement provides a clear pathway for students to develop knowledge, research skills, technical expertise, and transferable competencies, ensuring readiness for professional practice and lifelong learning.

1.2.4. Opportunities for students to personalise curriculum according to their personal learning goals and intended learning outcomes are ensured

Students in first- and second-cycle study programmes have ample opportunities to personalise their curriculum in alignment with individual learning goals and intended outcomes. First-cycle programmes offer flexibility through six pathways. Students can begin with bridging courses in mathematics, physics, chemistry, English, and information technologies to address gaps in prior education. They then select general university modules that promote global awareness and critical thinking, including philosophy, sustainable development, and foreign languages at C1 level. Further personalisation is achieved through programme alternatives, such as optional modules, entrepreneurship courses, and specialised subjects. The introduction of the *Product Development Project* in 2023 enhances practical skills in innovation and market readiness. Students also individualise their learning through internship and project topics, while high-achieving students benefit from the GIFTed Talent Academy, which offers an additional 6-credit module each semester free of charge. Extra internships during free time or summer further strengthen practical experience.

Second-cycle programmes in Applied Chemistry and Medicinal Chemistry provide similar opportunities. Students in Applied Chemistry can choose MA+ competencies, either as a field expert or interdisciplinary expert, gaining advanced or cross-disciplinary skills such as change management and data analytics. They may also select specialised modules and propose research topics in collaboration with industry partners. Medicinal Chemistry students personalise their studies through optional modules in Biomedical Chemistry and Synthetic Medicinal Chemistry, individual research projects, and participation in ECIU University activities and additional programmes like GIFTed or SKILLed, which offer free access to extra modules and micro-courses.

1.2.5. Final theses (applied projects) comply with the requirements for the field and cycle

The preparation and defence of final degree projects at KTU comply with regulations set by the Rector and annual methodological guidelines for Chemistry programmes. Requirements are provided via Moodle to students, supervisors, and committees, ensuring adherence to ethical AI use and academic language standards. Project topics may be proposed by faculty, students, or external partners and are approved by the Study Programme Committee to align with learning outcomes. Students select topics, consult supervisors, and prepare projects independently following methodological instructions. This structured process guarantees quality, relevance, and compliance with study field and cycle requirements.

The topics of the final thesis of both bachelor's and master's degree are of global relevance, written in structured well designed form. While the technical level and analysis applied in experiments are at a very high level. Final projects do comply with the requirements for the field and studies. To ensure high-quality final degree projects, students receive training on citation, information sourcing, and academic writing, supported by librarian and linguist consultations. Projects undergo language review, plagiarism checks via Turnitin, and rigorous evaluation of content, methodology, and originality. Defence occurs before a qualified commission, ensuring compliance with academic standards.

ANALYSIS AND CONCLUSION (regarding 1.2.)

The evaluated Chemistry study programmes at KTU fully comply with Lithuanian and EU laws, directives, and field descriptors, ensuring alignment with legal and regulatory requirements. Programme objectives, expected results, and module structures adhere to the principles of interdisciplinary integration and are designed to foster knowledge creation and competency development. Graduates are equipped to apply scientific knowledge and modern tools for analyzing, modeling, and interpreting chemical phenomena, demonstrating proficiency in research design, data evaluation, and experimental work. Their expertise spans chemical analysis, material characterization, and product development, complemented by strong communication, teamwork, and ethical standards. The programmes emphasize adaptability and lifelong learning, enabling graduates to meet evolving scientific, industrial, and societal needs.

The structure and duration of the programmes meet formal requirements: First-cycle programmes Applied Chemistry and Biomedical Materials Industries span four years (240 ECTS), while second-cycle programmes Applied Chemistry and Medicinal Chemistry last two years (120 ECTS). Competency development is organized into five groups reflecting knowledge application, research skills, special skills, social skills, and personal skills. These are supported by interdisciplinary modules, internships, and rigorous final project evaluation. Programme design ensures coherence between aims, learning outcomes, teaching methods, and assessments, using both classical and modern approaches such as problem-based learning and case studies. Continuous improvement is maintained through annual reviews and industry collaboration, guaranteeing that the programmes remain relevant, competitive, and compliant with national and international standards.

The programme structure at KTU is deliberately sequenced to ensure progressive learning and competency development. Students begin with general university subjects and foundational courses in mathematics, physical sciences, and engineering, which provide a strong intellectual base. Basic chemistry modules are introduced early and gradually intensified until the fourth semester, followed by advanced modules from the fifth semester onward, covering specialized topics such as polymer

chemistry, biomedical materials, and instrumental analysis. Competence development is reinforced through elective modules, interdisciplinary projects, and two professional internships, culminating in a final bachelor's project. This systematic arrangement guarantees coherence between learning objectives, teaching methods, and assessment strategies, enabling students to acquire technical expertise, research skills, and transferable competencies for professional practice and lifelong learning.

Both first- and second-cycle programmes offer extensive opportunities for curriculum personalization to meet individual learning goals. Students can choose from bridging courses, general university modules promoting global awareness, and specialized electives, including entrepreneurship and foreign language proficiency at C1 level. Additional options such as the Product Development Project, extra internships, and participation in initiatives like the GIFTed Talent Academy enhance innovation and practical experience. Second-cycle programmes provide similar flexibility through MA+ competencies, interdisciplinary modules, and research projects in collaboration with industry partners. Final theses comply with all academic and regulatory requirements, undergo rigorous quality checks, and address globally relevant topics, ensuring high technical standards and originality. This personalized and structured approach prepares graduates for diverse career paths and continuous professional growth.

AREA 1: CONCLUSIONS

AREA 1	Unsatisfactory - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle				X	
Second cycle				X	

COMMENDATIONS

1. The introduction of a new study programme in 2023, explicitly aligned with the National Progress Plan 2021–2030, demonstrates commendably precise and timely strategic planning at KTU. This initiative reflects a clear understanding of national priorities and a proactive commitment to meeting emerging societal and labour-market needs.
2. Objectives, outcomes, and assessments are well aligned, and made transparent to staff and students. The data matrixes connecting these factors are clear and understandable and provide a useful tool for program management and development.

RECOMMENDATIONS

To address shortcomings

None

For further improvement

1. Strengthen strategic planning to balance research and teaching, enhance staff recruitment, and continuously update curricula to meet evolving scientific and industry needs.
2. Implement systemic data management and guidance tools while integrating emerging technologies and digital platforms into teaching and learning processes.

- Expand partnerships with industry for internships and applied projects, improve language and academic writing support, and establish regular feedback mechanisms from graduates and employers.

AREA 2: LINKS BETWEEN SCIENTIFIC (OR ARTISTIC) RESEARCH AND HIGHER EDUCATION

2.1.	Higher education integrates the latest developments in scientific (or artistic) research and technology and enables students to develop skills for scientific (or artistic) research
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FACTUAL SITUATION

Research activities within the faculty are highly structured and demonstrate strong international competitiveness. The most significant research outputs are of exceptional quality, published in leading peer-reviewed journals of global recognition, with impact factors (IF) showing a consistent upward trend over recent years. The volume of publications by CTF researchers in international journals indexed in the Web of Science (WoS) citation database has remained substantial: 135 in 2021, 151 in 2022, 134 in 2023, and 112 in 2024. More than 90% of these articles appear in journals ranked at least in the second quartile (Q2), and over 50% involve co-authorship with researchers from foreign institutions. Open-access publishing is also actively pursued. These indicators confirm that faculty members and researchers associated with Chemistry study programs maintain a strong orientation toward world-class research, ensuring a clear linkage between research outputs and the academic curriculum.

In addition to journal publications, research findings are disseminated widely through presentations at international and national scientific conferences: 384 in 2021, 426 in 2022, 317 in 2023, and 245 in the first half of 2024. During the period of 2021 - 2024, the CTF has been involved in a wide range of competitive R&D projects. During the assessment period, 42 international (including 28 COST actions), 70 national and 8 inter-institutional research projects, 28 COST actions and 98 national and 8 international (ERASMUS+, NORDPLUS) study projects were carried out covering different topics like synthesis and characterisation of novel materials, innovation in cosmetics, functional, pharmaceutical, and biomedical industries, projects are also in line with multisectoral approach OneHealth

Academic staff maintain active collaborations with industry and business sectors at both national and international levels, delivering outsourcing and consulting services across a broad spectrum of research, technological design, and process optimization challenges. These partnerships have resulted in the development of several materials and technologies classified at high Technology Readiness Levels (TRL). An analysis of CTF's R&D activities for the period 2021–2023 indicates that, on average, 57% of financial resources were generated through research projects: 51% from and 6% from national and international projects, respectively. A further 24% originated from R&D&I services provided to economic operators, while 19% was secured through budgetary allocations. These institutional funds are distributed based on the outcomes of annual performance evaluations over the preceding three years and periodic peer-review assessments conducted every five years.

Both first and second cycle programmes use different assessment methods (e.g., defense of laboratory work, project reports, portfolios, problem-solving tasks, reflection, self-evaluation). Evaluation rubrics are widely implemented in modules such as *Professional Practice 1 & 2* (BA) and *Research Project 1 & 2* (MA), as well as final projects. These rubrics define expectations, criteria, and quality standards, improving transparency and enabling self-assessment. The SER lists this as a strength - variety of methods - but does not indicate any framework ensuring coherence between cycles. Furthermore, the improvement areas focus on cooperation with industry and integration of project themes, not only on assessment alignment suggesting that a formal mechanism for aligning assessment practices across cycles is missing.

2.1.1. Research within the field of study is at a sufficient level

Research activities within the Chemistry field at Kaunas University of Technology (KTU) are fully compliant with the Law of the Republic of Lithuania on Science and Studies, ensuring adherence to national and EU regulations and alignment with the principles of the European Research Area. The University's study programmes are firmly based on international-level basic and applied research and experimental development. Research linked to Chemistry programmes falls under the Natural Sciences (N003) and, for Biomedical Materials Industries, also under Technological Sciences fields such as Environmental Engineering (T004) and Chemical Engineering (T005). This structure guarantees that studies are research-driven, interdisciplinary, and aligned with current scientific and technological trends.

The quality and impact of KTU's research are systematically evaluated through national and international peer reviews. The Lithuanian Science Council conducts annual quantitative assessments and comparative expert evaluations every five years. The latest evaluation (2018–2022) rated KTU's Chemistry and Chemical Engineering research units highly, scoring 4 out of 5 for quality, economic and social impact, and viability. International experts highlighted publications in top-tier journals as well as significant participation in competitive funding programmes including Horizon Europe, H2020, and bilateral projects. The faculty benefits from modern infrastructure and strong industry integration, with recognized expertise in areas such as perovskite solar cells, food science, and organic materials. These results confirm the high quality, global relevance, and continuous growth of KTU's research activities.

Between 2021 and mid-2024, the Faculty of Chemical Technology (CTF) demonstrated strong research performance and innovation capacity. It produced 135–151 cited articles annually, most in Q2 or higher quartile journals, with increasing open-access publishing and significant international co-authorship. Patent activity rose from 5 in 2021 to 13 in 2023, reflecting technological advancement and commercialization potential. Financial indicators show robust external funding: international project revenues peaked at €952,746 in 2023, while national projects consistently exceeded €2 million annually. Income from R&D services to industry remained strong, averaging €800,000–€1 million per year, confirming effective knowledge transfer and industry collaboration.

CTF actively participated in 42 international projects (including 28 COST actions), 70 national projects, and multiple inter-institutional and study-related initiatives during the assessment period. These projects were supported by major international programmes such as Horizon Europe, ERA-NET, and EEA-Norway, and addressed research topics including advanced materials, solar cell technologies, biocomposites, and medicinal chemistry. Research directions - chemical and environmental technologies, functional materials, food systems, and applied and medicinal chemistry - are closely integrated with study programmes, ensuring that teaching is research-based and aligned with global scientific priorities.

Collaboration with industry and international partners further reinforces the quality and relevance of research. KTU collaborates with industry through applied research and technology development projects addressing real-world challenges. Partnerships include joint R&D with Lithuanian and foreign companies to develop new materials, improve production technologies, and innovate in chemical, pharmaceutical, and biomedical sectors. Industry themes are integrated into student theses and internships, with cooperation in areas such as sustainable chemistry, functional materials, and biomedical technologies, often supported by Horizon Europe and Baltic Research Programme. Engagement is maintained through company visits, joint events, and active participation of industry representatives in faculty activities and study committees. While SER emphasizes strong research integration and modern laboratory equipment, there is no explicit mention of systematic collaboration with industry to renew analytical chemistry methodologies, integrate cutting-edge developments, or standardize measurement practices for quality control, especially in the context of the second-cycle studies. The focus in the MSc programmes is primarily on research projects and thesis work, but visibility of methodological competencies aligned with industrial standards, like ISO, GMP, GLP, is not clearly articulated.

Research within the Chemistry field at KTU is not only sufficient but strategically strong, internationally recognized, and well-connected to teaching and innovation goals. It meets all regulatory requirements, demonstrates high-quality outputs, secures competitive funding, and maintains strong industry partnerships. These factors confirm its adequacy for supporting advanced studies, fostering innovation, and sustaining global competitiveness.

2.1.2. Curriculum is linked to the latest developments in science, art, and technology

The Chemistry study field programmes are deeply rooted in internationally oriented research and continuously adapt to the latest scientific trends. Core themes such as sustainable production principles, circular economy concepts, and green chemistry reflect global priorities in environmental responsibility and resource efficiency. Advanced topics, including biomass functionalization, molecular technologies for medicine and pharmaceuticals, and innovative approaches to drug delivery, are integrated into the curriculum to address pressing challenges in healthcare and industry. By embedding faculty-led research projects into teaching, students gain exposure to cutting-edge developments in areas like cancer treatment modelling, regenerative medicine, and nanotechnology, ensuring that theoretical knowledge is complemented by practical, research-driven applications.

The curriculum actively incorporates technological innovations that shape modern chemical sciences and related industries. Students engage with advanced analytical techniques, artificial intelligence applications in chemical processes, and the design of functional materials such as perovskite solar cells and smart polymers. Modules on nanomaterials, biomedical materials, and applied chemistry prepare graduates to work with emerging technologies that drive sustainability and performance improvements in sectors ranging from energy to healthcare. Furthermore, interdisciplinary projects and product development modules foster familiarity with digital tools, simulation software, and experimental platforms, ensuring that students acquire both technical proficiency and adaptability in a rapidly evolving technological landscape.

Beyond scientific and technological expertise, the programmes emphasize creativity, collaboration, and global engagement which are qualities essential for innovation. Students participate in international conferences, research exchanges, and science popularization events, gaining exposure to diverse perspectives and best practices. Soft skills such as teamwork, leadership, and ethical decision-making are systematically developed through collaborative projects and interdisciplinary modules, bridging science with entrepreneurial thinking and societal impact. This holistic approach reflects the intersection of science, art, and technology, where problem-solving requires not only technical mastery but also creative and critical thinking to design sustainable solutions for complex global challenges.

In terms of soft skills, they are explicitly addressed in the programmes through structured learning outcomes and teaching methods. All four programmes include outcome groups for social and personal competences, which focus on teamwork, communication, leadership, and ethical decision-making. These skills are developed through collaborative projects, interdisciplinary product development modules, group assignments, and presentations. For example, the *Product Development Project* module in bachelor programmes emphasizes teamwork, creativity, and entrepreneurial thinking, while master-level programmes integrate project management and leadership components. Additionally, students engage in discussions, case studies, and reflective activities that foster critical thinking, adaptability, and responsibility for qualities essential for modern labour markets. This systematic approach ensures graduates possess not only technical expertise but also strong interpersonal and problem-solving skills aligned with industry expectations.

2.1.3. Opportunities for students to engage in research are consistent with the cycle

The University and the Faculty of Chemical Technology (CTF) provide well-structured and comprehensive conditions for students to engage in scientific and applied research activities, ensuring alignment with their study cycle and future employability. Research engagement is scaled to the complexity of each cycle, supported by a favorable student-to-teacher ratio (7.19 students per teacher at faculty level and 8.2 students per professor in Chemistry), which enables personalized

mentoring and close supervision. The Academic Mentoring Programme, involving more than 60 faculty members, plays a pivotal role in guiding students through research initiation, participation in conferences, scientific publishing, and laboratory work. This structured approach ensures that students receive tailored support to develop both academic and professional competencies.

At the Bachelor's level, students participate in research through Professional internships and the Bachelor Final Project (15 ECTS), with opportunities to join faculty research groups early and engage in applied projects. National initiatives such as *Student Research during Semester* and *Student Summer Practice* funded by the Lithuanian Research Council further enhance research exposure. At the Master's level, research becomes a core component through modules like *Research Project 1* (6 ECTS), *Research Project 2* (12 ECTS), and the Master's Final Project (30 ECTS), ensuring systematic involvement in scientific work. Many projects are conducted in collaboration with industry or international partners, reinforcing practical relevance and global perspectives. Students are encouraged to present at conferences and co-author publications, contributing to their academic profile and employability.

The impact of these conditions is evident in strong student research outputs: over 390 presentations at national and international conferences, 75 co-authored articles in WoS/Scopus-indexed journals, and active participation in research projects funded, for example, by the Lithuanian Research Council. Approximately 20% of final theses are prepared with social partners, demonstrating integration of academic research with real-world applications. Additional opportunities, such as participation in the KTU Students' Scientific Society, the annual *Technorama* exhibition, and the student scientific conference *Chemistry and Chemical Technology*, provide platforms for visibility, networking, and entrepreneurial engagement. These initiatives confirm that the Chemistry programmes are strongly research-oriented, fostering both academic excellence and practical skills through interdisciplinary collaboration and industry partnerships.

ANALYSIS AND CONCLUSION (regarding 2.1.)

Research within the Faculty of Chemical Technology (CTF) at KTU is internationally competitive, strategically aligned with institutional goals, and deeply integrated into teaching. High-quality outputs: Over 90% of publications in Q2 or higher-ranked journals, significant international co-authorship, and growing patent activity, which reflect global collaboration and scientific impact. Research dissemination through conferences and participation in diverse R&D projects, combined with strong industry partnerships and sustainable funding, ensures innovation and financial stability. These activities are embedded in curricula through structured modules, transparent assessment rubrics, and interdisciplinary projects, enabling students to acquire both theoretical knowledge and applied competencies.

Student engagement in research is systematic and cycle-appropriate. At the bachelor's level, students participate through internships, final projects, and national initiatives, while master's programmes include dedicated research modules and projects often conducted with industry or international partners. Personalized mentoring and a favorable student-to-teacher ratio support close supervision and skill development. Strong outcomes of 390+ conference presentations, 75 co-authored publications, and 20% of theses prepared with social partners demonstrate effective integration of research and education. Overall, these links foster innovation, global competitiveness, and practical relevance, ensuring graduates are well-prepared for scientific and industrial challenges.

Research and education within the Chemistry field at KTU are strongly interconnected, ensuring that teaching is research-based, globally relevant, and aligned with technological and industrial trends. Structured modules, internships, and final projects embed research into curricula, while students actively participate in conferences, publications, and collaborative projects. This synergy fosters innovation, practical skills, and academic excellence, preparing graduates for competitive scientific and industrial environments.

AREA 2: CONCLUSIONS

AREA 2	Unsatisfactory - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle				X	
Second cycle				X	

COMMENDATIONS

1. Diverse methodological training and extensive hands-on practice. There is robust integration of inquiry and research in modules, internships, and final projects across both cycles.
2. Course structure is in line for a constructive learning path and timetable in conjunction with the expected learning outcomes and skills needed for employment in the labour market.
3. Thesis projects are well connected with industry and Faculty's research initiatives as highlighted in conference presentations and co-authored publications.

RECOMMENDATIONS

To address shortcomings

None

For further improvement

1. Further alignment of assessment practices between first and second cycle programmes ensures systematic coherence, transparency, and clears expectations for both teachers and students throughout the study path.
2. Strengthening collaboration with industry to renew analytical chemistry methodologies is foreseen to integrate modern developments. Also, standardizing measurement practices in large-scale for quality control makes these visible in second-cycle studies alongside methodological competencies.
3. Enhancing the implementation of soft skills in the curriculum supports interdisciplinary research and professional readiness.
4. Enhance commercialization pathways for research outputs and promote interdisciplinary projects across faculties.
5. Expand student participation in international research projects and mobility programmes to strengthen global competencies.

AREA 3: STUDENT ADMISSION AND SUPPORT

3.1. Student selection and admission is in line with the learning outcomes

FACTUAL SITUATION

Admission to the Chemistry study field at Kaunas University of Technology is organised in accordance with national regulations. Entry into bachelor programmes takes place through the centralised LAMA BPO platform, while applicants to master's programmes apply via KTU's internal admission system. Information about competitive score composition, subject requirements, and the distribution of state-funded and self-funded places is made publicly available on institutional channels, ensuring that the admission process is transparent and well communicated.

Applicant numbers fluctuated during the evaluation period, reflecting broader demographic trends in Lithuania and the changing attractiveness of STEM studies. According to the SER, students admitted to Chemistry field programmes typically demonstrate good academic preparation, though their prior knowledge in key science subjects may vary. This diversity sometimes requires additional academic support, especially for first-year students entering from different educational backgrounds. Nonetheless, interest in both Lithuanian- and English-taught programmes remains stable.

KTU maintains active communication with prospective students through a combination of online and on-site outreach activities, including information sessions, digital consultations, study fairs, and faculty-organised events. The student information and service centre provides general admission guidance, while the international studies office supports foreign applicants with documentation, qualification recognition, and practical questions related to integration. Procedures for recognising foreign qualifications, study periods completed abroad, and prior learning comply with national regulations and are implemented consistently across the institution.

The University systematically monitors student dropout at both programme and faculty levels. Withdrawals occur most frequently during the first academic year, to address this, programme staff organise individual consultations, early intervention meetings, and academic advising aimed at supporting at-risk students. Subsequently, programme committees review dropout data, discuss possible causes, and propose improvements to enhance student retention as much as possible.

3.1.1. Student selection and admission criteria and procedures are adequate and transparent

Admission to both first and second cycle Chemistry programmes at KTU is transparent, clearly defined, and publicly accessible. Bachelor-level admission is conducted through the national LAMA BPO system, which uses standardized competitive scores based on secondary education results and entrance exams. Information on subject requirements, deadlines, and available study places is published well in advance on official channels, ensuring clarity for applicants, therefore students confirm that the process is smooth, digitalised and easy to navigate with no major administrative obstacles.

Admission to master's programmes is managed through KTU's internal application system and follows similarly clear procedures, requiring a relevant bachelor's degree and competitive ranking. While students reported that the steps and requirements are understandable, differences in prior academic preparation among entrants are not always addressed through bridging measures, this can lead to uneven starting competencies, particularly for graduates from diverse academic backgrounds, highlighting the need for additional support mechanisms.

Across both cycles, admission is governed by a standardized competition-score framework, enabling comparability across funding types, however, much of the available evidence for demand relies on application volumes and priority selections rather than full score distributions, so direct inference on score trends remains partially constrained. In the first cycle (Applied Chemistry, state-funded), total priority selections rose from 78 (2021–2022) to 100 (2022–2023) (+28%) and then fell to 57 (2023–2024) (–43%), first-priority selections likewise moved from 23 → 28 (+22%) → 14 (–50%), indicating

peaked demand and competitive pressure in 2022–2023 followed by softened demand in 2023–2024, which typically correlates with lower thresholds. The competition-score data support a nuanced view: The maximum peaked at 10.06 (2022–2023) and then declined to 9.04 (2023–2024), while the minimum rose from 5.41 to 6.11, suggesting fewer top scorers but a higher entry floor amid reduced intake, i.e., maintained selectivity despite lower volumes. In the second cycle (MA Applied Chemistry, state-funded), total priority selections decreased from 24 (2021–2022) to 17 (2022–2023) and stayed 17 (2023–2024); first-priority choices dropped from 17 to 10 and remained there, while minimum scores increased from 5.55 (2021–2022) to ~6.2 (2022–2024) and maximums rose to 9.36, indicating improving top-end quality and a stable/higher threshold. For the MA Chemistry (KTU/LSMU), maximum scores held around ~8.7 and minimums fluctuated modestly (6.06–6.41–6.34), reflecting consistent competitive pressure. For the KTU–LSMU joint MA in Medicinal Chemistry, the same competition-score principles apply at LSMU (assuring cross-institutional consistency); while specific score series are not provided, preferences dipped in 2022–2023 and rebounded in 2023–2024, and historically higher demand aligns with higher maxima and/or lower acceptance thresholds, implying sustained competitiveness. Overall, the graduate programmes exhibit rising top scores with stable/higher minima, while the bachelor programme shows a narrower spread with a higher floor amid lower volumes – signals of maintained selectivity and quality tempered by year-to-year demand variance.

Overall, the admission process for Chemistry programmes at KTU meets national and institutional standards, ensuring fairness, transparency, and accessibility for both Lithuanian and international applicants. The inclusion of competitive scoring, motivation assessment, and recognition of prior research or professional experience adds value to the selection process. However, opportunities exist to strengthen alignment between cycles by introducing bridging modules and competency-based support, ensuring all admitted students start with comparable foundational knowledge.

3.1.2. Recognition of foreign qualifications, periods of study, and prior learning (established provisions and procedures)

The University has established a centralized and structured procedure for acknowledging foreign qualifications, partial studies, and prior non-formal and informal learning. This process is managed by qualified staff within the International Relations Department and applies to all study programs except state-funded bachelor's and full-time positions. The evaluation follows national regulations and institutional guidelines, ensuring consistency and transparency. For specific programs, such as the second-cycle Medicinal Chemistry program at LSMU, recognition is handled by authorized committees under separate regulations, maintaining compliance with specialized requirements.

Applicants submit a single online application for both admission and qualification recognition, and the assessment focuses on the value and level of the foreign qualification, its comparability to Lithuanian standards, and any essential differences. Recognition decisions are based on learning outcomes rather than detailed content analysis and do not guarantee admission, which is governed by separate regulations. Assessors rely on recommendations from the Centre for Quality Assessment in Higher Education (SKVC), and if guidance is unavailable, they seek SKVC input before finalizing decisions. The University offers several recognition outcomes, including full recognition, recognition with conditions, or non-recognition with the possibility of crediting partial studies. Between 2022 and 2024, four students with foreign bachelor's degrees enrolled in Chemistry postgraduate programs, and all their qualifications were recognized, with no rejections recorded during 2021–2024.

The University also applies clear procedures for crediting learning outcomes acquired through mobility, joint programs, and non-formal or informal learning. For agreed study content, credits and original grades are recorded without transferring them to the University's grading system, except when a full academic year abroad is completed and requested for transfer. Strict limits apply to non-harmonized study content, and free-choice modules are credited without restriction, while final projects are excluded. Part-time studies are permitted only at institutions with Erasmus+ or bilateral agreements, and between 2021 and 2024, 13 Chemistry students participated in part-time studies abroad, with all results credited. Competences acquired through non-formal and informal learning can be recognized for up to 50% of the program, excluding the final project, although no such

requests were recorded in Chemistry programs during the same period. These procedures ensure fairness, transparency, and alignment with international standards.

ANALYSIS AND CONCLUSION (regarding 3.1.)

Admission to Chemistry programmes at Kaunas University of Technology (KTU) is organized in line with national regulations and institutional procedures, ensuring transparency and accessibility. Bachelor-level admission is conducted through the centralized LAMA BPO platform, which applies standardized competitive scores based on secondary education results and entrance exams. Master's programme admission is managed internally via KTU's system, requiring a relevant bachelor's degree and ranking by competitive score. Information on subject requirements, deadlines, and funding options is published well in advance through official channels, and students report that the process is clear, digital, and user-friendly.

Applicant numbers have fluctuated during the evaluation period, reflecting demographic trends and varying interest in STEM fields. While admitted students generally demonstrate strong academic preparation, differences in prior knowledge – particularly in core science subjects – sometimes necessitate additional academic support for first-year entrants. KTU addresses these challenges through early intervention measures, individual consultations, and academic advising. Programme committees monitor dropout rates, which are most frequent in the first year, and implement targeted actions to improve retention and support students with diverse educational backgrounds.

The University provides comprehensive support for prospective and enrolled students through multiple channels. Outreach activities include online consultations, study fairs, and faculty-organized events, complemented by guidance from the Student Information and Service Centre. International applicants receive specialized assistance from the International Studies Office, covering documentation, qualification recognition, and integration. Established procedures for recognizing foreign qualifications, prior learning, and study periods abroad comply with national standards and are applied consistently. These measures, combined with systematic monitoring and responsive support strategies, ensure that admission processes are fair, transparent, and aligned with student success objectives.

Overall, the admission system is very good, operates effectively, and could be further strengthened through more targeted support for students entering with diverse academic backgrounds.

3.2.	There is an effective student support system enabling students to maximise their learning progress
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FACTUAL SITUATION

KTU demonstrates a well-structured and comprehensive student support system that addresses academic, social, psychological, and financial needs. Academic support is robust, including consultations with lecturers, mentoring, tutoring, and access to programme coordinators, which helps students manage diverse learning challenges. The availability of modern learning resources – such as virtual learning platforms, library services, laboratories, and specialized software – ensures that students have the tools necessary for successful engagement in Chemistry studies. These measures collectively promote academic success and reduce barriers to learning.

Social and financial support mechanisms are equally strong, offering accommodation in university dormitories, scholarships, allowances, and targeted assistance for students with disabilities or special needs. Psychological counselling and well-being services provided through the university's counselling centre further enhance student welfare, addressing mental health and stress-related issues. This multi-layered approach reflects an understanding of the holistic needs of students and contributes to their overall well-being and retention.

Career development and international mobility support add significant value to the student experience. The Career and Development Centre facilitates employability through consultations, internships, job fairs, and networking opportunities, while Erasmus+ and bilateral exchange

programmes encourage global exposure. Incoming international students benefit from dedicated assistance provided by the International Studies Office, ensuring smooth integration. Additionally, extracurricular activities and student representation opportunities foster community engagement and personal development. Overall, KTU's support system is comprehensive, proactive, and aligned with best practices for student success.

3.2.1. Opportunities for student academic mobility are ensured

KTU's Chemistry field has substantial headroom to expand student mobility, supported by a mature ecosystem spanning physical, blended, and virtual formats, clear duration rules, academic leave for year-long internships, tuition-fee waivers, scholarships, and strong communications. Participation from 2021–2024 totals 40 instances, split almost evenly between studies and internships, with bachelor's activity slightly exceeding master's, and recent growth in bachelor-level part-time studies and master-level internships confirming elastic demand when pathways are well signposted. Although tuition waivers are standard at partners, travel and accommodation remain student-borne costs (and summer/winter schools may charge fees), so broadening the funding mix - co-funded micro-grants for short mobilities, top-ups for high-cost destinations, and dedicated funds for students with disabilities or special needs - would widen participation. This conclusion is justified because cost is a known barrier, and targeted micro-grants have a direct, documented impact on participation decisions.

Opportunities include rebalancing toward master's-level mobility and activating underused virtual and blended formats through structured promotion and micro-credentials, which would expand access for students with work or family constraints. Destination diversification beyond frequently used countries would broaden disciplinary perspectives and networks; adding a small set of strategically chosen partners in the Nordics, Benelux, East Asia beyond Korea, and North America can align mobility with programme strengths such as green chemistry, materials science, and biopharma analytics. The presence of 111 foreign students in the faculty (2024–2025) creates immediate leverage for peer mentoring, buddy systems, and co-creation of blended mobility cohorts, using the intercultural capital already on campus to lower perceived barriers and increase outbound interest. Embedding the Intercultural Learning (3 ECTS) pre/post module across more programmes and mapping its outcomes to study modules will strengthen academic recognition and perceived value, further motivating participation.

To scale mobility without compromising quality, KTU should adopt field-level KPIs and publish an annual dashboard tracking participation rates by cycle and type, scholarship coverage ratio, destination distribution, recognition turnaround, credit transfer completion within 30 days, and post-mobility satisfaction and learning-gain surveys. Addressing reporting gaps - such as the blank/zero MA internship year - through systematic monitoring would enable early interventions (extra calls, targeted communications) and more nuanced resource allocation (scholarships where demand surges, partner seats where utilization lags). Clear, evidence-based targets - maintaining a studies-to-internships ratio within the 45–55% band and raising the MA share by 10–15% - will guide resource deployment and predictable scaling. This approach is justified because the ecosystem has already reacted positively to targeted support; adding KPI-based feedback loops ensures sustained quality and steady growth, as evidenced by recent upticks following focused interventions.

3.2.2. Academic, financial, social, psychological, and personal support provided to students is relevant, adequate, and effective

The support system at KTU is highly relevant because it addresses the full spectrum of student needs - academic, financial, social, psychological, and personal. Academic support through consultations, programme-level meetings, and structured initiatives such as GUIDed, GIFTed, and SKILLed ensures guidance for both coursework and career development. Financial support is tailored to diverse circumstances, including scholarships for talent, social hardship, and mobility, which directly align with students' academic and socio-economic realities. Psychological and personal support through peer mentoring, career mentors, and access to university psychologists reflects an understanding of mental health and well-being as integral to student success.

The range and structure of these services indicate adequacy. Academic support is multi-layered, combining faculty consultations with mentorship programmes that cater to high-achieving students and those needing additional guidance. Financial assistance is comprehensive, covering merit-based, social, and mobility scholarships, reducing barriers to participation in studies and international exchange. Social integration is promoted through non-formal education programmes and extracurricular activities, while psychological services are accessible and complemented by pastoral care. Multiple access points - faculty websites, the Student Information and Service Centre, and targeted programmes - ensure students can obtain help when needed, suggesting the system is sufficiently resourced and organized.

Effectiveness is supported by the structured nature of these services and their alignment with student development goals. Mentorship programmes and career support initiatives help students navigate academic challenges and prepare for employment, while financial aid mitigates economic constraints that could otherwise hinder performance or mobility. Psychological counselling and peer mentoring foster resilience and well-being, contributing to retention and academic success. Centralizing these services under the Student Information and Service Centre enhances coordination and responsiveness. However, effectiveness could be further strengthened by systematically monitoring usage rates, student satisfaction, and outcomes such as reduced dropout and improved performance, ensuring continuous improvement and targeted interventions.

3.2.3. Higher education information and student counselling are sufficient

Based on the SER and evidence collected during the site visit, it is clear that the information provided by the Faculty of Chemical Technology (CTF) to students about Chemistry study programmes, their structure, requirements, and progression rules is comprehensive and easily accessible. Information is delivered through multiple channels, including orientation events, faculty briefings, and introductory meetings with programme administrators and lecturers. All relevant details are consistently available in the virtual learning environment, on the faculty website, and through the KTU Student Information and Service Centre, ensuring that students can readily access study-related guidelines, regulatory documents, and support services without difficulty.

Counselling throughout the study period is systematic and sufficient. Students benefit from regular academic consultations with lecturers, ongoing communication with programme heads, and individual tutoring when needed. Structured mentorship systems—including peer mentors, academic mentors, and career mentors – provide continuous guidance from the start of studies through progression stages. Additional programmes such as GUIDed, GIFTed, and SKILLed offer personalised counselling, talent development, and skills enhancement, ensuring that students receive targeted support aligned with their academic and career goals.

Psychological and personal counselling services further strengthen the support framework, making it holistic and responsive to student needs. Access to university psychologists, pastoral care, and mentoring options ensures that students can address well-being concerns alongside academic challenges. The combination of clear information channels and multi-layered counselling mechanisms demonstrates that the University's approach is not only relevant but also adequate and effective in supporting student success.

ANALYSIS AND CONCLUSION (regarding 3.2.)

KTU provides a comprehensive and well-structured system for student assessment and support that is relevant, adequate, and effective in promoting academic success and overall well-being. Academic support is multi-layered, including consultations with lecturers, mentoring, tutoring, and access to programme coordinators, complemented by modern learning resources such as virtual platforms, libraries, laboratories, and specialized software. Financial and social assistance is robust, offering scholarships, allowances, dormitory accommodation, and targeted support for students with disabilities or special needs, while psychological counselling and pastoral care ensure mental health and resilience. Career development and international mobility further enrich the student experience through internships, job fairs, Erasmus+ exchanges, and dedicated services for international

students. The system is strengthened by clear information channels and structured counselling mechanisms, ensuring timely guidance throughout the study period. Overall, KTU's approach meets required standards and significantly contributes to student progress, retention, and personal development, with potential for further enhancement through targeted improvements such as expanding funding for mobility and refining mentoring practices.

To conclude, the panel finds that the student support system in the Chemistry field is very good and fully meets the required standards and provides a substantial contribution to students' academic progress, well-being, and overall study experience throughout their study years. The support infrastructure is well developed and functions effectively, with the potential for further enhancement through minor refinements – such as reinforcing the coherence of mentoring practices, reviewing the curriculum architecture regarding course content overlapping and offering more targeted guidance for students arriving with varied prior academic preparation.

AREA 3: CONCLUSIONS

AREA 3	Unsatisfactory - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle				X	
Second cycle				X	

COMMENDATIONS

- Using the centralized LAMA BPO platform for bachelor-level admission and KTU's internal system for master's programmes provides clarity and efficiency for admission to Chemistry programmes.
- Admitted students' preparation positively correlates with their learning capabilities and learning outcomes. Commitment to continuous improvement demonstrates proactive measures to support students with diverse academic backgrounds through early interventions, individual consultations, and academic advising.
- The availability of academic mentoring, career counselling, well-developed psychological services, and clear mobility support mechanisms demonstrates a strong institutional commitment to student well-being and successful study progression.

RECOMMENDATIONS

To address shortcomings

None

For further improvement

- Review curriculum architecture systematically to reduce content overlap between bachelor's and master's programmes, ensure better balance of workload across semesters, and align laboratory-intensive modules more evenly. Enhancing coherence between programme components would contribute to smoother learning progression and a more consistent student experience.

2. Despite the performance and potential of the joint second-cycle study programme in Medicinal Chemistry between KTU and LSMU, some issues have been raised by students regarding the operation of the study process at the two universities. Therefore, some measures and procedures must be implemented.
3. Strengthen targeted guidance for international students, particularly in areas of academic integration, communication with programme coordinators, and access to administrative services. More structured onboarding procedures and increased cultural–academic mentoring could further support their successful adaptation and study progression.
4. Expand student wellbeing initiatives by ensuring timely access to counselling, promoting preventive mental health programmes, and improving coordination between faculty-level advisors and central support units. A more proactive wellbeing strategy would help address emerging student needs more effectively.

AREA 4: TEACHING AND LEARNING, STUDENT ASSESSMENT, AND GRADUATE EMPLOYMENT

4.1.	Students are prepared for independent professional activity
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FACTUAL SITUATION

4.1.1. Teaching and learning address the needs of students and enable them to achieve intended learning outcomes

Teaching and learning in the Chemistry study field at KTU are structured around a blend of traditional instruction and modern, student-centered methodologies. The approach incorporates problem-based and project-based learning, case studies, and applied research integration, ensuring that module structures support cumulative learning and advanced specialization. Teachers have commendable autonomy to select teaching and assessment methods, fostering innovation and responsiveness. Active learning techniques - such as group projects, reflective practice, and industry visits - are widely applied across undergraduate and graduate modules to promote engagement and practical skill development. This dynamic approach creates an inclusive and motivating environment that supports students in achieving targeted learning outcomes.

Assessment practices emphasize both theoretical knowledge and practical competencies, using diverse methods such as exams, project reports, portfolios, self-evaluation, and activity reflection. Evaluation rubrics are systematically implemented to ensure transparency, fairness, and alignment with learning outcomes, while digital tools like Turnitin Feedback Studio enhance feedback quality. The University applies an accumulative evaluation system combining intermediate and final assessments, supplemented by participation-based components to encourage active involvement. Independent work is well-organized and continuously assessed throughout the semester, with clear requirements and deadlines communicated via multiple channels (syllabi, Moodle, AIS). Students have access to extensive resources, including library facilities, group workspaces, VPN-enabled virtual desktops, and specialized software, enabling effective self-directed learning and research.

Quality assurance mechanisms reinforce the effectiveness of this system. Each member of the teaching staff undergoes annual evaluation, which includes training participation, scholarly output, and student feedback on course content and teaching performance. Professional practice modules and research projects integrate real-world application and independent inquiry, supported by structured guidance from mentors and programme coordinators. Overall, the teaching, learning, and assessment framework in the Chemistry field is comprehensive, student-centered, and aligned with best practices, ensuring continuous engagement, skill development, and fair measurement of achievements, while maintaining flexibility for further enhancement through targeted refinements.

4.1.2. Access to higher education for socially vulnerable groups and students with individual needs is ensured.

KTU ensures access to studies through a strong commitment to inclusive education principles, guaranteeing equal opportunities for all students regardless of gender, race, nationality, social status, disability, or other characteristics. The University implements its Equal Opportunities and Diversity Policy and Violence Prevention Policy, creating an environment that respects individual dignity and values diversity. This framework prohibits any form of discrimination and promotes openness, ensuring that socially vulnerable groups and students with special needs can fully participate in academic life. Additionally, guidelines on emotional and social well-being and religious diversity foster a safe, respectful, and culturally sensitive environment, supporting integration and dialogue within the community.

Adaptation of studies for students with disabilities or individual educational needs is systematic and personalized. Students can request adjustments through the Academic Information System and consult with social welfare coordinators, who liaise with vice-deans and faculty to implement necessary accommodations. Flexible assessment methods are applied, such as extended time for exams, increased font size, adapted lighting, and accessible locations. Dedicated resources, including information on the KTU website, consultations via the Student Information and Service Centre, and mediation by social welfare coordinators, ensure that students receive guidance on study-related issues, financial support, and integration. In 2024, ten students with disabilities successfully completed their studies, demonstrating the effectiveness of these measures, although no Chemistry programme students required such adaptations during 2021–2024.

Continuous improvement and responsiveness are evident through active surveys on emotional and physical health, which help identify individual needs and enable timely adjustments. Training for staff on disability awareness, ethics, and universal design, along with social events promoting equal opportunities, strengthen the institutional culture of inclusion. Student satisfaction with adaptation services reached 100% in 2023, confirming the adequacy and effectiveness of these provisions. Overall, KTU's policies, infrastructure, and support mechanisms provide a comprehensive and proactive approach to ensuring access for socially vulnerable groups and students with special needs, aligning with best practices in higher education.

There were no students with special needs in the Chemistry degree programmes during the evaluation period.

ANALYSIS AND CONCLUSION (regarding 4.1.)

KTU's Chemistry programmes combine traditional instruction with modern, student-centered approaches such as problem-based and project-based learning, case studies, and applied research. Modules are sequenced for cumulative learning and specialization, while faculty autonomy fosters innovation. Active learning techniques - group projects, reflective practice, and industry visits - enhance engagement and practical skill development. Strong infrastructure, including digital platforms, specialized software, and collaborative spaces, supports independent and team-based learning.

Assessment is transparent, diverse, and competency-focused, using exams, project reports, portfolios, and self-evaluation. Evaluation rubrics ensure fairness and clarity, while digital tools like Turnitin improve feedback quality. The accumulative evaluation system combines intermediate and final assessments with participation components to encourage continuous engagement. Independent work is structured and monitored through multiple channels, and flexible accommodations are provided for students with special needs, ensuring inclusivity.

Graduate employability is embedded through practice-oriented modules, research projects, and industry-linked activities that develop technical and transferable skills. Professional practice and research projects integrate real-world application and independent inquiry, supported by mentoring and career guidance. Initiatives like WANTED and curated internship offers strengthen workplace

readiness. While employment data is not detailed, the curriculum design and quality assurance mechanisms strongly support graduates' competitiveness in the labour market.

4.2.	There is an effective and transparent system for student assessment, progress monitoring, and assuring academic integrity
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FACTUAL SITUATION

4.2.1. Monitoring of learning progress and feedback to students to promote self-assessment and learning progress planning is systematic

KTU operates a layered, coherent monitoring architecture across annual, semester, and continuous levels. Annually, the Department of Academic Affairs compiles a university-wide report by faculty and cycle covering student progress, repeat examinations, effectiveness of new QA measures, reasons for study termination/interruption, attendance, academic ethics violations, and bridging-course results, which is presented to the rectorate. Semester-by-semester, achievement review and standing are structured by the *Regulations on the Assessment of Study Modules* and the *Guidelines for Identification of Learning Achievements and Redistribution of State-Funded Places*. Chemistry Programme Committees track AIS data (averages, mid-term and final results, attendance) and use an Early Warning System to identify at-risk students, initiate outreach, and route support via academic mentors. To prevent student loss, the University deploys bridging courses, stricter attendance requirements, and differentiated didactics - while increasing independent learning - without lowering quality standards.

Feedback is structural and formative, enabling self-assessment and study-progress planning. Programme Committees triangulate annual reports, AIS dynamics, student surveys, roundtables, and targeted committee surveys to pinpoint modules for improvement, audit Moodle courses, and include actions in the annual SPC plan; lecturers embed module enhancements in their activity plans, present changes to students, and collect feedback. At course level, teachers provide ongoing comments on performance and recurring errors (including prior-year patterns), strengthening metacognition and self-regulation. Students participate via round tables, meetings with faculty administration, and representation in study programme committees (SPK), with explicit duties to channel student positions and provide direct feedback. The SPK ensures Moodle courses clearly present learning objectives, outcomes, assessment methodologies and criteria, and enable feedback on assessment issues; ongoing Moodle/e-module development is part of the SPK annual plan. Together, transparent criteria, iterative commentary, and structured student voice form a closed-loop QA cycle that translates monitoring into concrete improvements and supports timely, personalized study planning.

Overall, the evidence in SER and obtained during the on-site visit supports that monitoring and feedback are systematic and continuous, and they encourage self-evaluation and planning; implementing these enhancements would make the system even more predictive, personalized, and outcome-oriented.

4.2.2. Graduate employability and career are monitored

Graduates of the Chemistry study programmes at KTU exhibit strong employability prospects, securing positions in diverse sectors such as industry, research institutions, and public organizations both locally and internationally. Their competencies span practical and advanced chemical technologies, enabling them to work as chemical technologists, laboratory technicians, product development specialists, and quality managers in well-known companies. Employment outcomes are highly positive, with over 90% of graduates finding jobs within 12 months of graduation, often in roles directly related to their field of study. Furthermore, a significant proportion of graduates pursue postgraduate or doctoral education, including placements at prestigious institutions such as the Max Planck Institute and Lund University.

KTU systematically monitors graduate employability and career progression through a combination of formal and informal mechanisms. Structured surveys are conducted annually for recent graduates to assess employment timelines, job alignment, challenges faced, and the relevance of acquired skills. Biennial employer surveys and data from the Government Strategic Analysis Centre complement these efforts, providing insights into graduate competencies and employment rates. Feedback is shared among faculty, programme committees, and lecturers, forming a closed-loop quality assurance process where data informs curriculum adjustments and stakeholder communication. This multi-channel approach ensures continuous improvement and responsiveness to labour market needs.

Expressions of students like *“Studying at KTU was more than learning chemistry – it shaped me as a person. The modules taught me perseverance, logical thinking, and adaptability, skills that go far beyond the laboratory.”* Is a testimony of the quality and meaningfulness of the studies.

Graduate support is reinforced through initiatives such as the Alumni Career Mentorship Programme, which involved 101 alumni in 2024, and career consultations offered by the Career and Service Centre. Large-scale networking events like WANTED Career Days connect students and graduates with 130–150 employers annually, offering up to 1,000 job and internship opportunities. Alumni feedback consistently highlights the value of KTU’s programmes in building strong professional foundations and transferable skills, while employers express high satisfaction with graduates’ preparation for the labour market. Regular collaboration with industry through internships, final projects, and guest lectures strengthens work-integrated learning and ensures curriculum relevance.

KTU’s monitoring and support systems for graduate employability are comprehensive and effective, combining structured surveys, employer feedback, and alumni engagement to inform continuous improvement. Outcomes indicate high employment rates and career satisfaction, with graduates demonstrating strong theoretical knowledge, practical skills, and adaptability. While job-programme alignment and role complexity show room for improvement, these gaps largely reflect pre-existing employment patterns rather than curriculum deficiencies. To enhance alignment and elevate graduates into roles commensurate with their qualifications, KTU could expand embedded placements, formalize transition-to-work support, and publish programme-level KPIs, reinforcing transparency and responsiveness to evolving labour market demands.

4.2.3. Policies to ensure academic integrity, tolerance, and non-discrimination are implemented

The University enforces a comprehensive framework to uphold academic integrity through strict regulations and preventive measures. Violations such as plagiarism, forgery, falsification, and submitting work dishonestly are explicitly prohibited and may be addressed internally or escalated to external bodies, including the Office of the Ombudsman of Academic Ethics and Procedures of Lithuania or the courts. Students commit to ethical conduct by signing declarations of academic integrity, while preventive strategies - such as identity verification during examinations, invigilator oversight, and originality checks using Turnitin - ensure transparency and fairness. Continuous training for faculty on assessment design and clear methodological guidelines for written work further strengthen compliance.

In parallel, the University promotes tolerance and non-discrimination through its Equality and Diversity and Violence Prevention Policy, which guarantees equal opportunities for all members of the academic community regardless of gender, ethnicity, disability, religion, or other personal characteristics. This policy embeds principles of diversity and violence prevention across all institutional functions. A dedicated Commission of Equal Rights investigates complaints of discrimination, harassment, or violations of equal opportunities, ensuring confidentiality and prohibiting retaliation against complainants. Multiple reporting channels—including electronic systems, email, oral communication, and anonymous submissions—make the process accessible and secure.

Together, these measures create a robust system that combines enforcement, education, and inclusivity. The integration of ethical standards with equality policies fosters a culture of trust and respect within the University. The absence of reported cases in the Chemistry study field during the

evaluation period suggests effective implementation and a positive academic environment. By maintaining strict accountability while providing supportive mechanisms for reporting and prevention, the University demonstrates its commitment to academic honesty, fairness, and diversity.

4.2.4. Procedures for submitting and processing appeals and complaints are effective

The University has established clear and structured procedures for submitting and processing appeals and complaints, ensuring transparency and fairness. Appeals are intended for cases where a written decision concerning a student allegedly violates academic ethics, procedures, or contains technical errors, while complaints address violations of student rights or legitimate interests related to quality assurance, organizational processes, or compliance with the Code of Academic Ethics. Appeals must be submitted individually, whereas complaints can be filed by one student or a group, reflecting flexibility in addressing collective concerns.

Once an appeal or complaint is received, it is forwarded to the responsible head of the relevant area, who forms an interim board or complaint settlement commission. These bodies consist of at least three members, including a student representative, ensuring impartiality and representation. If the issue involves academic ethics, the case is referred to the Board of Academic Ethics. The commission is required to process the case within 10 working days, make a decision, and notify all parties involved. Students who disagree with the decision have the right to escalate the matter to the University's Dispute Settlement Commission within another 10-day period, providing an additional layer of review and safeguarding procedural justice.

The effectiveness of these procedures is demonstrated by their clarity, defined timelines, and multi-level review mechanisms, which promote accountability and trust. The availability of structured channels for both individual and group complaints, combined with student representation in decision-making, reflects a commitment to fairness and inclusivity. The absence of complaints or appeals in the Chemistry study field during the evaluation period suggests either strong compliance with academic and ethical standards or high satisfaction among students, further supporting the effectiveness of these processes.

ANALYSIS AND CONCLUSION (regarding 4.2.)

KTU employs a systematic and multi-layered approach to monitoring learning progress and providing feedback that promotes self-assessment and planning. Progress is tracked annually through university-wide reports, semester-by-semester via structured regulations, and continuously through Programme Committees using AIS data and an Early Warning System to support at-risk students. Feedback mechanisms are formative and integrated at multiple levels: lecturers provide ongoing comments on performance, Programme Committees analyze surveys and audit courses, and students actively participate through roundtables and committee representation. Clear presentation of learning objectives and assessment criteria in Moodle, combined with iterative commentary and structured student voice, ensures transparency and fosters metacognitive skills. This closed-loop quality assurance cycle translates monitoring into actionable improvements, enabling timely, personalized study planning and reinforcing a culture of continuous learning.

KTU ensures systematic monitoring of learning progress and feedback to promote self-assessment and planning, supported by strong policies on academic integrity, tolerance, and non-discrimination. Continuous tracking of student performance through AIS data, annual reports, and early warning systems is complemented by structured feedback at course and programme levels, enabling timely interventions and personalized learning strategies. These processes operate within a robust ethical framework that prohibits academic misconduct and guarantees equal opportunities, reinforced by clear reporting channels and complaint-handling procedures. Together, transparent assessment criteria, iterative feedback, and inclusive policies create a closed-loop quality assurance system that fosters accountability, fairness, and student empowerment in planning their academic progress.

AREA 4: CONCLUSIONS

AREA 4	Unsatisfactory - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle				X	
Second cycle					X

COMMENDATIONS

1. KTU integrates monitoring, feedback, and ethical policies into a coherent quality assurance system. It effectively connects academic integrity and inclusivity with learning progress monitoring.
2. Strong institutional mechanisms such as AIS tracking, early warning systems, and structured feedback loops, supported by ethical and equality policies. This demonstrates a comprehensive approach that goes beyond compliance to foster student empowerment.

RECOMMENDATIONS

To address shortcomings

None

For further improvement

1. While monitoring and support systems emphasize systematic processes and positive outcomes, there is space for enhancement, such as making feedback more personalized or predictive, to strengthen its forward-looking perspective.
2. Young people tend to show quick adaptation to changing career prospects, yet the demographic composition of the labour market is significantly different. Given Lithuania's historical context and past educational structures, international students may face distinct challenges when integrating into the local labor market - such as cultural or linguistic differences that may function as barriers. Moreover, such changes affect not just individual job roles but influence the entire organizational structure of companies from the ground up. Therefore, enhance the focus to inform social partners and jointly prepare for deeper collaboration between universities and employers. This would ensure the most effective possible integration of international students into the local labour market.

AREA 5: TEACHING STAFF

5.1.	Teaching staff is adequate to achieve learning outcomes
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FACTUAL SITUATION

5.1.1. The number, qualification, and competence (scientific, didactic, professional) of teaching staff is sufficient to achieve learning outcomes

The Chemistry study field at KTU is supported by a highly qualified and diverse academic staff. A total of 111 KTU lecturers, including 15 professors, 53 associate professors, and 36 lecturers, coordinate and teach modules, supervise research and final theses, and contribute to both first and second cycle programmes. For the joint KTU–LSMU MA programme in Medicinal Chemistry, 32 LSMU academic staff from faculties such as Pharmacy and Medicine are involved. Lecturer competence is evaluated according to national and institutional qualification requirements, considering education, research output, teaching experience, practical expertise, and innovative methods. Faculty members cover a wide range of disciplines—from core chemistry subjects to interdisciplinary modules—and many hold additional pedagogical qualifications, ensuring a strong academic and scientific environment for students.

The academic staff structure in Chemistry programmes at KTU meets national requirements and demonstrates strong qualifications. In the first cycle of the Applied Chemistry programme, 89 lecturers teach courses, including 31 lecturers, 49 associate professors, and 9 professors, with 93% holding PhDs. The second cycle Applied Chemistry programme involves 31 lecturers, of which 97% are PhDs, and 24% are professors, exceeding the minimum requirement of 20%. The joint KTU–LSMU Medicinal Chemistry programme is delivered by 48 lecturers (21 from KTU and 27 from LSMU), with 97% holding PhDs and 25% professors. Most lecturers have over 10 years of academic experience, and the average age ranges from 47 to 49 years, ensuring both expertise and continuity. Teaching teams integrate experienced professors with younger professionals and PhD students, supported by pedagogical training through KTU EDU_Lab, fostering knowledge transfer and innovative teaching practices.

Visiting lecturers from foreign universities and representatives of social partners are actively involved in the Chemistry study programmes at KTU, enriching the curriculum with practical insights and international perspectives. More than 95% of lecturers have practical experience ranging from 1 to 41 years, complementing theoretical knowledge with real-world applications. All lecturers are engaged in research activities, publishing in high-impact international journals and presenting at global conferences, while also participating in 74 international and national study projects during the review period, such as Erasmus+ Green Chemistry and Nordplus Green Circular Economy. Knowledge transfer is further supported through the publication of over 50 certified e-learning modules and textbooks, ensuring modern, interactive teaching formats. The majority of lecturers hold permanent positions with ≥ 0.5 FTE and ≥ 3 years of service, and the student-teacher ratio remains favorable at 7.19–9.34 students per lecturer, reflecting strong capacity for personalized learning and quality teaching.

ANALYSIS AND CONCLUSION (regarding 5.1.)

The analysis confirms that the number, qualifications, and competence of teaching staff in the Chemistry study field at KTU are fully sufficient to achieve the intended learning outcomes. The programmes are delivered by a large and stable team of highly qualified academics, with over 93–97% holding PhDs and professors teaching more than the required proportion of Master's courses. Most lecturers have extensive academic and practical experience, are actively engaged in research and international projects, and apply innovative teaching methods supported by pedagogical training. Favorable student–teacher ratios, strong integration of visiting lecturers and social partners, and the development of modern e-learning resources further enhance teaching quality. Overall, the evidence demonstrates compliance with national standards and ensures a robust academic environment conducive to achieving programme objectives.

5.2.	Teaching staff is ensured opportunities to develop competences, and they are periodically evaluated
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FACTUAL SITUATION

5.2.1. Opportunities for academic mobility of teaching staff are ensured

KTU's Erasmus+ mobility programme is strategically designed to support internationalization and enhance teaching quality. It enables both outbound teaching visits by KTU staff to partner institutions and inbound teaching by foreign lecturers at KTU, creating opportunities for knowledge exchange and curriculum enrichment. The programme's objectives include exposing students who cannot participate in mobility to international expertise, encouraging innovative pedagogical methods, expanding course content, and fostering mutual exchange between students and teachers. Mobility is available across Erasmus+ countries and globally through bilateral cooperation agreements, ensuring broad access while maintaining quality standards.

The programme operates under clear and accountable procedures. Teaching visits range from two days to two months, require a minimum of eight academic hours, and are selected four times per year based on Erasmus+ priorities and KTU's strategic goals. In addition to teaching mobility, staff training opportunities such as job shadowing and participation in international training events are offered to all employees. KTU has demonstrated adaptability by introducing blended and virtual mobility formats during pandemic-related restrictions, ensuring continuity of international engagement. Comprehensive information on participation requirements is made available through the KTU website, promoting transparency and accessibility.

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Using the reported staff baseline of 111 KTU Chemistry teachers, the 45 outbound visits (9 traineeships + 36 teaching visits) over 2021–2024 equate to 0.41 visits per staff member across the period – about 13.5 visits per 100 staff per year. By year, this corresponds to approximately 6.3 per 100 staff in 2021–2022 (7/111), 18.0 per 100 staff in 2022–2023 (20/111), and 16.2 per 100 staff in 2023–2024 (18/111), indicating a strong post-pandemic rebound and sustained activity thereafter. Inbound engagement totalled 37 visiting lecturers, equal to 0.33 inbound visits per staff across the period - about 11.1 per 100 staff per year (yearly breakdown: 8.1, 23.4, and 1.8 per 100 staff in 2021–2022, 2022–2023, and 2023–2024, respectively). Overall, the period shows 82 total engagements (outbound + inbound), or 0.74 engagements per staff over three years - about 24.6 per 100 staff per year. Outbound activity exceeded inbound by 8 visits (45 vs. 37), and outbound teaching dominated traineeships at roughly 4:1. Here the visit counts do not equal unique participants: if each visit were unique, up to ~40% of staff could have participated in outbound mobility over the period, but the actual unique coverage may be lower due to repeat travellers. Data for this could not be retrieved from the SER.

5.2.2. Opportunities for the development of the teaching staff are ensured

KTU ensures continuous professional development for its teaching staff through a structured, comprehensive system that strengthens both didactic and scientific competencies. Guided by national standards and KTU's own Guidelines for the Development of Didactic Competencies, the

EDU_Lab Centre delivers foundational and advanced training in innovative pedagogy – such as challenge-based, problem-based, and project-based learning, design thinking, and digital teaching followed by mentored “follow-up” integration into modules. Annual recognition of teaching innovation further incentivizes participation and fosters a culture of pedagogical excellence aligned with internationalization and blended learning.

Data from the SER shows active engagement by Chemistry lecturers in didactics-focused courses (basic competence development, case study training, challenge-based learning, and digital competence), with a notable rise in digital skills training in 2023–2024. Complementary opportunities include supplementary education (one KTU-funded module per semester) and institutional support for language proficiency (B2–C1 English), enabling staff to teach in international contexts. Scientific development is supported through conferences, internships, collaborative projects, and diversified funding (e.g., Research Council of Lithuania and KTU instruments), ensuring ongoing growth in research capacity. Together, structured training, financial support, and recognition mechanisms provide ample, effective opportunities for staff to upgrade teaching and research skills.

ANALYSIS AND CONCLUSION (regarding 5.2.)

KTU ensures robust opportunities for the development and internationalization of its teaching staff through structured systems and strategic initiatives. Academic mobility is actively promoted via the Erasmus+ programme, which facilitates both outbound teaching visits by KTU lecturers to partner institutions and inbound visits by foreign academics. This reciprocal exchange enriches curricula, introduces innovative pedagogical approaches, and provides students with access to global expertise. The programme operates under clear procedures, including defined visit durations, minimum teaching requirements, and regular selection rounds aligned with institutional priorities. Adaptations such as blended and virtual mobility formats during pandemic-related restrictions demonstrate flexibility and commitment to continuity. Between 2021 and 2024, Chemistry lecturers recorded 45 outbound visits (including teaching and traineeships) and hosted 37 visiting lecturers, amounting to 82 mobility engagements a significant indicator of active international cooperation and knowledge transfer.

In addition to mobility, KTU provides diverse and accessible opportunities for teaching staff to develop their competences, including didactic training, research activities, and supplementary education. The EDU_Lab Centre for Excellence in Learning and Teaching plays a central role by offering structured training in innovative teaching methods, such as challenge-based learning, problem-based learning, design thinking, and digital pedagogy, followed by mentored integration into modules. Teachers also benefit from language training to meet international teaching standards and financial support for participation in conferences and research projects. Data from the SER confirms active engagement by Chemistry lecturers in these programs, with notable growth in digital skills training in recent years. Scientific competence development is supported through conferences, internships, collaborative projects, and competitive funding schemes, ensuring alignment with research priorities and internationalization goals.

While these measures demonstrate a strong commitment to staff development, the process could be further strengthened by implementing systematic and consistent tools for pedagogical development, ensuring that continuous improvement becomes an integral and strategic part of faculty culture. This would enhance the sustainability and effectiveness of teaching quality improvement, reinforcing KTU’s long-term objectives for innovation, internationalization, and excellence in higher education.

AREA 5: CONCLUSIONS

AREA 5	Unsatisfactory - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle				x	
Second cycle				x	

COMMENDATIONS

1. The teachers expressed a very clear and sincere desire to help students, which is a very welcome and fundamental aspiration of educators.
2. KTU demonstrates a well-structured and comprehensive approach to teaching staff development, offering diverse opportunities for didactic training, research activities, and supplementary education.
3. Teaching staff in the Chemistry study field actively engage in Erasmus+ mobility programmes, with significant outbound and inbound exchanges
4. Lecturers consistently enhance their scientific competence through participation in national and international conferences, collaborative projects, and funded research initiatives.

RECOMMENDATIONS

To address shortcomings

None

For further improvement

1. While KTU offers diverse opportunities for teaching staff development, the process could be strengthened by introducing structured and consistent mechanisms for pedagogical improvement. This includes periodic meetings, peer discussions, and knowledge-sharing sessions that do not require excessive time but emphasize continuous quality enhancement.
2. KTU should establish clear reporting and monitoring systems to document participation in training, mobility, and pedagogical research initiatives. This would improve transparency, allow recognition of efforts, and support data-driven decisions for future improvements.
3. KTU should actively encourage subject-related pedagogical research and integrate its outcomes into teaching practices. Providing targeted training in research-based teaching methods and recognizing pedagogical research as a positive factor in career progression would motivate staff to innovate and contribute to educational quality. Linking these efforts to promotion criteria and institutional awards would reinforce the strategic importance of teaching excellence.

AREA 6: LEARNING FACILITIES AND RESOURCES

6.1.	Facilities, informational and financial resources are sufficient and enable achieving learning outcomes
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FACTUAL SITUATION

6.1.1. Facilities, informational and financial resources are adequate and sufficient for an effective learning process

KTU organizes its studies with effective use of material resources to ensure quality assurance and create optimal, motivating conditions for students and teachers. The University provides 445 rooms for study purposes, including amphitheater lecture halls, lecture halls, computer classrooms, laboratories, and spaces for group and independent work, all equipped with modern hardware, laboratory instruments, computers, internet access, and audio-visual tools. Annual investments focus on adapting classrooms for active learning methods such as challenge-based and problem-based learning. KTU promotes innovation through the Artificial Intelligence Centre, which develops AI policy, conducts research, and engages students in AI-related projects and courses, and through the M-Lab Experimental and Prototyping Centre, established in 2023, which hosts 12 thematic laboratories integrating research, development, and studies in collaboration with business partners. These laboratories focus on health, sustainability, and technology development, enabling students to participate in research and thesis projects. For chemistry programs, KTU ensures hygienic classrooms, modern laboratory equipment, and comprehensive library resources, providing safe and efficient learning environments supported by continuous modernization and access to technical literature and software.

The Chemical Technology Faculty uses all buildings located at 19 Radvilėnų Rd., which include 18 general-purpose classrooms with a total area of 1,411 m² and 1,066 seats, three computer classrooms covering 180 m², study laboratories, a 226 m² library with a 51-seat reading room, chemical and material storage rooms of 438 m², and a glassblowing workshop. Staff offices are located in the same building as lecture and seminar rooms, ensuring effective interaction with students, and all workstations are equipped with computers and wireless internet access. The main building contains classrooms, laboratories, and computerized rooms for theoretical, practical, and laboratory classes, including amphitheater classrooms and spaces for groups of more than 100 students. Classroom occupancy follows approved norms, ensuring optimal group sizes for lectures, seminars, and laboratory work. All premises comply with hygiene and safety standards and are equipped with computers, audio-visual devices, and efficient laboratory equipment. The faculty also provides spaces for individual study, including seminar rooms, teaching laboratories, and a library with 33 workstations (14 computerized), recreational areas, wireless internet, and self-service printing and copying facilities. Auditoriums have been renovated according to modern standards, equipped with remote lecture broadcasting systems, smart boards, and ergonomic student workstations. Laboratory spaces for practical classes are properly separated by activity type and adapted to the specifics of the work being performed.

CTF also uses the premises of the KTU Santaka Valley at 59 Baršausko Street, which houses modern research laboratories of the Institute of Synthetic Chemistry, the Department of Organic Chemistry, and the Department of Polymer Chemistry and Technology, enabling students to conduct research and complete Bachelor's and Master's projects. The Faculty systematically renovates and develops its facilities, investing in SMART interactive whiteboards, speaker tracking cameras, mobile furniture, and student-friendly public areas between 2021 and 2023. Infrastructure improvements during this period included significant allocations for study environment upgrades, computer and audio-visual equipment, and laboratory modernization. Modern analytical equipment is correctly administered by separating it from the main experimental space, and there are sufficient devices for the current number of students. The available analytical base allows for the analysis of volatile compounds using gas chromatography (GC) and for structural analysis after isolating individual compounds using NMR. However, attention should be given to expanding capabilities for analyzing

more complex ionic samples, mixtures, or proteins by acquiring easily operated HPLC systems for daily student practice and training purposes.

Laboratories across four buildings, including Santaka Valley, are equipped for advanced processes such as synthesis, chromatography, spectrometry, thermal analysis, 3D printing, and bio-viscosity analysis. Students and researchers have access to the Open Access Centre with over 800 registered research instruments and specialized software for statistical analysis, modeling, and chemical design. All study materials are provided through the KTU Moodle platform, which supports interactive learning and collaboration, while remote classes are organized via Zoom, MS Teams, and BigBlueButton. Additional digital tools, including Office 365 and the Document Management and Processes System, ensure secure communication, document handling, and access to IT services, supporting efficient study and research processes. In general, the premises are well maintained, and investments are correctly distributed toward essential educational needs rather than unnecessary aesthetic elements, complemented by leisure areas for students' personal needs.

6.1.2. There is continuous planning for and upgrading of resources.

Students at Kaunas University of Technology (KTU) acquire practical skills both on campus and off campus through internships, research projects, and professional practice placements. They can select companies or organizations for their internships or final projects, with opportunities listed on the KTU WANTED platform, which supports career development and links academic studies to future employment. During external visits, students gain insights into company structures, work organization, equipment, products, and environmental solutions. Lecturers also assist in arranging placements for first-cycle students, and social partners often provide research topics and sponsor competitions for final projects, such as ThermoFisher Scientific Baltics' annual scholarship program. Additionally, students participate in Erasmus+ traineeships, gaining international experience in countries such as Germany, Italy, Spain, France, and the Czech Republic.

The planning and upgrading of resources for Chemistry study programs are integrated into KTU's strategic development process, ensuring adaptability to changing student and stakeholder needs. Infrastructure modernization and new facility development remain top priorities, with investments planned in five-year cycles and operational adjustments made annually. Program committees, faculty administration, and social partners collaborate to identify resource needs, including laboratory equipment and software licenses, at the start of each semester. Resource planning also involves annual performance reviews with unit heads and budget discussions at the Rector's Office, supported by student feedback collected through surveys. Continuous monitoring and maintenance of infrastructure are ensured through KTU's document management system, which tracks IT and equipment issues for timely resolution. This structured approach guarantees the availability of physical, virtual, and intellectual resources necessary for high-quality study and research.

Modern analytical equipment at KTU is correctly administered by separating it from the main experimental space, and the current number of devices is sufficient for student needs. The existing analytical base supports gas chromatography (GC) for volatile compound analysis and nuclear magnetic resonance (NMR) for structural studies after compound isolation. However, expanding capabilities for analyzing complex ionic samples, mixtures, or proteins is recommended by acquiring easily operated high-performance liquid chromatography (HPLC) systems for routine student practice and training. Overall, the premises are well maintained, auditoriums meet modern standards with smart boards and remote broadcasting systems, and laboratories are properly adapted to specific activities. In addition to advanced chemical technology equipment, which provides an excellent foundation for understanding technological processes, KTU offers leisure areas for students, ensuring a balanced academic and social environment.

The investment plan for the Chemistry study programs at KTU (2025–2028, SER, Appendix 12) demonstrates a strategic and comprehensive approach to modernizing infrastructure and enhancing educational quality. Major allocations focus on advanced laboratory equipment, including a twin-screw extruder, mass spectrometry apparatus, PCR systems, photobioreactors, and 3D bioprinting technology, ensuring alignment with global trends in polymer science, biotechnology, and analytical chemistry. Continuous support for software licenses, updated study literature, and classroom

modernization complements these investments, while faculty development initiatives and international traineeships strengthen pedagogical innovation and global competitiveness. The plan is financially feasible, phased over four years, and addresses critical needs for interdisciplinary research and active learning. However, expanding analytical capabilities through the acquisition of HPLC systems is recommended to fully meet the demands of complex sample analysis. Overall, the plan positions KTU as a forward-looking institution committed to integrating cutting-edge technology, sustainable practices, and high-quality education in chemical sciences.

ANALYSIS AND CONCLUSION (regarding 6.1.)

KTU's Faculty of Chemical Technology offers a well-structured and modern infrastructure that supports high-quality education and research in chemistry. Facilities include renovated auditoriums equipped with smart boards, ergonomic workstations, and remote broadcasting systems, ensuring accessibility and flexibility in teaching. Laboratories are properly segmented by activity type, providing safe and specialized environments for practical training. Advanced analytical instruments such as gas chromatography (GC) and nuclear magnetic resonance (NMR) enable complex compound analysis, while the Santaka Valley premises further enhance research capabilities with state-of-the-art laboratories for synthetic, organic, and polymer chemistry. Continuous planning and resource upgrades demonstrate a proactive approach to maintaining technical and pedagogical standards.

Student resources are comprehensive and extend beyond campus through internships, research projects, and international mobility programs such as Erasmus+. The KTU WANTED platform facilitates career-oriented placements, while partnerships with industry provide research topics and scholarships, strengthening employability. Digital learning tools, including Moodle, Office 365, and remote teaching platforms, support interactive and flexible learning. Continuous feedback mechanisms and strategic planning cycles ensure that resource development aligns with evolving academic and industry needs, creating an environment conducive to skill development and innovation.

Overall, the Faculty's facilities and resources meet and exceed the standards expected of a modern chemistry higher education institution. Strategic investments outlined in the 2025–2028 plan prioritize advanced laboratory equipment, software, and faculty development, positioning KTU as a competitive and forward-looking institution. Minor enhancements, such as acquiring user-friendly HPLC systems for routine student practice, would further strengthen analytical capabilities and practical training. These measures, combined with ongoing modernization efforts, ensure that KTU remains aligned with global trends in chemical sciences and continues to deliver high-quality education and research opportunities.

AREA 6: CONCLUSIONS

AREA 6	Unsatisfactory - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle				X	
Second cycle					X

COMMENDATIONS

1. Laboratory spaces are designed and regularly upgraded to align with the nature of practical activities and research requirements. Analytical equipment is correctly separated from

experimental areas to ensure safety and operational efficiency. Access to advanced technologies is provided, and future acquisitions are strategically planned to support evolving academic and training needs.

2. A systematic approach to resource planning is evident, with regular reviews and updates of laboratory equipment and facilities. Stakeholders - including students, alumni, and industry partners - are actively engaged in evaluating module requirements and equipment needs, ensuring alignment with institutional priorities and emerging scientific trends.
3. The Faculty demonstrates a commitment to continuous improvement through strategic investments in advanced laboratory tools, digital platforms, and faculty development. These measures not only meet current academic standards but also position the institution to adapt to future technological developments and maintain competitiveness in chemical sciences

RECOMMENDATIONS

To address shortcomings

None

For further improvement

1. Future resource development should prioritize the acquisition of user-friendly HPLC systems to complement the existing GC and NMR equipment, as HPLC is indispensable for rapid analysis of biological compounds and chemically unstable substances. This is particularly critical for programs such as Biomedical Materials Industries and Medicinal Chemistry, which require high-sensitivity analytical capabilities. At the same time, the Faculty should maintain its proactive approach by monitoring global trends in analytical and biomedical technologies and planning investments that ensure competitiveness and responsiveness to evolving academic and industry requirements.
2. Integration of advanced analytical techniques into curriculum, study modules and laboratory training should be ensured. This will allow students to gain practical experience in techniques widely used in industry and research, strengthening their competencies and employability in sectors requiring complex sample analysis.

AREA 7: QUALITY ASSURANCE AND PUBLIC INFORMATION

7.1.	The development of the field of study is based on an internal quality assurance system involving all stakeholders and continuous monitoring, transparency and public information
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FACTUAL SITUATION

7.1.1. Internal quality assurance system for the programmes is effective

The internal quality assurance system at Kaunas University of Technology (KTU) is effective due to its comprehensive structure and alignment with international standards. It is based on the European Standards and Guidelines (ESG) and incorporates principles from key EU higher education policy documents, ensuring compliance with the Bologna Process and Lithuanian legislation. This alignment guarantees that the system meets recognized benchmarks for quality assurance in higher education. The framework adopts a holistic approach, integrating study management, student-centered learning, teacher development, and stakeholder engagement, which collectively foster a strong culture of quality and continuous improvement.

The system's effectiveness is further demonstrated through its structured governance and accountability mechanisms. Responsibilities for quality assurance are clearly distributed across

multiple levels, including module coordinators, program committees, faculty councils, and the Rector's Office. Regular and non-periodic evaluations are conducted by dedicated bodies such as the University Senate and Study Quality Committee, supported by data-driven monitoring through institutional information systems. These systems track key indicators such as student progress, graduate employment, teacher performance, and infrastructure quality, ensuring that decisions are evidence-based and strategically aligned. This structured approach enables timely updates to study programs in response to international trends, market needs, and stakeholder feedback.

The process for approving and monitoring study modules at Kaunas University of Technology is systematic, transparent, and aligned with institutional and national standards, ensuring compliance with program objectives and relevance to current scientific and technological developments. Annual reviews, supported by student feedback, social partner input, and external evaluations, enable continuous improvement, while quantitative and qualitative criteria, expert assessments, and structured reporting through the Academic Information System ensure objectivity and accountability. Embedded within this framework are active learning methods, flexible study organization, and integration of research into teaching, which promote innovation and responsiveness. Stakeholder involvement - including students, alumni, and employers - strengthens transparency and adaptability, while equal opportunities for all learners support inclusivity. Overall, these features demonstrate that KTU's internal quality assurance system is proactive, robust, and effective in maintaining high standards in teaching, learning, and research.

7.1.2. Involvement of stakeholders (students and others) in internal quality assurance is effective

Stakeholder involvement in KTU's internal quality assurance system is structured, comprehensive, and highly effective. Students, graduates, employers, and social partners actively participate in committees and working groups responsible for designing, monitoring, and improving study programmes. Their engagement ensures that diverse perspectives and current industry insights inform curriculum development and quality enhancement. Employers contribute by proposing thesis topics, evaluating final projects, and offering internships, while alumni and student unions provide experiential feedback and advocate for continuous improvements. This collaborative approach strengthens the practical relevance of studies and aligns programmes with labor market and societal needs.

The effectiveness of this involvement is reinforced by systematic feedback collection and its direct integration into decision-making processes. Regular consultations, formal cooperation agreements with industry partners, and participation in external evaluations demonstrate a proactive and transparent mechanism for quality assurance. By embedding stakeholder input into programme reviews and strategic planning, KTU ensures adaptability to emerging scientific trends and market expectations. Overall, this model fosters innovation, responsiveness, and accountability, confirming that stakeholder engagement is a key driver of maintaining high academic standards and ensuring the competitiveness of study programmes.

7.1.3. Information on the programmes, their external evaluation, improvement processes, and outcomes is collected, used and made publicly available

KTU demonstrates a highly effective and transparent approach to stakeholder involvement and information management in its internal quality assurance system. Students, alumni, employers, and social partners actively participate in governance structures such as the Council, Senate, Study Quality Committee, Faculty Councils, and Study Programme Committees, as well as working groups for programme development and external evaluation preparation. This inclusive model ensures that diverse perspectives inform curriculum design, monitoring, and improvement processes. Employers contribute by proposing thesis topics, evaluating final projects, and offering internships, while alumni and student unions provide experiential feedback and advocate for continuous enhancements.

The university systematically gathers and analyzes information on its study programmes through regular surveys, module evaluations, and feedback from students, graduates, and employers, ensuring that all stakeholder perspectives are included in the quality monitoring process. This feedback is reviewed each semester by university, faculty, and Study Programme Committees,

leading to targeted updates and improvements to curricula and teaching methods. Changes initiated in response to feedback are communicated transparently through meetings and digital platforms such as Moodle. Publicity is a key element: detailed information about programmes, learning outcomes, quality assurance results, and external evaluation reports is published on the university website and shared via internal systems and newsletters. Regular public meetings with social partners, alumni, and industry representatives further reinforce accountability. This transparent and accessible flow of information supports a culture of evidence-based quality management and continuous improvement.

7.1.4. Student feedback is collected and analysed

Student feedback at KTU is systematically collected through a variety of mechanisms designed to capture both quantitative and qualitative perspectives. These include annual programme reviews, end-of-semester module evaluations, and comprehensive surveys such as “Student Voice” and the Degree Programme Evaluation Survey. Through these instruments, students provide ratings on teaching quality, curriculum relevance, and overall satisfaction, while open-ended comments offer detailed insights into areas for improvement. This multi-channel approach ensures that feedback reflects the full spectrum of student experiences, from academic content to practical components of study programmes.

The analysis and utilization of feedback follow a structured, multi-tiered process that promotes accountability and timely action. Survey results are presented each semester to the University Rectorate and the Students’ Association, then reviewed by Deans’ offices and Study Programme Committees. These findings inform annual improvement plans at faculty and programme levels, with corrective measures implemented by the Vice-Rector for Education and the University Study Quality Committee. Changes resulting from feedback such as adjustments to module content, teaching methods, and workload are communicated transparently through meetings and digital platforms like Moodle. Additionally, the publication of survey results and programme updates on the university’s website reinforces transparency and social responsibility.

Overall, the systematic collection, rigorous analysis, and transparent dissemination of student feedback demonstrate KTU’s strong commitment to evidence-based quality assurance. Regular feedback cycles ensure that student input directly influences programme enhancements, while the integration of alumni and employer perspectives further aligns improvements with labour market needs. This comprehensive approach guarantees that study programmes remain responsive, competitive, and consistent with stakeholder expectations, thereby fostering continuous improvement and maintaining high standards of academic quality.

ANALYSIS AND CONCLUSION (regarding 7.1.)

KTU’s internal quality assurance system is comprehensive, transparent, and aligned with international standards, ensuring compliance with the European Standards and Guidelines (ESG), the Bologna Process, and Lithuanian legislation. The framework integrates study management, student-centered learning, teacher development, and stakeholder engagement, fostering a strong culture of continuous improvement. Governance and accountability are clearly structured, with responsibilities distributed across programme committees, faculty councils, and the Rector’s Office, supported by data-driven monitoring of key indicators such as student progress, graduate employment, and teacher performance. Regular evaluations and systematic feedback collection from students, alumni, and employers inform programme updates, while changes and outcomes are communicated through meetings, digital platforms, and published reports. By embedding stakeholder input and making evaluation results and improvement processes publicly accessible, KTU demonstrates a proactive and inclusive approach to quality assurance that ensures transparency, responsiveness, and high academic standards.

KTU’s internal quality assurance system is comprehensive, transparent, and aligned with international standards, ensuring compliance with ESG and the Bologna Process. Its structured governance, data-driven monitoring, and systematic feedback integration enable continuous improvement and responsiveness to market and stakeholder needs. Active involvement of students,

alumni, and employers, combined with clear communication and public dissemination of results, reinforces accountability and inclusivity. Overall, the system effectively maintains high academic standards and fosters innovation, making KTU's study programmes competitive and relevant.

AREA 7: CONCLUSIONS

AREA 7	Unsatisfactory - 1 Does not meet the requirements	Satisfactory - 2 Meets the requirements, but there are substantial shortcomings to be eliminated	Good - 3 Meets the requirements, but there are shortcomings to be eliminated	Very good - 4 Very well nationally and internationally without any shortcomings	Exceptional - 5 Exceptionally well nationally and internationally without any shortcomings
First cycle				X	
Second cycle				X	

COMMENDATIONS

1. The university demonstrates exemplary governance and accountability in quality assurance. Responsibilities are clearly distributed across multiple levels, supported by data-driven monitoring of key indicators such as student progress, graduate employment, and teacher performance. This structured approach enables timely, evidence-based decisions that keep study programmes relevant and competitive.
2. KTU excels in fostering transparency and inclusivity through active stakeholder involvement and public dissemination of information. Students, alumni, employers, and social partners participate in programme design and evaluation, while survey results and improvement outcomes are communicated openly via meetings, digital platforms, and published reports. This approach strengthens trust, responsiveness, and social accountability.

RECOMMENDATIONS

To address shortcomings

None

For further improvement

1. While KTU publishes survey results and programme updates, the university could further improve by creating a centralized, user-friendly digital dashboard that consolidates all quality assurance reports, external evaluations, and improvement actions. This would make information more accessible to students, staff, and external stakeholders, reinforcing transparency and engagement.
2. Although teacher development is part of the quality assurance framework, KTU could expand structured training programmes focused on innovative teaching methods, digital pedagogy, and emerging technologies. Regular workshops and certification opportunities would ensure teaching practices remain aligned with international trends and student-centered learning principles
3. Stakeholder involvement is strong at the programme level, but KTU could formalize mechanisms to integrate employer, alumni, and student feedback more systematically into institutional strategic planning. Establishing annual stakeholder forums and publishing action plans based on their input would enhance responsiveness to labor market needs and societal expectations.

V. SUMMARY

The Chemistry programmes at KTU fully comply with Lithuanian and EU regulations, field descriptors, and international quality standards, ensuring alignment with programme aims, learning outcomes, teaching methods, and assessment strategies. Competency development is systematically organized across five areas – knowledge application, research, special, social, and personal skills supported by interdisciplinary modules, internships, and rigorous evaluation of final projects. Graduates acquire both specialized expertise and transferable skills such as entrepreneurship, foreign language proficiency, and socio-economic awareness, preparing them for scientific, industrial, and interdisciplinary careers. Robust quality assurance processes, including plagiarism checks, methodological reviews, and multi-stage evaluations, combined with annual programme reviews and industry collaboration, maintain relevance and competitiveness. Flexibility through elective modules, entrepreneurship courses, and international opportunities further enhances personalization and innovation, ensuring graduates are well-equipped for professional practice, lifelong learning, and global competitiveness.

Research within the Faculty of Chemical Technology at KTU is internationally competitive, strategically aligned with institutional goals, and deeply integrated into teaching. Over 90% of publications appear in Q2 or higher-ranked journals, supported by strong international collaboration, patent activity, and industry partnerships that ensure innovation and sustainable funding. Research is embedded in curricula through structured modules, interdisciplinary projects, and transparent assessments, enabling students to gain both theoretical and applied competencies. Systematic student engagement - from internships and final projects at the bachelor's level to dedicated research modules and industry-linked projects at the master's level - fosters innovation, global competitiveness, and practical relevance, preparing graduates for scientific and industrial challenges.

Admission to Chemistry programmes at KTU is transparent, accessible, and fully compliant with national regulations and institutional procedures, using standardized competitive scores for bachelor-level entry via LAMA BPO and internal ranking for master's programmes. Comprehensive information on requirements, deadlines, and funding is published in advance, and students report the process as clear and user-friendly. While applicant numbers fluctuate and some entrants require additional academic support, KTU addresses these challenges through early interventions, mentoring, and academic advising. The university provides robust support services, including consultations, tutoring, financial aid, psychological counselling, and career development opportunities, complemented by international mobility and assistance for foreign applicants. Overall, the admission and support systems are well-structured, effective, and significantly contribute to student success, with potential for further enhancement through targeted guidance for students with diverse academic backgrounds and refinement of mentoring practices.

KTU's Chemistry programmes integrate traditional instruction with modern, student-centered methods such as problem-based learning, case studies, and applied research, supported by strong infrastructure and digital tools. Modules are sequenced for cumulative learning, while active techniques like group projects and industry visits enhance engagement and practical skills. Assessment is transparent and competency-based, using diverse formats and clear rubrics, complemented by digital tools for fairness and feedback quality. Graduate employability is reinforced through practice-oriented modules, internships, and industry-linked projects, while systematic monitoring of learning progress via AIS data, early warning systems, and structured feedback ensures timely interventions and continuous improvement. Inclusive policies and flexible accommodations further promote fairness and student empowerment, creating a robust, innovative, and responsive learning environment. Nevertheless, some measures must be taken regarding curriculum development and calibration, as well as to improve articulation between the joint second-cycle study programme in Medicinal Chemistry at KTU and LSMU.

The Chemistry programmes at KTU are delivered by a highly qualified and stable academic team, with over 93–97% holding PhDs and professors teaching more than the required share of Master's courses. Faculty members combine extensive academic and practical experience with active research engagement and innovative teaching methods supported by pedagogical training. Favorable student–teacher ratios, integration of visiting lecturers, and strong e-learning resources further enhance teaching quality. KTU promotes internationalization through Erasmus+ mobility, hosting and sending lecturers abroad, and provides structured professional development via the EDU_Lab Centre, offering training in modern pedagogies, digital skills, and language proficiency. These measures ensure compliance with national standards and foster excellence, though systematic tools for continuous pedagogical development could further strengthen sustainability and innovation in teaching quality.

KTU's Faculty of Chemical Technology provides modern, well-structured infrastructure that supports high-quality education and research in chemistry. Renovated auditoriums with smart boards, ergonomic workstations, and remote broadcasting systems ensure flexible learning, while specialized laboratories equipped with advanced instruments such as GC and NMR enable complex analyses. Research capabilities are further strengthened by Santaka Valley's state-of-the-art facilities for synthetic and polymer chemistry. Comprehensive student resources - including internships, industry partnerships, digital platforms like Moodle, and international mobility - enhance practical experience and employability. Continuous upgrades and strategic investments outlined in the 2025–2028 plan demonstrate KTU's commitment to innovation and global competitiveness, with minor enhancements such as additional HPLC systems recommended to further improve hands-on training.

KTU's internal quality assurance system is comprehensive, transparent, and fully aligned with international standards, including ESG, the Bologna Process, and Lithuanian legislation. It integrates study management, student-centered learning, teacher development, and stakeholder engagement within a structured governance model supported by data-driven monitoring of key indicators. Regular evaluations and systematic feedback from students, alumni, and employers inform programme updates, while changes and outcomes are communicated through meetings, digital platforms, and published reports. By embedding stakeholder input and ensuring public access to evaluation results, KTU maintains high academic standards, fosters continuous improvement, and demonstrates accountability and responsiveness to market and societal needs.

VI. EXAMPLES OF EXCELLENCE

KTU's Chemistry programmes demonstrate excellence through rigorous alignment of aims, outcomes, and assessments. Their flexible, competency-based design - enhanced by electives, entrepreneurship courses, and international mobility - prepares graduates for global competitiveness and lifelong learning.

Research excellence at KTU demonstrates not only strong international collaboration, high-impact publications, and active industry partnerships that drive innovation and sustainability. Exemplary is that students engage in research at every study cycle through internships, in interdisciplinary projects, and through their thesis work. This ensures that they graduate with both theoretical depth and practical expertise relevant to global scientific and industrial challenges, as applied research is conducted on an ongoing basis.

KTU demonstrates excellence by combining academic rigor with robust student support and modern infrastructure. Transparent admission processes, inclusive policies, and comprehensive services ensure accessibility and success, while highly qualified staff, advanced laboratories, and digital tools enable active, student-centered learning. Continuous monitoring and feedback reinforce quality and innovation, creating a globally competitive environment for chemistry education.