STUDIJŲ KOKYBĖS VERTINIMO CENTRAS
CENTRE FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

SOFTWARE ENGINEERING FIELD OF STUDY

Kaunas University of Technology

EXTERNAL EVALUATION REPORT

Expert panel:

1. Panel chair: Prof. Dr. Peeter Normak (signature)
2. Academic member: Prof. Dr. Wim van Petegem
3. Academic member: Prof. Dr. Marjan Mernik
4. Social partner representative: Kirilas Dubininas
5. Student representative: Aidas Čurovas

SKVC coordinator: Daiva Buivydiene

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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 (hereafter also - *RP*) was as follows:

1. Panel chair: Prof. Dr. Peeter Normak, Director of the Institute of Digital Technologies, Tallinn University, Estonia.
2. Academic member: Prof. Dr. Wim van Petegem, Faculty of Engineering Technology, KU Leuven, Belgium.
3. Academic member: Prof. Dr. Marjan Mernik, Faculty of Electrical Engineering and Computer Science, University of Maribor, Slovenia.
4. Social partner representative: Kirilas Dubininas, Accenture Lithuania.
5. Student representative: Aidas Čurovas, 4rd year bachelor's degree student of Ship Design and Construction programme at Klaipeda University, Lithuania.

1.3. SITE VISIT

The site visit was organised on onsite 17. February 2025.

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

- Senior management and administrative staff of the faculty;
- 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 (hereafter – KTU) was established in 1922 as a Kaunas campus of the University of Lithuania, which subsequently became an independent institution. In 1950, it was reorganised into Kaunas Polytechnical Institute before taking its present name on 31 October 1990. The University operates as a public institution. The University has nine faculties (Chemical Technology; School of Economics and Business; Electrical and Electronics Engineering; Informatics; Mathematics and Natural Sciences; Mechanical Engineering and Design; Panevėžys Faculty of Technologies and Business; Social Sciences, Arts and Humanities; Civil Engineering and Architecture), eight research institutes (Environmental Engineering, Architecture and Construction, Biomedical Engineering, Food, Mechatronics, Materials Science, Healthcare Telematics Science, and Ultrasound Research), and 17 administrative and service departments. Students are enrolled on higher education programmes across the three Bologna cycles: Bachelors, Masters and Doctorate. Although the University offers study programmes across a range of disciplines, significantly the highest numbers are within the field of Engineering. Numbers within the social sciences are relatively low, although this is an academic area in which the University has active researchers.
The university offers 99 first and second study programmes, of which 42 are bachelor's and 55 master's programmes. Additionally, there is one full-cycle (bachelor and master combined) study programme and one professional pedagogy programme.

Overview of the study field

Studies of computer science at KTU are implemented by the Faculty of Informatics (hereafter – the Faculty). The Faculty carries out first and second cycle studies in the fields of study Informatics, Software Engineering, Information systems and Informatics engineering, in total six first cycle and five second cycle study programmes. In the third cycle, the Faculty coordinates and implements doctoral studies in Informatics and Informatics Engineering. The Faculty has five departments, 2 research centres and 1 laboratory centre with 4 laboratory departments (the Audiovisual Technology Laboratories, the Virtual and Augmented Reality Technology Laboratories, the Educational Laboratories, and the Smart Educational Technologies Science Laboratories). The Faculty has about 2,000 students and over 150 lecturers.

The **mission** of the Faculty is pursued through three value chains and by contributing to their goals: 1) to foster a sustainable society through the development of innovative information technologies; 2) to create and transfer knowledge in Informatics and innovative information technologies, to develop the ability to create and solve challenges; 3) to communicate and achieve ambitious goals together through continuous improvement and collaboration with external leaders in the field of studies, research and IT.

The **vision** of the Faculty is to be a competitive, international KTU unit, which successfully carries out studies and research and experimental development in priority topics for a sustainable future and sustainable social development.

In the fields of *Informatics* and *Information Engineering*, the total amount of R&D grants for the period 2020-2022 was about 9,6 million euros, which is the highest figure among Lithuanian universities.

The Faculty is a member of Informatics Europe, ERCIS (European Research Center for Information Systems), OMG (Object Management Group) and CLARIN ERIC (Common

Language Resources and Technology Infrastructure European Research Infrastructure Consortium).

Previous external evaluations

All study programmes under evaluation have previously undergone external evaluations, and are positively accredited:

- The first cycle study programme *Software Systems* was accredited in 2013 for a period of 3 years;
- The first cycle study programme *Multimedia Technologies* was accredited in 2016 for a period of 6 years;
- The second cycle study programme Software Engineering was accredited in 2012 for a period of 6 years;
- The second cycle study programme Information Technologies of Distance Education was accredited in 2017 for a period of 6 years.

However, due to the restructuring of the process of study fields and their evaluation in Lithuania, the accreditation deadline for all study programmes in the Field was extended by orders of the Director of the Study Quality Evaluation Center (SKVC) until the next evaluation.

Documents and information used in the review

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

- *Self-evaluation report and its annexes*
- *Final theses*
- *Relevant documents regulating the activities of the university approved by the University Senate or approved by order of the Rector, as well as minutes of meetings of various decision-making bodies.*

Working with documents was complicated by the fact that SER frequently only listed the names of relevant university documents without including the necessary web links. Since the university does not have a public document register (only University Council documents could be easily found on the university website) and only some of the documents are on the public web (of which only a small part is in English), the Review Panel had to request a relatively large number of additional documents from the university. Some confusion was sometimes caused because of using different terminology. For example, SER uses the term *director of study programme* while corresponding university regulation *head of study programme*.

Additional sources of information used by the review panel:

The following additional sources of information have been used by the review panel:

- *Legal acts provided by SKVC*
- *Public web pages of the University*

II. STUDY PROGRAMMES IN THE FIELD

First cycle/LTQF 6

Title of the study programme	Software Systems	Multimedia Technologies
State code	6121BX012	6121BX015
Type of study (college/university)	university	university
Mode of study (full time/part time) and nominal duration (in years)	Full-time, 4 years	Full-time, 4 years
Workload in ECTS	240	240
Award (degree and/or professional qualification)	Bachelor of Computing	Bachelor of Computing
Language of instruction	Lithuanian	Lithuanian
Admission requirements	Secondary education	Secondary education
First registration date	2011-03-10	2009-05-04
Comments (including remarks on joint or interdisciplinary nature of the programme, mode of provision)		

Second cycle/LTQF 7

Title of the study programme	Software Engineering	Information Technologies of Distance Education
State code	6211BX011	6211BX010
Type of study (college/university)	university	university
Mode of study (full time/part time) and nominal duration (in years)	Full-time, 2 years	Full-time, 2 years
Workload in ECTS	120	120
Award (degree and/or professional qualification)	Master of Computing	Master of Computing
Language of instruction	Lithuanian	Lithuanian
Admission requirements	Higher (Bachelor's degree or equivalent) qualification	Higher (Bachelor's degree or equivalent) qualification
First registration date	2007-02-19	2007-02-19
Comments (including remarks on joint or interdisciplinary nature of the programme, mode of provision)		

III. ASSESSMENT IN POINTS BY CYCLE AND EVALUATION AREAS

The **first cycle** of the Software Engineering 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	3
7.	Quality assurance and public information	3
	Total:	26

The **second cycle** of the Software Engineering 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	4
5.	Teaching staff	4
6.	Learning facilities and resources	3
7.	Quality assurance and public information	3
	Total:	26

1*

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.

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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

FACTUAL SITUATION

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

The learning outcomes cover all main competences stated in relevant international frameworks (the *Software Engineering Body of Knowledge* (SWEBOK) *Guide*, *Euro-Inf Framework of Standards and Accreditation Criteria for Informatics Degree Programmes*, and the *European e-Competence Framework*). The structure of study programmes, the content of courses, study results and their consistency with the study methods are systematically reviewed annually and regularly discussed with social partners. Feedback on the compliance of study programmes with market needs was received from:

- the KTU teachers who also work for private Information and Communications Technology (ICT) companies;
- from social partners who are the member of study programme committees;
- students, by providing comments on study material during the course and using the surveys at the end of course;
- bachelor theses shared by ICT companies, mostly for students who work or completed an internship in these ICT companies.

Regarding the Software Systems and Software Engineering programmes

There is still a high demand for ICT talent. These study programmes significantly benefit society and the labor market by delivering skilled alumni to fulfill their needs. The second-cycle Software Engineering study programme includes a Software Security Engineering course, which positively impacts the market. This is particularly beneficial for software security in an environment with rising cybersecurity risks and an increasing number of threats.

Regarding the Multimedia Technologies Study Programme

The Lithuanian labour market for multimedia technologies is quite developed. According to the website of the Lithuanian Game Developers Association (LGDA) — an organization that unites game developers across various fields — there are over 40 companies, including game developers, publishers, and service and technology companies.

Companies in the game production industry and other multimedia-related fields require talented professionals who can analyze, design, and develop interactive graphical interfaces, multimedia application systems, computer games, mobile applications, and game components based on artificial intelligence.

The Multimedia Technologies study programme, by delivering skilled professionals, directly benefits companies that create products and services with high added value.

Regarding Information Technologies of Distance Education

This study programme provides knowledge for a wide range of specialists: e-Learning specialist, Instructional designer, Learning management system (LMS) administrator, Educational technology consultant, Human resources and training manager and others.

During the Covid-19 pandemic, the need for distance education grew, and this trend has persisted since. Alumni of the study programme are able to utilize modern distance learning technologies, contributing to sustainability and regional policies in Lithuania by providing reskilling and upskilling opportunities in regions where a wide range of study programmes are not accessible in person.

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

The University's mission is to provide research-based studies of international standard, to create and transfer knowledge and innovative technologies, to foster an open environment, and to promote democracy and national culture. The University's vision is to be an internationally competitive, interdisciplinary university of technology that creates and transfers new knowledge and innovations. The general objective of the Software Engineering study programmes is to develop comprehensively educated, ethically responsible, communicative, creative, and entrepreneurial individuals.

It is noteworthy that the Software Systems and Multimedia Technologies first-cycle study programmes include not only courses that build professional-oriented and innovative skills, but also courses that contribute to the development of well-educated, ethical individuals with the potential to pursue careers in science. These include courses such as Philosophy and Sustainable Development Alternatives, and Academic and Technical Communication in English.

ANALYSIS AND CONCLUSION (regarding 1.1.)

The learning objectives and outcomes of the study programmes are effectively aligned with the mission, goals and strategy of the university, ensuring that graduates have the necessary skills and values to contribute to society and their professional fields. The study programmes are systematically reviewed and discussed with social partners to ensure their relevance to market needs. Feedback is gathered from KTU teachers, social partners, students, and ICT companies.

- Software Systems and Software Engineering Programmes: These study programmes address the high demand for ICT talent, benefiting society and the labor market. The inclusion of a Software Security Engineering course is particularly relevant given the rising cybersecurity risks.
- Multimedia Technologies Study Programme: The Lithuanian labor market for multimedia technologies is well-developed, with over 40 companies in the game development industry. The study programme delivers skilled professionals needed for creating high-value products and services.
- Information Technologies of Distance Education Study Programme: This study programme prepares specialists for various roles in e-learning and educational technology. The demand for distance education has grown since the Covid-19 pandemic, and the study programme supports regional policies by providing reskilling and upskilling opportunities.

Conclusion:

The study programmes are well-aligned with the needs of society and the labor market. They are designed to meet regulatory standards and are regularly updated based on feedback from various stakeholders. The study programmes effectively address the demand for skilled professionals in ICT, multimedia technologies, and distance education, thereby contributing to societal and market needs.

Based on the facts provided in the self-evaluation report, it can be concluded that the programme aims and learning outcomes of the Software Engineering study programmes are well-aligned with the University's mission, goals, and strategy. The University's mission emphasizes research-based studies, knowledge transfer, innovation, and fostering an open environment, which are reflected in the comprehensive and interdisciplinary nature of the Software Engineering study programmes.

The inclusion of courses that develop professional skills, as well as those that promote ethical responsibility and communication, aligns with the University's vision of creating well-rounded, innovative individuals. Additionally, the focus of courses like Philosophy and Sustainable Development Alternatives, and Academic and Technical Communication in English, supports the goal of fostering ethically responsible and communicative graduates, further aligning with the University's mission and vision.

Overall, the alignment between the programme aims and the University's strategic objectives is evident, ensuring that the study programmes contribute to the broader goals of the institution.

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

FACTUAL SITUATION

1.2.1. Programmes comply with legal requirements

The study programmes comply with all legal requirements. The study programmes have been developed and are continuously updated in accordance with the legislation in force in Lithuania, such as the *Law on Higher Education and Research*, adopted by the Resolution of the Seimas of the Republic of Lithuania, and the *Descriptor of the General Requirements for the Implementation of Studies* approved by the Ministry of Education and Science of the Republic of Lithuania. The amounts of credits and study hours in each study programme have been selected in such a way as to meet the requirements defined in the above-mentioned documents: The first-cycle programs consist of 240 credits, of which 15 credits are for an internship and 15 credits for a thesis; the total amount of hours is 6400, of which 35-37% are contact hours, and 65-63% are for independent work. The second-cycle programs consist of 120 credits, of which 18-30 credits are for a thesis; the total amount of hours is 3200, of which 21-23% are contact hours, and 79-77% are for independent work.

The experts note however that the information on the amount of contact work and especially the interrelation between remote learning and direct participation of lecturers and students in the distance learning programme, could be clearer in terms of compliance with the formal requirements (at least 5% of direct participation is always included).

The courses of the programmes are distributed consistently over the semesters throughout the studies. The student's individual study plan is 30 credits per semester. In the first cycle study programme Software Systems, instead of 18 free elective credits, students can choose one of the University's BA+ competences, which consists of 3 courses. In the second cycle programme Software Engineering, it is also possible to choose one of the University's complementary MA+ competences, which also consists of 3 courses. If the MA+ competency is not chosen, only 12 credits are free to choose. The Multimedia Technologies first cycle programme offers a free choice of only 6 credits. However, there are two 30-credit specialisations: 1) Digital Content Engineering and 2) Game and Interactive Systems Programming. The second cycle programme Information Technologies of Distance Education offers a choice of 18 credits over the entire period of study, but with a choice of alternatives for students with different backgrounds: students who have not graduated in Informatics must choose courses related to Informatics, while students who have graduated in Informatics must choose other courses, such as those more related to pedagogy.

The number of credits for a course is determined on the basis of the learning outcomes and the amount of time a student needs to work to achieve the learning outcomes.Typically the amount of contact work is about 40% of the hours of the course, except for the courses for the preparation of the final Bachelor and Master projects and the final Bachelor practice. These courses allocate more time for independent work, translated in a number of credits that is 2.5 to 5 times greater than for a standard course, which is in line with the norms approved by the KTU Academic Regulations.

The structure of the study programmes meets the requirements set out in the *Descriptor of the Group of Study Fields of Computing* and is also in line with the international recommendations governing the field of study (software engineering), as developed and maintained by the IEEE Computer Society and EQANIE (European Quality Assurance Network for Informatics Education)..

Further, KTU systematically organises training sessions for members of study programme committees on the principles of good study programme construction, in order to guarantee optimal curriculum and instructional design of the programmes.

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

The objectives of the study programmes are detailed in the following five groups of learning outcomes: (1) ‘knowledge and its application’, (2) ‘research skills’, (3) ‘specific competences’, (4) ‘social skills’, and (5) ‘personal skills’. The general courses of the study programmes address (1); the core courses of the study field Software Engineering cover (1), (2), (3) and also the in-depth courses tackle (1), (2), (3); (4) and (5) are developed consistently across all three types of courses.

Lecturers of study courses that aim to achieve the same or related study outcomes, together with the Study Programme Committee, review appropriate study and assessment methods applied in achieving the study outcomes. Various active learning activities are used throughout the curriculum in order to help students to achieve the learning objectives.

Of particular note is the 12-credit PR00B251 Product Development Project (PDP) course. It integrates interdisciplinary and applied learning into first-cycle study programmes. It focuses on real-world product or service development, where students solve complex scientific and practical

challenges in interdisciplinary teams. Using experiential learning (learning by doing), students work with lecturers and industry mentors to create innovative solutions. The course bridges theory and practice, fostering problem-solving, teamwork, communication, creativity, and entrepreneurial skills. By engaging with professional realities, students gain market-relevant experience and develop essential competences.

In the second-cycle study programmes, research skills are developed through Research Project 1, 2, and 3, and the final Master's project, which tackles real professional challenges. These courses emphasize both scientific and practical aspects, enhancing students' ability to analyze problems, conduct experiments, and apply software engineering to find solutions. Students are also encouraged to present their findings at conferences and publish in scientific journals, fostering academic and professional growth.

In addition to the most common assessment methods, such as oral, written, computer-based or committee examinations, reports (project-based), oral illustrated presentations, problem-solving exercises and individual work, teachers also use more advanced assessment methods, such as performance reviews, portfolios and essays to assure an optimal alignment with the learning outcomes of the program.

To ensure the quality of study and assessment methods, teachers can, if necessary, improve their didactic competence through EDU_Lab or similar training offered at KTU.

1.2.3. Curriculum ensures consistent development of student competences

The first cycle study programmes include courses in the following topics: general university studies, social sciences, fundamentals of engineering, mathematics and physical sciences, fundamentals of software engineering, a set of in-depth (specialisation) or personal courses in the field of study, free electives, practical training and a final project. A clear structure and a good balance of courses is provided over eight semesters of 30 ECTS each. The professional practice internship (15 ECTS) is designed to help students develop skills to work in a real company and be able to apply the knowledge and skills gained during the studies in practice by solving real-life problems and challenges in a chosen company or organisation. In parallel, students also prepare a 15-credit Bachelor's final project, where they apply the knowledge, skills and experience gained during the studies and the experience of independent learning.

Similarly, the second cycle study programme is set up by courses in the field of study, a free choice of electives, three research projects and a final project. By completing the assignments in the three research projects, students are well prepared for the final quantitative and/or qualitative experimental research in the Master's degree project. In this final project students must demonstrate a broad range of knowledge and understanding, their ability to analyse the chosen topic, to critically evaluate and systematise scientific publications of the field of research, to discover new knowledge, to present it in an appropriate manner and to present original results and recommendations in a clear and understandable manner.

Stakeholders mention that sufficient attention is paid in the curriculum for students to develop their personal and academic skills. Only on team work skills a remark was made that this could be improved: tools to facilitate teamwork are introduced in certain courses, but the continuation later on is missing because these tools are not used anymore in the study programmes. Also lacking according to the stakeholders is a holistic view on project management: all steps of project management are addressed in the curriculum, but they are introduced in steps, and an overall approach is lacking.

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

KTU students have the opportunity to personalise their studies, both in their first- and second-cycle study programmes, by choosing:

- remedial courses like English or mathematics, if necessary
- generic university courses, that could develop students' global, critical, and reflexive awareness, and their understanding of the socio-economic, cultural and environmental context,
- courses from the alternatives in the study programmes, designed to individualise studies according to personal needs by selecting modules from the in-depth subjects of the study field,
- specialisations (in the Multimedia Technologies study programme),
- free-choice courses taught across the university,
- BA+ or MA+ competency packages, consisting of 3 (18 ECTS) or 5 (30 ECTS) courses,
- topics for their projects in study courses, including the final project,
- traineeships in companies where they can best consolidate the knowledge and skills they have acquired,
- an additional internship during a free time or in the summer,
- an additional course of up to 6 credits, which is available free of charge each semester to first cycle students,
- participating in the GIFTed Talent Academy.

Students can also take part in the Erasmus+ programme and study abroad for a semester. And they are also invited to actively participate in ECIU University activities, where they work together in international and interdisciplinary teams to tackle real-life topics of the Sustainable Development Goals, as presented by companies and organisations. Students however hesitate to go for an international exchange experience, because the offer of alternative options by the University itself is high and perceived by the students as interesting enough.

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

The topics of the final degree projects can be proposed by the University's academic employees, the students themselves, or other stakeholders, like social partners, companies, public sector institutions or research institutes. The proposed project topics/themes are evaluated, and approved by the Study Programme Committee. In the last three years, 52 final degree project themes were requested by companies.

The topics of the final theses are in the field of software engineering. However, the titles of the theses were not always distinctive or too vague. For example, "IoT Platform" was the title of two theses. It is entirely acceptable for several students' final theses to deal with the same field, but a better chosen title could reveal the concrete research object and/or problem.

The content of the final degree projects is regulated by the requirements for reporting and defending of the Faculty of Informatics, as mentioned in the *Guidelines of Methodological Requirements for Report and Defence of Bachelor* (resp. *Master*) *Final Degree Projects*. The quality and relevance to the Field of final degree projects is further ensured through interim project evaluations at departmental committee meetings. Moreover, students may participate in training sessions organised by the University Library (on the citation requirements applied to the written

works, the use of reference sources, and the compilation of a bibliography list), or by the University's linguists (on academic writing, language culture, terminology, spelling, punctuation, and grammar). Both cycles of the study program also check the final degree projects on possible plagiarism. In addition, KTU has adopted a *Policy on the Ethical Use of Generative Artificial Intelligence in the Study Process*. The final degree projects of both cycles are also peer-reviewed, and eventually presented and defended in public meetings of the Qualification Commission of the study field. They make the final decision, against which no appeal is possible (except for technical errors and procedural irregularities). These public meetings are recorded and stored for learning purposes of next cohorts of students (if students sign their consent), or for possible appeals.

ANALYSIS AND CONCLUSION (regarding 1.2.)

The study programmes, their structure, the content of the courses, the study results and their consistency with the study methods are all in accordance with the legislation in force in Lithuania and international standards for this type of programmes. Moreover, they are systematically reviewed on an annual basis, regularly discussed with social partners (representatives of companies), and updated when and where needed.

The structure of the study programmes in both first- and second-cycle study programmes is well-thought through, with ample options for choices, enabling students to acquire all necessary competences, including practical experience in real-life contexts (project and research work, internships, final degree projects, etc.). Students appreciate the 'learning by doing' approach very much.

However, tools to facilitate teamwork are introduced in certain courses, but not used later on in the study programmes, and project management is introduced in steps, but an overall approach is lacking. Also, student participation in foreign exchange is relatively low.

The topics of the final theses are in the field of software engineering. However, the titles of the theses were not always distinctive or were too vague.

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. EDU_LAB is instrumental in supporting and training teachers to guarantee the educational quality of the programmes.

RECOMMENDATIONS

For further improvement

1. Provide clear information on the amount of contact work and especially the interrelation between remote learning and direct participation of lecturers and students in the distance learning study programmes.
2. Pay more attention to teamwork and holistic project management skills development in both first- and second-cycle programmes, as asked for by the stakeholders.
3. Provide more incentives for students to gain real international experience.

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

FACTUAL SITUATION

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

The annual evaluation of research and experimental development (R&D) at higher education institutions in the period 2020-2022 carried out by the Research Council of Lithuania (RCL) shows significant breakthrough achievements of KTU researchers. For the period 2020-2022, KTU ranks first in research with more than €9.6 million in R&D contracts, outperforming Vilnius University (second place) almost by double. The KTU researchers are participating in Horizon Europe, Nordplus, Erasmus+ and many other projects. The number of projects, as well as the projects' budget, have consistently increased over the years. The Summary of the Evaluation Units of Lithuanian Universities and Research Institutes for the years 2020-2022, published by the Research Council of Lithuania, shows that the weighted sum of points in the field of Study (T 007 - Informatics Engineering, N 009 - Computer Science/Informatics) has increased almost by double in 2022 (2020 - 321.89 points, 2021 - 416.74, 2022 - 547.14). The publishing of KTU researchers in WOS/Scopus with Science Citation Index (SCI) have been also increased over recent years: 92 SCI papers were published by 110 researchers in 2020 (average 0.84 per researcher), 125 SCI papers were published by 96 researchers in 2021 (average is 1.3 per researcher), 182 SCI papers were published by 105 researchers in 2022 (average is 1.73 per researcher). KTU researchers are publishing in journals from MDPI (Multidisciplinary Digital Publishing Institute) such as Applied Sciences, Brain Sciences, Electronics, and Sustainability, as well as in Elsevier journals such as Applied Soft Computing, Biomedical Signal Processing and Control, Neurocomputing, and in Springer journals, such as Journal of mathematical chemistry, Cognitive neurodynamics, and Optimization letters. While KTU researchers are publishing at computer science conferences, such as the International Conference on Information and Software Technologies, the International Technology, Education and Development Conference, the International Conference on Advance Learning Technologies and Applications, the International Conference on Computational Science and its Applications, they are not publishing at the top conferences in Computer Science (CS) and Software Engineering (SE). The research carried out by VU is directly related to the field of Study. For example, results from the "FGPE Plus" project,

where it was explored how compiled and interpreted languages can be applied within browsers and integrated into learning management systems have been used in the course "Programming in Python", the results from projects "BioMAC", "Intelligent Hockey Training System", "RoadmasterVR", "Beyond the Classroom", "AugmentedWearEdu" have been used in courses "Virtual Reality Technologies", "Digital Content Creation", "Intelligent Information Technologies". KTU cooperates with external partners, universities (e.g., Riga Technical University, Universitat Autonoma de Barcelona, University of Agder, Mälardalen University) and companies (e.g., Coherent Solutions, Danske Bank Group IT Lithuania, Media4Change, TransUnion Baltics) to carry out research in the field of Study.

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

KTU lecturers are active researchers, and the results of research and R&D projects have been transferred to the content of the study courses, as shown in numerous cases (e.g., research on the use of artificial intelligence in health and language technologies has been integrated into the course “Advanced Machine Learning”). The content and learning outcomes of the study programmes are based on international guidelines such as SWEBOK and comparable to similar study programs in Lithuania and abroad. The new version of SWEBOK v4 from 2024 adds three new knowledge areas, Software Architecture, Software Engineering Operations, and Software Security, to enhance the foundational knowledge in software engineering. While Software Security is already presented in the second cycle study programme Software Engineering, this is not the case for the first cycle study programme Software Systems.

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

Students are involved in scientific and applied research activities mainly through final projects and thesis with the possibility to represent their work at the Technorama exhibition, which has been organized by KTU for more than two decades. Moreover, the KTU has launched the mentoring programme GUIDed for all first-year students to get involved in research activities, as well as a call for applications for funding for academic mentoring studies (student with mentor). An example of students' engagement in research is investigating immersive technologies in projects "Beyond the Classroom", "FuturENG", "FGPE Plus", and "AugmentedWearEdu". Students are also encouraged to write research articles and participate in scientific conferences. The first-cycle students are mainly publishing at the conference "Information Society and University Studies - IVUS", while second-cycle students are mainly publishing at the International Conference on Information and Software Technologies, organized by KTU. Students also publish at conferences abroad, and they even won the best paper award at the 4th International Conference on Intelligent Technologies and Applications (INTAP'21).

ANALYSIS AND CONCLUSION (regarding 2.1.)

Research within the field of study is at a sufficiently good level. KTU researchers are performing extremely well regarding R&D projects. The weighted sum of points and the number of WOS/Scopus SCI papers published per year are also increasing. However, the number of SCI papers in Multidisciplinary Digital Publishing Institute (MDPI) journals is too high compared to the number of SCI papers published at Elsevier, Springer, IEEE and ACM. Publishing at software engineering (SE) and computer science (CS) conferences is relatively low, especially at the top conferences. Study programmes do not sufficiently take into account the latest international

trends in the development of the field of study, such as those in the fields of software architecture, software engineering operations, and software security.

KTU systematically engaged students in research by organizing the Technorama exhibition, using programmes such as GUIDed, and funding academic mentoring studies. The engagement of students in research is consistent with the cycle.

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. The volume of research and development activities and corporate contracts in the IT field is relatively large and on a growing trend.

RECOMMENDATIONS

For further improvement

1. The share of SCI publications in non-MDPI journals should be increased.
2. Publishing at the top SE and CS conferences should be increased.
3. Plan annual reviews of study programmes and subjects' content, taking into account the latest developments in the field.

AREA 3: STUDENT ADMISSION AND SUPPORT

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

FACTUAL SITUATION

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

All relevant information for applicants and *Regulations for the Student Admission* of KTU are available on the University's website. Kaunas University of Technology has clear rules for admission of students, which are prepared in accordance with the minimum requirements of learning outcomes. The rules, as well as the procedures for the competitive queue for admission

to state-funded study places (I and II cycles) are in line with the regulations approved by the Minister of Education, Science and Sports of the Republic of Lithuania. The set competition score for applicants is at least 5,4 points.

According to statistics for 2020-2022, the number of applicants for the first cycle of study has been unstable over three years, which may be a consequence of the pandemic. Meanwhile the number applying for the II study cycle has slightly increased. Students explained during interviews that they had no difficulty finding information about the university's admission criteria. There were many study fairs, events and information provided online. All information can be found on the university's website.

Over the past three years, the dropout rate in the first cycle “Software Systems” has been decreasing by about 1% per year, while in other study programmes (the first cycle “Multimedia Technologies”, the second cycle “Software Engineering and Information Technologies of Distance Education”) the dropout rates are not consistent (increasing and decreasing each year). It was stated in the meeting that dropouts mostly increase in the second semester in bachelor’s studies. However, the university has a dropout prevention system in place to identify and contact students who are about to leave. If the problems are caused by a lack of competence, students are provided with additional courses; if the problems are caused by psychological problems, the services of a psychologist are provided.

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

The evaluation and recognition of foreign qualifications for applicants to all the University's study programmes is centralised and conducted by the employees of the University's International Relations Department. Study results achieved in other Lithuanian or foreign higher education institutions may be accepted in accordance with the KTU *Study Results Crediting Procedure*. The University also applies assessment and recognition of learning achievements and competences acquired through informal and individual learning, whereby those who have acquired competences through informal learning can have them assessed and recognised as learning outcomes.

The results of partial studies in accordance with the agreed content of the studies are credited without restriction, if there are no violations of the requirements of the documents that students submit. In the case of crediting the results of partial studies based on a non-synchronized content with studies, no more than 75 % of the content of the same study programme may be credited.

When it comes to recognition of informal education (work experience or some completed professional courses) when enrolling to study, students had no problems while submitting their results as it was clearly stated what documents and how / to whom they need to present them but they were not sure if it was included in their competition score.

The university administration stated that the expectations and steps in the process of recognising foreign qualifications are presented in the academic system as well as at study fairs. Each department has its own rules and provides what is acceptable and always contacts the student about the information they have provided if any problems arise.

Students using the Erasmus mobility option prepare a mobility plan. Students must accumulate a total of 30 credits. They either prepare a plan with more credits or make a plan with 24-26 credits and take one course at KTU to even out the number. If the gap remains (not enough credits collected and no additional course chosen), students must take an exam or their achievements will be reviewed when they return to Kaunas.

ANALYSIS AND CONCLUSION (regarding 3.1.)

Kaunas University of Technology has clear, adequate and transparent student admission rules, requirements and procedures which are in line with those approved by the Minister of Education, Science and Sport of the Republic of Lithuania. All this information can be easily accessed in the KTU website, in advertisements of study programmes on the internet, in LAMA BPO and also study fairs.

As for the recognition of foreign qualifications, this is centralised and carried out by the staff of the International Relations Department of the University. Although administrative staff claim that all information is provided in the academic system, at study fairs etc., students are still confused because information is insufficient and not clearly advertised and they do not know whether the results of non-formal qualifications are taken into account when applying for postgraduate studies.

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

FACTUAL SITUATION

3.2.1. Opportunities for student academic mobility are ensured

In order to improve the quality of education, acquire modern knowledge and skills, and gain international experience, students are given the opportunity to complete an international internship or partial study abroad. Students can also go abroad for 1-2 semester exchange programs or summer/winter programs within the framework of bilateral cooperation and student exchange agreements signed between KTU and partner universities. KTU exchange students can also go abroad under NORDTEK programs, state scholarships, or other programs.

During the three-year analysed period, the mobility of students for partial studies and international internships was not significant. In three years time, there were 41 I cycle students of the study programme and 1 student from II cycle programme for partial studies or internships during their studies. Apart from pandemic and global geopolitical challenges, another factor limiting students' motivation to choose partial studies or internships abroad is the risk of losing their existing jobs in Lithuanian companies, as many of the students in the field of study are already employed during their studies.

None of the students who took part in the meeting had taken part in the Erasmus or other mobility programmes. They stated that they currently have everything in their home country and are not interested in going abroad to study even for a couple of months. The students assured that they receive more than enough information about mobility opportunities.

Over the past three years there were in total 122 students in all study programmes going on Erasmus+ and the number is increasing each year (respectively 25, 43 and 54).

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

As KTU states in SER, it provides comprehensive academic, financial, social, personal and psychological support to students. Relevant information for students is provided on the KTU website. And if individual consultations are needed, they are organized with study programme

managers, teachers and administrative staff. They also provide comprehensive academic support to students by organizing non-formal education programmes.

Students have three ways to get financial support: a) being the most active, having outstanding results and participating in various activities (they are awarded university talent scholarships); b) having good academic results and being active in KTU (scholarships from sponsors or companies); c) participating in extracurricular activities - participation in student organizations, etc. Each year, students are awarded personal and sponsored scholarships from companies.

Students with individual needs are provided with study, adaptive, financial, psychological, and other support. The KTU Career and Services Centre employs 2 psychologists (total workload 1.5 full-time jobs) and offers free psychological services: individual and group counselling and sessions, stress management and relaxation sessions, and a separate canine therapy group.

During the visit the students stated that they are satisfied with the teachers' provided support. Students were satisfied with their teachers. It is easy to communicate with them and get help from them. They rarely argue with teachers about grades. Students are also satisfied with the teaching material provided to them, as some teachers tend to correct or add something new to their material, but noted that the novelty of the information actually depends on the course. They have the right to provide feedback to faculty on materials posted in the academic system and on materials taught in lectures. The students were also satisfied with the learning facilities and did not make any suggestions about what they would like to add.

The condition of the hostels is generally good, some of them have been renovated or are in the process of being renovated, while some are in relatively poor condition.

It is worth mentioning the financial support and the support of the student association. On the economic side, students can apply for a number of different scholarships, they can get paid internships and receive other financial assistance from the university if needed. The student association was mentioned almost as a key factor in their well-being, as it provides students with support and assistance in critical moments when some situation needs to be resolved (disagreements among students, between students and teachers, etc.).

3.2.3. Higher education information and student counselling are sufficient

Students admitted to KTU study programmes, including those in the field of Software Systems, are introduced to the university's procedures and activities by providing all information sent via e-mail. A week before the start of their studies, students participate in the Welcome Week event, where they are introduced to the study procedures, available information systems, curriculum planning procedures, academic timetables, scholarships, library services, opportunities for travel abroad, the mentoring programme, the activities of the KTU IF student association, etc. Meetings are organised with the deans of the faculties and the head of the study programme, who provide detailed information about the study programme and the course of study. In the first semester of study, students are introduced to the specialisation module. Students are constantly provided with consultations on study issues, academic and other support. Information about the study process and procedures is available on the KTU Office365 student intranet.

Students are satisfied with the amount of information and consultation hours they receive. Information is sent via email, can be found in departments, in dormitories, on the university website, etc. Speaking of lectures, teachers often, if not always, stay a little longer after lectures to talk or help students achieve something by advising them individually. Also, there is a system

for teachers where they can see each student's progress on a given task/work and can help them along the way.

ANALYSIS AND CONCLUSION (regarding 3.2.)

The university helps students in many ways (financially, academically, socially, etc.) to ensure that they have the best conditions for their studies and provide them with everything they need to become specialists in their field. The encouragement and conditions provided for participation in the Erasmus+ program are good, but the information and benefits of mobility could be communicated better.

Students get enough support, whether it is academic, financial or psychological. Lecturers are always open to help students, work with them on various projects (individual or for lectures), there are plenty of scholarships that they can apply or achieve for their work and academic results.

With the exception of a couple of dormitories, students were unable to name any issues that the university could change or improve, which leaves behind a sense of wonder and the label of a solid university.

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	

RECOMMENDATIONS

For further improvement

1. The rules on the recognition of prior learning should be reviewed and decisions on this should be made more accessible, as students do not know whether their qualifications have been recognised or not.
2. Living conditions in dormitories No. 14 and 15 are unsatisfactory; the renovation of these dormitories should be considered.

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

4.1.	Students are prepared for independent professional activity

FACTUAL SITUATION

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

The general organization of studies is set out in the document *Academic Regulations of Kaunas University of Technology*. Students have a possibility to compose an individual study plan. Several active learning methods are used in teaching, such as: individual project activities (project development and visualisation), design-based learning, challenge-based learning, workshops, group work, reflection activities, idea (mind) mapping, etc. In software engineering courses, agile methodology (Scrum) is used.

A variety of active learning activities is used to help students to achieve the learning outcomes: (guest) lectures, exercises and laboratory work, case studies, discussions, individual and group/team projects, modelling, simulations, design thinking, workshops, oral illustrated presentations, collaborative discussions, etc. This mix gives the students ample opportunities for experiential learning, problem-based learning, inquiry-based learning, reflective learning, cooperative learning, and so on.

To monitor the progress of students' academic activities throughout the academic semester, the university uses a cumulative assessment system. This allows for early identification of students who are experiencing difficulties and planning the necessary measures to support them. During the semester, the lecturer monitors the student's progress in the subjects they offer. Since participation in classroom teaching is mandatory for students, the lecturers generally have a good overview of the student's problems if they should arise. The correspondence of the subjects to the needs of students is also indirectly shown by the ratings given by the students, which are relatively high, ranging from 4.48 to 4.51 (on a 5-point Likert scale) for the curricula.

Teachers allocate at least two academic hours per week (32 hours per semester) for individual student counselling. Generally, a re-examination can only be taken once. In justified cases, an additional examination may be taken with the permission of the vice-dean. If a student accumulates less than 15 ECTS during the semester, he or she will be transferred to a paid study place.

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

KTU provides education in accordance with the principles of inclusive education, where it is important to respect the diversity of students. KTU implements the Equal Opportunities and Diversity and Violence Prevention Policy. All university students (regardless of gender, disability, race and other characteristics) are regularly consulted and periodically informed about opportunities to join university initiatives and KTU social events. The KTU website constantly runs an active survey for students with disabilities and/or learning difficulties.

When assessing the study achievements of students with special needs (visual, hearing, mobility or other disabilities), flexible forms of achievement assessment are applied according to the

faculty's possibilities, adapting to the students' abilities - for example, increasing the font size of exam tasks, etc.

During the three-year period, there were 10 students with special needs on the study programmes under evaluation. Most places have wheelchair lifts and tactile paving to aid navigation.

ANALYSIS AND CONCLUSION (regarding 4.1.)

The students who met with the experts were very satisfied with all aspects of their studies; they unanimously agreed that KTU offers the best IT education in Lithuania. It was explained to the experts that roundtable discussions are held with students to ensure the content and consistency of the subjects. As for their studies, they only wanted more guest lectures from leading experts from the industry, which would give them a broader overview of what is currently happening in the field.

The university strives to make its studies accessible to socially vulnerable groups and students with special needs. Although some of the places visited appeared to be inaccessible in wheelchairs, the experts were shown alternative routes. Students also admitted that work in the lab is not always fully adapted for students with special needs, but teachers always try to help them so that they do not feel left out.

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

FACTUAL SITUATION

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

The general organization of assessment is set out in the document *Guidelines for the Organisation and Performance of the Assessment of Study Modules*. Monitoring and assessment of learning process is conducted on three levels: on the university, study programme and course levels.
At the university level, the *Department of Academic Affairs* prepares an annual report of the monitoring of the students' learning outcomes (according to the faculties and the study cycles). The report includes indicators of student performance and re-examinations, an assessment of the effectiveness of newly introduced measures to ensure the quality of education, a discussion of the reasons for termination and interruption of education, attendance indicators, violations of academic ethics, results of attendance and testing in examination courses and other information relevant to the assessment of the systematic monitoring of student performance and quality of education.

The surveys – by faculties, for all academic programs of a given cycle in total – are available in the public domain on the Internet.

At the study programme level, the main monitoring function has the Study Programme Committee that initiates, if necessary, an individual discussion with the coordinating teacher or team of teachers, looking for causes and possible solutions. Additionally, roundtable discussions are used. KTU Academic Information System (AIS) is the main tool for study programme level assessment. The learning management system *Moodle* serves as the main tool for course level

assessment. Feedback is collected mutually – from the students and from the teachers. It is processed according to the Objective Feedback Model.

Both – AIS and Moodle - contain assessment criteria of the courses, and can therefore be used as self-assessment tools by students.

4.2.2. Graduate employability and career are monitored

According to the self-evaluation report, the university has implemented measures to track the employability of its alumni. These measures include the utilization of the QS Graduate Employability Rankings (published by the QS World University Rankings), the Career Management Information System and the Government Strategic Analysis Centre, as well as the collection of feedback from social partners and alumni, including informal communication. The university sends a survey to alumni two years after graduation, collecting information about the alignment of the study programme with market needs and alumni success. Additionally, many teachers are employed in private IT companies, and representatives of social partners participate in study programme committees, which should positively impact the university's awareness of market needs.

Alumni provide feedback about study programmes through surveys, and representatives of social partners participate in study programme committees, the university is considered to possess all the necessary information to track alumni employability and appropriately monitor their career progression. During the meeting at the university, students shared their opinion that the university has the best software engineering program among all universities in Lithuania. This opinion was formed by collecting information from friends who have either completed or are still continuing their studies at the university. This collected information was one of the reasons why students chose the university for their studies.

However, graduate employment data is not publicly available. SER claims that graduate employment data can be found on a special website karjera.lt, but this link automatically leads to www.vu.lt, which contains data only from Vilnius University..

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

To ensure academic integrity, tolerance and non-discrimination, the university has adopted *the Policy on Equality and Diversity and Violence Prevention at Kaunas University of Technology*. Upon admission to the University, all students sign the Declaration of Academic Integrity in the AIS, in which they undertake to comply with the requirements of academic ethics and to complete assignments assessed at the University individually and conscientiously throughout the entire period of study. To deal with reports/complaints from members of the university community regarding discrimination, bullying, sexual harassment, equal opportunity violations and harassment at the university, the university has formed the *Equality Committee* that has its own Statute (https://en.ktu.edu/wp-content/uploads/sites/5/2022/05/20210416Lygiu-galimybiu-komisijos-nuostatai-EN.pdf).

The Code of Academic Ethics is placed on the public webpage among the University's main documents. A separate chapter is devoted to ethical standards for students. However, since this document dates back to 2012, it does not particularly address issues that have become relevant in recent years, including those related to the use of artificial intelligence tools. On using artificial intelligence tools, a separate document *Policy on the Ethical Use of Generative Artificial Intelligence in the Study Process at Kaunas University of Technology* is adopted. This document states that when using generative artificial intelligence (GenAI) tools in writing, it is important to

indicate which tools were used, which parts of the content were generated by GenAI, and which prompts were used. Actions related to cases of plagiarism are described in the document *Description of the procedure for detecting plagiarism in students' written work*. For plagiarism detection, the University is using *Turnitin*.

The University has formed the Board of Academic Ethics. For detecting and handling misconduct, the University has also formed *the Academic Misconduct Committee* and *the Examination Monitoring Groups*.

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

The procedures for submitting and reviewing appeals and complaints are described in *the Guidelines for the Submission and Processing of the Students' Appeals and Complaints*. The appeal or complaint is submitted through the KTU Academic Community Reporting System or by e-mail. The complaint or appeal is forwarded to the Chair of the Academic Integrity Council, or to another responsible person, depending on the problem, who will form a special appeals committee or a complaints resolution committee consisting of at least three members, including one student representative. The student, who disagrees with the commission's decision, has a right to apply to the University's Dispute Settlement Commission within 10 working days.

ANALYSIS AND CONCLUSION (regarding 4.2.)

Monitoring of student academic performance and support is carried out systematically; the roles and tasks of the parties are clearly defined. The university has agreed on the general principles of using AI tools in academic activities while specific issues related to the use of AI in a course are decided by the lecturer of the respective course.

Monitoring is accompanied by appropriate feedback. Feedback is collected mutually – from students and teachers, and its treatment is systematic, according to the Objective Feedback Model.

It should be noted that over three years (2020–2022), only seven cases of appeals and complaints were registered, of which three were upheld. The students who met with the experts had not submitted any appeals during their studies, and according to them, there had been no reason to do so. In one case, a student disagreed with his grade and explained this to the teacher (via email), after which his grade was changed.

Employability of graduates is currently high, and is monitored using various sources of information. However, graduate employment data is not publicly available.

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	

RECOMMENDATIONS

For further improvement

1. Update the *Code of Academic Ethics*, taking into account the latest developments in the academic world (including the ethical use of artificial intelligence tools).
2. Ensure the free availability of graduate career data online.

AREA 5: TEACHING STAFF

5.1.	Teaching staff is adequate to achieve learning outcomes

FACTUAL SITUATION

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

KTU in the field of Study meets the general requirements for conducting studies in the Republic of Lithuania, where at least 50% of the teachers in the first cycle and 80% in the second cycle study programme must hold a degree and at least 20% of the courses in the field of Study must be taught by teachers holding the position of professor. The average age of teachers of the study programmes in the field of Study varies between 44 - 52 years. The workload of a KTU full teacher is around 1520 hours per year and consists of teaching (720 hours ± 15%), research (530 hours ± 10%), and the rest is for other activities such as expert consulting. As such, the work is organised in accordance with the Labour Code of the Republic of Lithuania. KTU teachers in the field of Study have, on average, 13 years of teaching experience, while at least 60% of the teaching staff have experience in professional practice.

KTU teachers have pedagogical, scientific and practical experience. Their scientific activities are closely related to the courses in the field of Study. They are regularly assessed every 5 years, where assessment considers education, research interests and research results, teaching and practical experience, and application of innovative teaching methods and tools. Teachers are also subject to a public competition. At least 60% of teachers in this study programme have English language skills at the B2 level or above.

In 2022/2023, the total number of students was 1337 on the assessed study programmes. The largest number (841) studied in the Software Systems study programme, taught by 148 teachers. On the other hand, since faculty teach courses across multiple curricula, the student-faculty ratio is not more favorable.

However, students expressed a wish for more professors from abroad and industry experts to be invited as guest lecturers so that they could gain knowledge about the latest trends in the world of work. It should be noted that when talking to employers, several of them expressed their willingness to participate in teaching.

ANALYSIS AND CONCLUSION (regarding 5.1.)

The qualifications, and competence of teaching staff are sufficient to achieve learning outcomes. They have on average 13 years of teaching experience, and at least 60% of the teaching staff have experience in professional practice. However, according to the students, some teachers are using somewhat outdated teaching materials. The number of teachers could be bigger. This was evident from discussions both with teachers and students: teachers complained about the high teaching load, while students would like more teachers, especially from abroad and from the industry. Overall, the student-faculty ratio is not favourable anymore. The fact that several employers expressed a desire to participate in the study creates good opportunities for this in the future.

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

FACTUAL SITUATION

5.2.1. Opportunities for academic mobility of teaching staff are ensured

KTU has a sufficient number of Erasmus+ agreements with foreign institutions in the field of Study and KTU employees are encouraged to use the Erasmus+ mobility programme for teaching and training. In addition to the Erasmus+ program, KTU teachers have other mobility opportunities (e.g., international projects). In the assessed period (2020-2023), 66 teaching and training visits were carried out to countries like Estonia, France, Italy, Latvia, Netherlands, Poland, and Portugal, while 20 foreign teachers were visiting KTU from the Czech Republic, Estonia, Finland, Georgia, Italy, Latvia, Portugal, Romania. About 24% of the teachers in the field of Study participated in the Erasmus+ program and other international cooperation training, teaching visits or project partner meetings abroad in the last three years. The mobility of teachers depends on their personal initiative, and the selection process for the Erasmus+ programme is carried out four times per year. The applications are assessed with regard to the priorities of the Erasmus+ programme and the strategic objectives of KTU.

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

The KTU teachers are able to improve their didactic competencies by participating in various training for innovative teaching methods (e.g., challenge-based teaching, problem-based and project-based learning, distance learning) organized by KTU EDU_Lab Centre for Excellence in Learning and Teaching. In the assessed period, more than 40% teachers improved their competencies in the trainings organized by the EDU_Lab. Moreover, KTU teachers constantly improve their scientific and practical competence by participating in national and international conferences, scientific internships, and seminars in Lithuania and abroad (e.g., they were participating in seminars organized by “Cognizant Softvision”, “Lithuanian Association of Distance and e-Learning (LieDM)”, “Agile Coach”, “UAB Industry Service Center”, and “MathWorks”. KTU teachers' professional and competence development are discussed and evaluated at annual interviews organized by department heads, where also student surveys are taken into account.

ANALYSIS AND CONCLUSION (regarding 5.2.)

The established Erasmus+ program and other international cooperation training ensure opportunities for academic mobility. However, the high teaching load prevent KTU teachers from participating in the Erasmus+ program more widely. KTU has developed several systematic measures to ensure accessible competence development opportunities for KTU teachers. In this respect, launching the EDU_Lab Centre for Excellence in Learning and Teaching five years ago was a good decision.

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. EDU_Lab Centre for Excellence in Learning and Teaching supports KTU teachers in improving their didactic competencies by participating in various training sessions for innovative teaching methods.

RECOMMENDATIONS

For further improvement

1. The number of teachers in the field of Study participated in the Erasmus+ program and other international cooperation training, teaching visits should be increased.
2. The number of foreign teachers visiting KTU should be increased.
3. Invite more leading experts in the field as guest lecturers to give students a broader overview of what is currently happening in the field.
4. Make sure the work balance for teachers remains correct with enough (read: more) time for research, with (more) realistic options for sabbatical leaves and/or international staff mobility, etc.

AREA 6: LEARNING FACILITIES AND RESOURCES

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

FACTUAL SITUATION

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

Facilities are on an appropriate level: classrooms are well equipped for face-to-face and online education, and each year, the University invests in the creation of spaces adapted to active learning methods. Students have access to specialised computer rooms and laboratories, and the university campus is home to the newly opened M-Lab, an interdisciplinary prototyping laboratory centre. KTU provides appropriate information systems for the students and teachers, also accessible from a distance (from outside of campus). All learning materials are available on a Moodle platform. One particular IT system is the KTU WANTed platform, where students can find all sorts of information about events and seminars, career counselling, job and internship offers, in order for them to develop their career competences, to plan their studies in a focused and targeted way and to link them to their future career.

KTU has a library, and in 2022 it established the University's library branch (University Campus Library), which serves as a multifunctional centre, with common areas, reading rooms, individual and group study rooms and an amphitheatre. It has in total 423 workstations and over 56,000 copies of various publications. The library is further adapted for visitors with special needs (e.g. with height-adjustable tables and chairs, specialised computer mice and keyboards, etc.). The library also offers home loans in accordance with the rules of the Library Services.

The main software necessary for the study programmes and especially used to learn programming is provided free of charge or is free, open-source software.

The norms of KTU with regard to contact classes are respected in both cycles of the programme. In the first cycle studies of computer science, the permitted student flow rate for lectures is 50 students, for exercises 20 students, for laboratory work 10 students, and for consultations 20 students. This procedure also ensures optimal occupancy of the study facilities, with the number of students in classes corresponding to the number of workstations in the facilities.

Facilities for people with special needs are organised by the social welfare coordinator of the Department of Student Affairs. Adaptation of studies is based on individual cases and the situation of the student or students with special needs.

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

The KTU IF infrastructure and equipment is constantly maintained and monitored. In the event of equipment failure or the need to upgrade existing equipment, new equipment is purchased if financial possibilities allow. Each year KTU IF prepares an activity plan, a revenue and expenditure plan and a procurement plan. The planning also includes expenditure for the maintenance and improvement of the study infrastructure.

In 2023, as part of the University's participation in the "EdTech" project, the KTU E-Learning Technology Centre staff assessed the University's classrooms, the existing equipment and the

need to install hybrid learning equipment in them. The “EdTech“ project funds, as well as funds from the University's budget, allowed the purchase of equipment. The hybrid classrooms and the equipment installed in them now enables students to participate in the study process or in other events such as training not only face-to-face, but also remotely.

Finally, the improvement of the study infrastructure is also implemented through research and study projects carried out by the Faculty's lecturers.

ANALYSIS AND CONCLUSION (regarding 6.1.)

All facilities and resources seem to be on an appropriate level for the study programmes. Classrooms are in general well equipped for face-to-face and online education. Students also have access to specialised computer rooms and laboratories. Specific facilities for people with special needs are well organised.

Each year KTU agrees on university wide plans for investments in infrastructure and equipment to create engaging spaces adapted to active learning methods. The planning also includes resources for maintenance and improvement of the student infrastructure.

However, some computer labs are outdated (over 10 years old). The experts were told that this is due to a lack of resources, which in turn is due to the university's budgeting model, which does not take into account the need for technology in the implementation of the study programmes.

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. KTU developed the WANTed platform, where students can find all sorts of information about events and seminars, career counselling, job and internship offers, in order for them to develop their career competences, to plan their studies in a focused and targeted way and to link them to their future career.

RECOMMENDATIONS

To address shortcomings

1. The University should ensure that all laboratories used for teaching are equipped with equipment whose depreciation period has not expired.

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

FACTUAL SITUATION

7.1.1. Internal quality assurance system for the programmes is effective

The main document describing the quality system of the University, is *the Kaunas University of Technology Quality Management Guidelines* (https://en.ktu.edu/wp-content/uploads/sites/5/2023/03/QUALITY-MANAGEMENT-GUIDELINES.pdf). However, the status of this document is not described. Even more, this document is even not mentioned in the SER. The main document describing the quality system of studies, *the Description of the Internal Study Quality Assurance System (ISQAS) at Kaunas University of Technology*. This comprehensive (42 pages) document covers all aspects related to teaching in depth: study quality policy, internal study quality system and its components, quality of study management, quality of teaching process and teachers, monitoring of study quality, etc. Unfortunately, the English version of this document was not freely available online and was provided to the RP by special request.

In terms of quality of education, the university has identified three priority areas: 1) Improvement of study programmes and teaching process, 2) professional development of academic personnel and 3) Modernisation of study environment. The university's strategy for 2021-2025 defines priority activities in all three priority areas. However, the indicators by which achievements in these priority areas are measured are quantitative, not qualitative. For example, it is planned to increase the number of articles in scientific journals of foreign publishers by 10%. This is probably one of the reasons why the proportion of scientific articles published in top journals is relatively small.

The main functions of the internal monitoring and evaluation of the study quality are carried out by the *University Senate* (determines the policy of studies), the *Vice Rector of Studies* (formulates the objectives of studies), the *University Study Quality Committee* (UNISQC; makes proposals to the Vice Rector of Studies on quality issues), the *Department of Academic Affairs* (monitors the study quality), the *Faculty Council* (adopts resolutions on the most important quality issues), the *Dean* (ensures the implementation of the University's policy at the Faculty level), *Faculty Study Committees* (provide suggestions and recommendations to the Dean on quality issues), and the *Fields' Study Programme Committees* (responsible for the quality of study programme and its implementation). The latter operates according to the *Regulations of the Field's Study Programme Committee of Kaunas University of Technology*, which describes the composition, responsibilities and functions, organization of the work, as well as the rights and obligations of the committee. The experts were also presented with the minutes of the SPC meetings. For example, the meeting on November 27, 2024 was entirely dedicated to preparing for the 2025/2026 academic year: the courses' assessment criteria, changes to curricula, curriculum competency frameworks, and admission criteria for studying in curricula were discussed.

The head of the study programme, who also leads the activities of the programme committee, has the primary responsibility for ensuring the quality of the study programme. The university has adopted a detailed job description for programme head, which sets out the requirements, functions, rights and obligations, as well as the responsibilities of their owners.

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

Stakeholders are involved in internal quality assurance at all stages of the study process. Social partners have representatives in the study programme committee, provide internship opportunities, share relevant topics for final theses, participate in final thesis defenses, and deliver guest lectures. The faculty has concluded cooperation agreements with a total of 26 companies, with 3 of them in 2023.

Students have the opportunity to influence the quality of study programs by providing feedback in various ways: directly to teachers, through regular surveys, or by raising concerns via the student committee.

During student interviews, it was mentioned that students participate in surveys at the end of the study program to evaluate relevance and provide feedback on program shortcomings. Students can view comments from other students (anonymized) and see teacher feedback on student suggestions. The university has a dedicated communication manager who facilitates cooperation with social partners on the aforementioned matters.

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

Internal quality assurance system of studies is described on a special website of the University (https://en.ktu.edu/study-quality/). The web also contains a description of the holistic quality management system of the university (https://en.ktu.edu/university/quality-management/).

Information about study programmes and their accreditation results (grades for evaluation areas, summary, recommendations) is also available on the public web. Unfortunately, information about some study programmes is only in Lithuanian. Some documents are in a format that does not allow for text search within the document. The experts were unable to find an action plan for implementing the proposals made in the evaluation reports on the public web. The university has also not published the full texts of the curriculum evaluation reports – or links to them – on its website, although they are published on the SKVC website.

The results of the courses and teacher surveys on the public web are only per faculty, not per study program. Some statistical information, such as *Survey Results* on study programmes, is located on the Intranet, i.e. is not publicly available.

7.1.4. Student feedback is collected and analysed

Students at all levels and courses can anonymously express their opinion on the quality of the study programme and the study modules it offers by participating in study surveys and monitoring the progress of studies.

The quality of the Field is assessed by students in the final semester of the study programme in the study surveys "Evaluation of the Quality of Study Programmes", "Evaluation of the Compulsory Internship", and "Evaluation of the Preparation and Defence of the Final Qualification Project".

Students are almost forced to fill in the form and give feedback to lecturers if they want to see their grade sooner than others. This clearly shows in the results of the quality assessment quizzes. Highest average mark was in 2020-2021 (4,67 out of 5) but only marked by 6 students

in II cycle Information Technologies of Distance Education. In other cases in four study programmes, results vary under 4 or just over it (from 5 total). The lowest mark was 3,49 in 2022-2023 from I cycle Software Systems students. All of the questionnaires are anonymous, some of them are from the faculty, others - from the central department. As the teaching staff mentioned, there is a platform, where students can see what problems were in the study programme earlier and how they were sorted.

Students also mentioned to the expert group that each semester there is a roundtable with the representative office where everything is put on the table and the impact for the studies is discussed. Students have the ability to express their thoughts about the learning process and they can achieve significant changes to make their study programme better for themselves and future generations.

ANALYSIS AND CONCLUSION (regarding 7.1.)

All important instruments for ensuring the quality of curricula are available at the university, but they are implemented relatively unevenly. While university regulations cover the quality assurance aspects of the entire curriculum life cycle - from the proposal for the creation of the curriculum to the closure of the curriculum - the reflection of this in the form of public information is clearly insufficient. There is no systematic and comprehensive public document register, and some public documents are not in machine-readable format. However, actual practice includes several commendable elements, such as feedback from stakeholders on the curriculum as a whole (universities usually limit themselves to subject-specific feedback surveys).

The involvement of stakeholders in internal quality assurance is effective. The active participation of social partners and students at various stages ensures that the study programs remain relevant and of high quality. The systematic collection and consideration of feedback, along with transparent communication, contribute to the continuous improvement of the programs. However, more attention could be paid to cooperation with professional associations.

During the meeting with the experts, students expressed the opinion that their voice carries too little weight in the Field Study Programs Committee (FSPC) and they would like the committee members to take their views into account to a greater extent than before.

It is considered that the university has all the necessary resources to maintain quality assurance due to the high involvement of stakeholders.

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's website is largely bilingual - alongside the Lithuanian page, there is also a similar English website, or it is possible to conveniently use an automatic translation solution.

RECOMMENDATIONS

To address shortcomings

1. Ensure user-friendly accessibility of English versions of university documents.

For further improvement

1. While various aspects of the university's activities are described in great detail on the university's English-language websites, the university's regulatory documents are largely only in Lithuanian. Develop and implement a comprehensive system for publishing English translations of university documents online.
2. While the university has implemented cooperation with stakeholders. It may be useful to establish closer cooperation with IT associations that can provide consolidated market information.
3. Review the decision-making mechanism of the Field Study Programs Committee (FSPC) to ensure that the opinions and suggestions of the student members of the committee are taken into account to the necessary extent.

V. SUMMARY

Kaunas University of Technology stood out from other evaluated universities already in the quality of its self-analysis report. The thoroughness of the analysis of the field being evaluated, the description of international institutions, and the wide scope and deepness of the analysis clearly showed that the university has relied on a broad knowledge base in developing its study programmes and conducting educational activities.

Another very important aspect is the applied orientation of academic activities, both in research and teaching. In research and development, this is primarily reflected in the volume of research and development projects and corporate contracts, which is larger than the combined volume of the other two evaluated universities (Vilnius University and Vilnius Gediminas Technical University). The applied orientation of the teaching activities was highly appreciated by both students and representatives of social partners (alumni and representatives of the Faculty's cooperation partners). This was probably one of the reasons why the students who met with the experts considered Kaunas University of Technology to be the best university in Lithuania for IT studies.

The social partners who met with the experts were ready for even closer cooperation: offering entire courses or individual lectures, offering internships to students, (co)supervising students, carrying out joint research and development projects, etc. The university was expected to be more proactive in developing cooperation, better communication, and generally more systematic cooperation with companies and public institutions.

Although the evaluated study programmes belonged to different subareas of ICT (software engineering, multimedia technologies, IT of distance learning), the need for graduates from all of these study programmes is big. The alignment between the objectives of the study programmes and the University's strategic goals is clear, ensuring that the study programmes contribute to the University's broader objectives. The structure of the study programmes is well thought out, with plenty of options, allowing students to acquire all the necessary competencies, including practical skills needed in real working life. Somewhat more emphasis could be placed on developing teamwork skills of students, especially within the framework of full-cycle software development.

In research, the average number of publications per academic employee is relatively high. However, the proportion of articles published in top journals and high-level conference proceedings is relatively low. We would specifically like to emphasize the importance of participating in high-level conferences - it is at these that the results of the latest research are shared, current problems are discussed, and collaborative ties and project consortia are created, etc.

The quality of the university's infrastructure is relatively uneven, both in terms of study spaces, the technology used, and the non-academic environment. This applies to both the general infrastructure of the university (for example, dormitories) and the Faculty of Informatics and the Department of Software Engineering. Although the university's financing system was not within the scope of this accreditation, the experts developed a clear understanding that the problems related to IT-related academic activities largely resulted from insufficient financing.

On the other hand, we believe that some problems can be solved by partially reorganizing existing activities and seeking synergies. For example, if students wanted more lectures from professors from foreign universities, why not offer lectures from foreign experts during scientific events held at the university (conferences, project meetings, doctoral dissertation defences, etc.).

In conclusion, we would like to thank both the university and SKVC for the excellent preparation and implementation of the accreditation. We would like to especially highlight Kaunas University of Technology for preparing an excellent self-evaluation report.

VI. EXAMPLES OF EXCELLENCE

The volume of research and development projects and corporate contracts is currently by far the largest among Lithuanian universities.

Panel chair: Prof. Dr. Peeter Normak 

(signature)