STUDIJŲ KOKYBĖS VERTINIMO CENTRAS
CENTRE FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

SOFTWARE ENGINEERING FIELD OF STUDY

VILNIUS GEDIMINAS TECHNICAL UNIVERSITY

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 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 19 February 2025 onsite.

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

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

The meetings were conducted in English. In some cases, the explanations were in Lithuanian and were translated into English.

1.4. BACKGROUND OF THE REVIEW

Overview of the HEI

Vilnius Gediminas Technical University (hereinafter – *the University* or *VGTU*) is a public higher education Institution that was established in 1956 as the Vilnius Evening Division of the Evening Faculty of the Kaunas Polytechnic Institute, and in 1969 it was transformed into an independent institution – the Vilnius Civil Engineering Institute. The institution was renamed to Vilnius Technical University in 1990, and to Vilnius Gediminas Technical University in 1996.

The university has 11 top-level academic units: 9 faculties (Architecture, Business Management, Civil Engineering, Creative Industries, Environmental Engineering, Electronics, Fundamental Sciences, Mechanics, Transport Engineering), Antanas Gustaitis' Aviation Institute and Lithuanian Maritime Academy.

The university conducts studies in 27 fields under the following study field groups: engineering, IT, technology, mathematics, social sciences, business and public management, as well as arts.

The core values of the University are: sustainability, connection, openness, innovativeness.

The vision of the University is to become by 2030 “a prestigious and international European technical university, distinguished by the quality of studies and research, its significant impact on the individual, the community and society”.

Overview of the study field

Software Engineering (hereinafter also *SE*) is a first cycle 4-year study programme that belongs to the field of *Software Systems*. It was launched in 2014 by the *Department of Information Systems* at the *Faculty of Fundamental Sciences*. The other study programmes administered by the Department are: *Information Systems* full-time and part-time bachelor programmes, *Information Systems Software Engineering* Master’s programme and *Information and Information Technologies Security* Master’s programme.

According to the Study Programme website, “This study programme prepares software systems specialists. With application of modern software engineering methods and tools such specialists will be able to engineer, program and test complex software systems. Students are taught to develop software systems using different models and software frameworks, apply difficult algorithms and evaluate their efficiency, test software with the help of different methodologies, and conduct various software integration processes. Studies provide knowledge on modern mobile project management methodologies and also develop teamwork skills. The study programme is for individuals who intend to become highly skilled software systems developers, software architects, software quality professionals, and project managers.”

Previous external evaluations

The study programme has not previously undergone external 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,*

Access to university documents was made easier by the fact that SER also contained direct links to them. However, at times it also caused some confusion. For example, according to the SER, the document “On the Approval of the Procedure Description for Student Performance Assessment and Earning Credits at Vilnius Gediminas Technical University” was submitted to the Senate on July 1, 2022, but the corresponding web link opened the

2018 Lithuanian version of this document (although the English version was also found after some searching). The fact that the links led to Lithuanian documents, even if there was an English translation of the document, caused some additional difficulties (most of the expert panel members do not speak Lithuanian).

It is worth noting here that the self-analysis report was relatively general. However, this was compensated for by the conversations that took place during the visit, which were informative and quite comprehensive.

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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 Faculty of Fundamental Sciences*

II. STUDY PROGRAMMES IN THE FIELD

First cycle/LTQF 6

Title of the study programme	**Software Engineering**
State code	6121BX023
Type of study (college/university)	university
Mode of study (full time/part time) and nominal duration (in years)	Full-time, 4 years
Workload in ECTS	240
Award (degree and/or professional qualification)	Bachelor of Computing
Language of instruction	Lithuanian
Admission requirements	Secondary education
First registration date	2014
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	3
2.	Links between scientific (or artistic) research and higher education	3
3.	Student admission and support	4
4.	Teaching and learning, student assessment, and graduate employment	4
5.	Teaching staff	4
6.	Learning facilities and resources	4
7.	Quality assurance and public information	4
	Total:	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.

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

According to the forecast of the European Centre for the Development of Vocational Training, "*The employment of ICT professionals is projected to increase by 30 per cent between 2022 and 2035. <...> In recent years, EU policies have given greater attention to ICT skills and in particular to the employment of ICT specialists as strong digital skills should strengthen the EU's competitive position in the digital world and drive Europe towards a more equal society.*"[2]

As the Software Engineering study programme is designed to train developers, system architects, analysts, software quality assurance specialists, testers, IT project managers the outcomes are aligned with labour market and society needs.

According to the study "Need for ICT specialists and labour market forecast in Lithuania" conducted in 2023 by "Unicorns Lithuania", "Invest in Lithuania" and "Google" initiative, ICT companies are ready to employ, the urgent need is for about 1400 software back-end developers and 1000 front-end developers. Thus, the programme objectives and learning outcomes are in line with the needs of society and the labour market.

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

As outlined in the "Goals, Areas of activity, and Types" section of the University Statute, "The university conveys the latest scientific knowledge, develops competencies necessary for the needs of the labor market and further studies, develops creative people who are able to solve various problems and adapt to changing environmental conditions <...> fosters a creative, knowledge-based and innovation-open society."

According to the VGTU 2021-2030 Strategy, "*VILNIUS TECH inspires and nurtures the talent - civic, responsible, creative, and competitive personalities, able to alter and change the environment, mobilize a vast university community, work for the advancement of society economy, culture, social welfare, and technology. <...> We will implement the vision of VILNIUS TECH while in pursuit for the following MOONSHOTS:*

- *Each learner constructs own learning experience*
- *Each partner receives a knowledge-based smart solution*
- *Each alumnus creates value for the society*
- *International center of attraction for talent, business society"*

[2] ICT professionals: skills opportunities and challenges (2023 update) | CEDEFOP

The assessed study programme includes a broad range of mandatory courses of general type that contribute not only to building professional skills but also are consistent with the mission and goals of the university. These courses include Philosophy, Management, Economics, Principles of Project Management, Informatics Law, and one of Logic, Ethics, and Public Communication.

Given that the university provides not only specialized knowledge but also a wide range of mandatory interdisciplinary courses, a graduate of this study programme is likely to become a well-rounded IT professional who combines technical knowledge, critical thinking, managerial awareness, and ethical responsibility.

The engineering mindset of graduates, established by the university during the study process, was mentioned as one of the beneficial skills during the meeting with social partners and alumni. This mindset, in conjunction with interdisciplinary courses, is directly aligned with one of the strategy's points: 'VILNIUS TECH inspires and nurtures talent - civic, responsible, creative, and competitive personalities, able to alter and change the environment, ... work for the advancement of society, economy, culture, social welfare, and technology.

ANALYSIS AND CONCLUSION (regarding 1.1.)

The Software Engineering study programme is designed to align with labor market and societal needs by training a diverse range of IT professionals. The study programme's comprehensive curriculum, which includes both specialized and interdisciplinary courses, ensures that graduates are not only technically proficient but also possess critical thinking, managerial skills, and ethical responsibility. This holistic approach fosters the development of well-rounded IT professionals who are capable of adapting to dynamic environments and contributing to a knowledge-based, innovation-driven society.

The study programme includes courses in knowledge areas that are essential in the modern IT world and highly valued by ICT companies. This alignment contributes to meeting market needs and enhancing the employability of graduates. These courses include Cloud Computing, Fundamentals of Data Mining, and either Information Security Fundamentals or Information Systems Audit. The study programme also includes courses specifically dedicated to building market-demanded soft skills, such as Management and Project Management.

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 programme is designed in accordance with the requirements set out in the corresponding Lithuanian legislation, i.e. (amongst others) the decree of the Seimas of the Republic of Lithuania on the *Approval of Description of the Lithuanian Qualifications Framework*; the Order of the Minister of Education, Science and Sport on the approval of the *Description of the Group of Study Fields of Computing*, and of the Descriptor of the *General Requirements for the Implementation of Studies*; and the Resolution of the Senate of VGTU *General principles of compilation and implementation of the Vilnius Gediminas Technical university study*

programmes. The study programmes also follow the requirements of the joint ACM/AIS curricula recommendations.

The study programme comprises 240 credits, of which 165 are in the study field, 39 are optional or institution allocated credits, 15 are for practical training and 15 for the final thesis. The programme has 6400 hours in total, of which 2307 are for contact work hours, leaving 64% for student's self-training time.

The principles of study credits are defined in the "General principles of compilation and implementation of the Vilnius Gediminas Technical university study programmes". This document stipulates that first cycle university study programmes should comprise 240 study credits. The duration of full-time first cycle studies is 4 years (so 60 credits per year). The academic year is divided into autumn and spring semesters, with a calendar semester of 20 weeks.

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

The general aim of the study programme is to prepare highly qualified and comprehensively educated software engineering specialists, who are able to apply program engineering methods for design, development, testing, implementation and operation of program systems of various purposes and complexity in various fields, understanding both fundamental areas of computer science and modern programming technologies and software frameworks, able to master information technology innovations and apply them to solve actual problems of professional activity. This is translated into appropriate learning outcomes, based on Bloom's taxonomy of cognitive objectives, focusing on the different components of competences and skill levels (knowledge, understanding, application, analysis, synthesis, evaluation and self-assessment). The individual courses contribute to the learning outcomes as is indicated in the course descriptions. The assessment methods are also described at course level: Students can find out about the evaluation criteria and assessment procedures for each course separately. In general, students confirmed during the visit that they are happy with the syllabi of the courses: the syllabi describe very well what is expected from them.

For each learning outcome in the study programme, not only is a list of courses that contribute to achieving that learning outcome provided, but also a description of the study and assessment methods used. However, no analysis of the substantive correspondence between the learning outcomes of the study programme and the learning outcomes of individual courses has been presented. Unfortunately, the conformity of the learning outcomes of the study programme with the learning outcomes of the first-cycle study programmes given in Appendix 2 of the *Description of the Group of Study Fields of Computing* has also not been analyzed. Nevertheless, the analysis conducted by experts suggests that this compliance does exist to the necessary extent.

However, an overall coherence plan, with structured clusters of subject areas (with regard to both the academic contents and professional skills) and clear corresponding competence growth paths, is lacking. It is also difficult to understand what are fundamental courses and what are more specialisation courses. For example, how do mathematics courses, including the largest course, Fundamentals of Mathematical Analysis, serve information technology courses? Or how will the learning outcome *information security* of the study programme be achieved if the course "Information Security Fundamentals" is optional and the term security is not present in the description of any achievement level (excellent, typical, threshold) of any other course (the

explanation that some aspects of information security are covered in the course “Information Systems Audit” will certainly not be sufficient)?

The same applies to the assessment methods. Students can find out about the evaluation criteria and assessment procedures for each course separately, but no overall assessment and/or evaluation matrix is provided.

1.2.3. Curriculum ensures consistent development of student competences

The study starts with the fundamentals, in courses on Information technologies, Fundamentals of mathematical analysis, Procedural programming, Computer graphics, Discrete mathematics, Computer architecture, and Object-oriented programming. This fundamental knowledge is further developed into a more holistic approach and an understanding of various more and more complex processes. From the 4th semester students take specialization subjects, such as Requirements engineering, Software systems design, Artificial intelligence and knowledge systems, together with optional courses that broaden their horizon, providing not only knowledge of his or her specialisation, but also the basics of other fields. Internships in the 4th and 6th semesters enrich students with practical skills in their field of study. The final bachelor’s thesis demonstrates the skills a student has acquired throughout the studies.

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

The volume of compulsory courses constitutes 183 credits out of 240 (approximately 76%). The remaining credits come from elective courses (42 credits) and courses aimed at preparing the final thesis (15 credits).

Students have each semester the chance to take one optional course. They can also make an individual study plan by arranging the courses in time according to their own needs and possibilities (e.g. part-time studies). However, the choice of elective courses in the IT field is relatively limited. For example, in the first year of study, it is only possible to choose between different foreign languages, in the fourth semester only between the type of practice (Professional Internship or Demola practice), etc. Since all mathematics courses are compulsory, one alumnus considered the study programme too theoretical during a meeting with experts. Thus, the total volume of elective courses in ICT is 12 credits, plus 6 credits for free choice obligatory courses.

Since the pandemic, distance learning has become more and more an option for all students.

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

The requirements for the students’ final thesis are prescribed university wide in the “Description of the Final Thesis Preparation and Defence Procedure” with amendments. The final thesis is the student’s independent research project submitted at the end of the study programme to show to what extent he or she has acquired the learning outcomes of the study programme. In this research project, students demonstrate their creativity, knowledge and understanding of the subject area, their academic and professional skills, understanding of the topic, the ability to solve current problems, their communication and language skills, the ability to correctly formulate conclusions and scientifically justify their views.

The topics of the theses, based on the titles, comply very well with what is at stake in the field of study. They are sufficiently descriptive, and indicate a wide variety of possible applications students can work on. The defence of the final thesis is evaluated by the Degree Awarding Committee (DAC), consisting of the university teaching staff and a specialist (a practical expert) not employed at the university, who is appointed as the chairperson of the DAC. The final grade is decided by the DAC, considering the thesis quality, the results of the defence, and the answers to the questions of the members of the commission.

ANALYSIS AND CONCLUSION (regarding 1.2.)

The general aim of the study programme is to prepare highly qualified and comprehensively educated software engineering specialists, equipped with a set of competences nicely described in learning outcomes that reflect current national and international standards in this field. The courses in the study programme help to achieve these learning outcomes and are arranged in a sequence that consistently develops students' competencies.

The study programmes comply with the legal requirements set out in Lithuanian legislation and university study regulations.

A problem is related to the relatively small proportion (5%) of the total study programme volume of elective courses in the ICT field. Students can also choose 6 credits of ICT courses as free choice obligatory courses, but they also have the option not to do so.

Also, an overall coherence plan, with structured clusters of subject areas (with regard to both the academic contents and professional skills) and clear corresponding competence growth paths, is lacking. The same applies to the assessment methods. Students can find out about the evaluation criteria and assessment procedures for each course separately, but no overall assessment and/or evaluation matrix for the whole study programme is provided. This table would allow to identify which learning outcomes in the study programme are not sufficiently covered by the learning outcomes of the courses.

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		

RECOMMENDATIONS

To address shortcomings

1. Revise the curriculum as such that, based on an overall coherence plan, it becomes clearer what are fundamental and specialisation courses, what are structured clusters of subject areas (with regard to both the academic contents and professional skills), what are clear

competence (and skills) growth paths and what is the appropriate mix of assessment and/or evaluation methods to measure students' growth along these learning pathways.

2. Ensure that the learning outcomes of any individual study programme (i.e. in any combination of electives) taken together cover the learning outcomes of the entire study programme.

For further improvement

1. Increase the proportion of elective courses in the ICT field in the study programme.

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 that VGTU has R&D contracts in the amount of EUR 2.18 million, which is the 6th place among Lithuanian higher education institutions (HEIs). The VGTU researchers are less active in participating in international and national projects. In the assessed period VGTU participated only in four projects in the amount of 580.000 EUR. In the period 2020-2022, the VGTU researchers published 52 papers in WOS/Scopus with Science Citation Index (SCI). The publishing of VGTU researchers (Department of Information Systems) in WOS/Scopus with SCI have been steady over recent years: 17 SCI papers were published by 36 researchers in 2020 (average is 0.47 per researcher), 17 SCI papers were published by 36 researchers in 2021 (average is 0.47 per researcher), and 18 SCI papers were published by 36 researchers in 2022 (average is 0.5 per researcher).

VGTU researchers are publishing mainly in journals from MDPI (Multidisciplinary Digital Publishing Institute) such as Applied Sciences, Electronics, Energies, Sensors, Sustainability, as well as in Elsevier journals such as Sensors and Actuators A: Physical, Expert Systems with Applications, Applied Numerical Mathematics, Mechanical Systems and Signal Processing, and in Springer journals, such as Education and Information Technologies, Journal of Global Optimization, and in another journal such as IEEE Transactions on Instrumentation and Measurement, IEEE Transactions on Magnetics, Mathematical Population Studies. While VGTU researchers are publishing at computer science conferences, such as the Conference on Data Analysis Methods for Software Systems, the Conference on Information Technologies and Management, the Conference on Discrete Element Methods, the Conference on Digital Business and Intelligent Systems, the Conference on Electrical, Computer, Communications and Mechatronics Engineering, they are not publishing at the top conferences in Computer

Science (CS) and Software Engineering (SE). The research carried out by VGTU is directly related to the field of Study to ensure that the study content is in line with the latest achievements in science and technology. VGTU cooperates with external partners, universities (e.g., Polytechnic of Porto, University of Orléans, University of Salento, University of Siegen, University of Siegen, Marie Curie-Sklodowska University) and companies (e.g. Teltonika, Coherent Solutions) to carry out research in the field of Study.

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

VGTU lecturers are active researchers who transfer the results of research and R&D projects into the content of the study courses. The content and learning outcomes of the study programme are based on international guidelines such as SWEBOK and comparable to similar study programmes in Lithuania and abroad. For example, students learn about cloud computing services suitable for design, deployment and support of digital systems, Android operating system and Android application development, distributed databases, object-oriented database management systems, NoSQL databases, Electronic Transaction Systems, developing intelligent software systems. 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 covered in particular courses (e.g., Information Security Fundamentals), this is not the case for Software Architecture and Software Engineering Operations.

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 course projects and final thesis, where the problems from the IT sector are identified and solved by computerising the company's operations and developing software systems. As such, the first cycle students apply the latest scientific advances to tackle practical problems. Final theses often benefit from company consultation, culminating in close cooperation between the business, the faculty staff and the students. Furthermore, students can participate in the annual VGTU Lithuanian Young Scientists' Conference, "Science - the Future of Lithuania", as well as in the research topic competition organized by VGTU since 2019, where winners are awarded a one-semester incentive scholarship. Students also participated in the Research Council of Lithuania (RCL) projects, such as the Development and investigation of a nanometre-resolution, high-power piezoelectric hybrid gyroscopic stabilisation system project.

ANALYSIS AND CONCLUSION (regarding 2.1.)

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

However, the participation of VGTU researchers in R&D projects is modest - only three ongoing projects were listed in the SER. The total budget for R&D projects is many times smaller than what one would expect from a university department.

Also the number of SCI papers should be increased in the next period. The number of SCI papers in 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 should be increased as well, 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.

The University engaged students in research through the annual VGTU Lithuanian Young Scientists' Conference and in the research topic competition. 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		

RECOMMENDATIONS

To address shortcomings

1. The number and budget of research and development projects should be significantly increased.

For further improvement

2. Publishing in SCI publications should be increased.
3. The share of SCI publications in non-MDPI journals should be increased.
4. Publishing at the top Software Engineering and Computer Science conferences should be increased.
5. 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

VGTU has a fair student admission system as the admission of students takes place in accordance with the *Law on Science and Studies of the Republic of Lithuania*, in accordance with the requirements and procedures approved by the Ministry of Education, Science and Sport of the Republic of Lithuania and other legal acts.

VGTU also offers preliminary admission to non-state-funded places of first and second-cycle full-time studies as well as separate admission to non-state-funded places of first-cycle full-time and part-time studies. The admission procedure is described on the University's website.

Admission to the SE programme is granted to persons who have passed at least one state mature examination and have at least a secondary education, and on the basis of a competitive score consisting of study subject assessments and additional scores. Students are admitted to the university study programme by the rector: upon the recommendation of the Director of the admission and information centre they are admitted to the first semester of the first year, on the recommendation of the Dean they are admitted to the second semester of the first year or higher.

The highest competition score of admitted students was 10,09 to the state-funded place (worth a mention that there was only one time in the 2019-2023 period when the competition score was lower than 9,5 (9,36 in 2020). On the other hand, the lowest score was 5,41 (during the same period scores vary from 5,41 to 5,59) in 2020 and 2021. Talking about non state-funded places, the highest admission score was 8,31 in 2019 (8,20 in 2023) while the lowest was 5,48 in 2021 (6,69 in 2023).

The promotion of studies is a team effort as not only teaching staff, departments and the University Admissions and Information centre but also students participate in order to help with the promotion.
VGTU has a typical student admission system and criteria and procedures are adequate and transparent. They can be found on the University's website, social media, study fairs and similar events. The University holds a competition with Vilnius University for the number of students choosing one of these two universities, which limits the possibilities for implementing joint projects and working together during admissions.

Students told the experts that they chose VGTU because of its high international ranking in this field of study, friendly community, career day events and practical approach to studies. Some students came from schools that have a partnership with VGTU and had VGTU lecturers as teachers in school.

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

Since 2015, the university has been granted the right to decide on the academic recognition of education and qualifications acquired in foreign countries. The Centre for International Studies (CIS) coordinates and administers the study process of students from foreign countries who have chosen the entire study programme at the University.

In order to help the admitted students personalize their studies, the University also recognises non-formally and informally acquired competences, in accordance with the *Procedures for the assessment and recognition of competences acquired through non-formal and informal means*. In order for competencies acquired non-formally or informally to be taken into account, the student must submit a corresponding application to the dean, and the entire decision-making process takes place within the faculty. The amount of study credits that can be earned for the competencies acquired during non-formal and informal learning can not exceed 70% of the scope of the study programme to be studied.

Although the students mentioned that they had no problems with the recognition of periods of study abroad, the procedures were not presented in the SER.

ANALYSIS AND CONCLUSION (regarding 3.1.)

The University has a clear student admission system, rules and procedures. Everything (information about enrolment, scholarships, general information and other important aspects) can be found on the University's website. The University has created a separate unit to support student candidates from foreign countries - the Centre for International Studies.

Similarly, all information about recognition of foreign qualifications, periods of study, and prior learning is stated clearly on the University's website. It is easy to understand, and the processes are transparent.

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

The university is very active in promoting academic mobility. The advertising campaign starts during the Inclusive Week and continues throughout the academic year, intensifying before the selection for the Erasmus+ programme. Information about mobility opportunities is published on the bulletin boards, Faculty's website, etc. Before students leave on Erasmus+ or other mobility, they have to prepare their study plan which must be coordinated with the faculty's Erasmus coordinator. If students go on Erasmus visit while writing their final thesis, the University asks students to find a supervisor before they go on to mobility. Students acknowledged that the teachers have always promoted Erasmus+ mobility among students and that the university has a clear interest in sending as many students as possible and does everything to make mobility as smooth as possible. Students even have the opportunity to choose courses at the host university that are not part of the home university's study programme.

During the visit students confirm that the university really wants the students to go for an international (Erasmus) experience, and facilitates the process as much as possible. However, students are not often going, mainly due to personal reasons (e.g. activities in leisure time or jobs). During the period of analysis (2018/19 - 2022/23 academic years), only 15 students have used the Erasmus+ mobility grant. In one of these academic years (2019/2020), there was no student mobility due to Covid. Students explained that the main reason for low academic mobility is their employment (most students get a job during the 2nd year of study). The students who participated in the meeting with the experts explained that they will not go on Erasmus or other study mobility because they also have permanent hobbies (sports, etc.).

Regarding reverse mobility, the department did not report any foreign students studying at the university during the period under review.

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

Academic support is provided to students throughout the academic year in various forms. During the first cycle of full-time studies, a senior student (curator) and supervising teachers are assigned to each academic group. Their task is to inform students about the study procedure, the activities of the dean's office, departments, students' rights and obligations, the procedure for assigning scholarships and social payments, and the academic schedule.

Information about the course plan, objectives, expected learning outcomes, list of sources of information, lecture notes, assignments, assessment system and other information is posted in Moodle.

The staff of the Academic Support Center organizes consultations and seminars for students on career choices, internships and job search, practical advice on passing a job interview (in Lithuanian and English). The Career Days event is held annually.

At the request of most students, dormitories are provided near academic buildings and laboratories. Social support for students is provided through the provision of incentive scholarships for academic performance, one-time incentive scholarships from the University and faculty scholarship funds, social scholarships (awarded by the State Research Foundation), and personal scholarships. Over the past three years, 21 students have received scholarships in the amount of 1,500 euros and one student has received 500 euros. The university also has a Psychological Support and Individual Needs Group, which provides psychological support to students.

3.2.3. Higher education information and student counselling are sufficient

Information about the University as well as academic and other activities is provided to students in various forms - University's website, physical and virtual consultations, social media, etc.).

First-year students are introduced to the structure of the University and the faculties, organization of the study process, get assigned senior year students-tutors and teachers-tutors, who accompany them in the first weeks in the University, etc.

Additional counseling can be received from lecturers during dedicated consultation hours. These can be held in classrooms or online. Special targeted counselling is provided during the preparation of the final thesis. The University Student Association also plays an important role in ensuring the well-being of students. All groups have student representatives who represent the interests of students in the Student Association. There were no problems in communicating with the Student Association, students were always promptly helped.

Students were satisfied with the situation at the university in terms of the abundance of information. They noted that the university keeps up-to-date information about what is happening at the university, changes in regulations, events, classes, etc. And teachers provide their students with the necessary assistance.

ANALYSIS AND CONCLUSION (regarding 3.2.)

In students' opinion, students in this faculty have high-level academic support. Regular meetings with each academic group representative, meetings with academic staff about studies etc. are organised. The students informed the experts that the information provided to them was sufficient and adequate. Lecturers use in their teaching additional information, online sources, and videos. Even if a lecturer uses previous semester material, he/she always reviews it and adds additional information.

Students are ensured with all possibilities they want. Apart from Erasmus+ and other mobilities provided, students also do internships even in well-known companies which also provide them with additional training courses.

There are also several scholarships for students. Some students have received a scholarship from the company already in the first month of study, having provided a motivation letter and having shown themselves well in an individual interview.

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	

COMMENDATIONS

1. The university provides comprehensive support to students for participating in the Erasmus+ mobility program.

RECOMMENDATIONS

For further improvement

1. Implement more effective measures to motivate students to participate in Erasmus+ mobility. This in both ways - for VGTU students to study at a foreign university and for foreign students to study at VGTU's software engineering study programme.

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

For virtual learning environment, *Moodle* learning management system is used. This allows to give students personalized homework assignments, monitor their completion and give feedback. If necessary, individual or group consultations are organised.

At the first lecture of the course being studied, the teacher introduces students to the program of the course being studied, as well as to the list of recommended literature, expected learning outcomes, deadlines, etc.

The methods used in teaching are relatively diverse and vary significantly between courses. In addition to traditional lectures, labs, exercises, discussions and presentations, case studies, and problem solving, course descriptions also mention group projects, reflection, brainstorming,

debates, simulations, demonstrations, literature review, peer tutoring, etc. However, the descriptions of the methods used in different courses vary considerably, ranging from a few words (for example, inspiring lectures) to in-depth descriptions of the methods.

The grade for the course is determined based on the interim credits (30% to 70% of the final grade) and the exam grade. Interim credits are mandatory and the forms of midterm assessment include report, coursework, laboratory work, homework, colloquium, test and demonstration. The teacher may increase the final grade by up to 10% based on the quality of the assignments and/or active participation of students. Students can discuss their examination results with the lecturer and answer additional questions. According to the survey about the study process of the students who studied the SE study programme in 2022-2023 academic year, 67,95% of students agreed that *The learning load and pace of the study subject was suitable for mastering the material and completing the tasks* (11,88% disagreed, and 20,17% were undecided on this). According to the teaching staff, the main instrument for helping students who are lagging behind in their studies is weekly consultations. The volume of planned consultations is 2 hours per week, which can be longer if necessary. Case studies are also conducted relatively frequently. They allow observe the reasoning of students and understand what they have learned.

For online communication and presentations, both Zoom and MS Teams are used.

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

VGTU applies a flexible payment schedule, and can partially or fully exempt students from tuition fees due to severe disabilities.

Since April 30, 2012, the State Research Foundation has been implementing the project "Ensuring Accessibility of Education for Students with Special Needs". Disabled students (subject to meeting the criteria and not having failed exams) are provided with a monthly targeted allowance of 152 euros.

The university premises are adapted for disabled students on the university campus. The university has ramps, lifts and toilets adapted for people with limited mobility. During the evaluation period, there was only one student from a socially vulnerable group. The user interface of the student information system as well as Moodle can be configured to be suitable for students with special needs. If his computer equipment could read tables, teachers provided information in other ways. He also participated in the meeting with the experts. According to him, the infrastructure is not the best, but manageable.

Persons with a working capacity of 55% or less (disability groups I and II) are exempt from the registration fee. When signing the admission documents, they must provide documents confirming the right to receive this allowance. There is no application fee.

In 2021, the University's Disability Coordinator began providing support to students with individual needs and counselling to faculty working with these students. These activities are coordinated by the Academic Support Center.

The SER team noted that visually impaired students successfully graduate from the university, as the study material, as well as the library, are adapted for students with visual impairments. Teachers make slides that allow students to use the text-to-speech function. VGTU even had ERASMUS students with visual impairments who successfully studied, and after all this, they mentioned the university only in a positive light.

ANALYSIS AND CONCLUSION (regarding 4.1.)

Although both students and social partners positively highlighted the practical orientation of the study program, social partners in particular emphasized the need to further strengthen its practical orientation. The students who participated in the interviews also had the same opinion. It was noted that the exercises performed in the classes were too simple and did not pose students with sufficiently challenging tasks to promote the development of critical thinking, problem-solving and project management skills. On the other hand, according to the social partners, the university is open to discussion and suggestions.

It is also worth noting as a positive aspect the three-stage (takes place in the 2nd, 4th and 6th semesters) mandatory internship system implemented in the study programme, where the first internship (introductory internship) is essentially an observation internship. During this, students visit companies to gain an overview of the company's activities, the challenges facing the company, and its development.

The general academic calendar is available to everyone online. Unfortunately, the link in the SER leads to a Lithuanian version – selecting English will automatically redirect the user to the university main homepage (although the University also has an English version of the academic calendar).

Considering the needs and conditions of disabled students, the entire campus of the university is adapted for students with mobility problems so that they can get to any place they want.

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 criteria for the assessment of study performance are indicated and defined in “Procedure Description for Student Performance Assessment and Earning Credits at Vilnius Gediminas Technical University”. Students are assessed according to a 10-grade scale. Over the past three years, the average grade for students of SE has been between 8.00 and 8.18.

The university uses cumulative types of academic performance assessment. Only if all the intermediate grades have positive scores, the student is allowed to take the exam on the course of study during the session. The final grade on the course of study is automatically generated by the system.

Monitoring of learning progress is carried out at four levels: university, faculty, study programme and course levels. In order to ensure higher student achievement, the University has developed a “Student Achievement Monitoring and Improvement Plan”. This document describes the tasks, tools, resources and executors of monitoring the learning process. For example, in *Analysis of survey results and implementation of feedback*, vice-deans hold meetings with students to inform them about the decisions made. To prevent student dropouts, a number of additional measures are being implemented. Systematic monitoring and additional measures are one of the reasons why the student dropout rate in recent years has been 8%, which is relatively low for IT majors.

The university implements extensive feedback collection: student survey about the quality of teaching; student survey about the implementation of the study programme; teacher survey about the quality of the study programme; student survey about the choice of studies; student survey upon coming under exchange programmes; student drop-out survey; graduate survey about career opportunities; social partners/employers survey.

4.2.2. Graduate employability and career are monitored

During the meeting in the University it was mentioned that alumni surveys (12 months after graduation) and informal communication are used to monitor the career path of graduates. Other implemented career path monitoring methods are analysis of LinkedIn data (the University profile has more than 40 000 members, of which more than 35 000 are alumni), reports of Employment Service under the Ministry of Social Security and Labour, studies of Centre for Quality Assessment in Higher Education (SKVC).

As it was mentioned during the meeting with the self-evaluation report preparation team, employment and career information is collected additionally through informal communication with social partners when they give guest lectures and participate in the activities of the Study Programme committee at the faculty level or meet with faculty on other occasions.

Employers highlighted alumni's orientation towards problem solving and their good practical skills.

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

The general ethical requirements, the principles of ethical behaviour, submission and examination of reports, and complaints about violations of ethical behaviour are described in *The Code of Academic Ethics of Vilnius Gediminas Technical University*. Some aspects of academic integrity, tolerance and non-discrimination are dealt also in the *Study Regulations*, the *Description of the Final Thesis Preparation and Defence Procedure*, *Procedure Description for Student Performance Assessment and Earning Credits*, *Rules for Responsible Use of Artificial Intelligence*, *Vilnius Gediminas Technical University Declaration on Assurance of Equal Opportunities*, and others.

For example, the *Rules for Responsible Use of Artificial Intelligence* outline the principles for the responsible use of AI the study, research, administration and other activities at VGTU, as well as requirements for declaring AI-generated content in papers (tool's name, usage date, and specify the exact places where it was used). In addition, students must be able to explain their paper, including parts generated by AI tools, and answer questions about the work process. However, students are not allowed to use AI tools during assessment unless the specifics of the subject require the use of AI.

A group was set up to make recommendations on measures to ensure fairness in the preparation of written assignments. Courses for teachers were organized like “Distance learning: how to ensure integrity?”; “Test development on Moodle virtual learning environment and Zoom: how to prevent academic dishonesty”.

In 2021, the University’s students’ union jointly with the VMU students union launched a campaign to prevent academic dishonesty titled “Illumination”. The first stage of the campaign

included a question to the students on their opinion about academic dishonesty and how they deal with it.

The University also adopted a Gender Equality Plan 2022–2027. The plan follows the principles described in the *Horizon Europe guidance on gender equality plans* and describes five overall goals, measures to achieve the goals, indicators, responsible persons/divisions and implementation timelines.

Since 2019, the *Turnitin* service has been implemented to check for plagiarism.

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

The appeal procedures are regulated by „The Description of Procedures for Resolving Student Appeals and Complaints". The document describes the procedure for submitting appeals, the content of appeals and complaints, forming and operating of the Appeals Commission, resolving appeals and making decisions. A student has the right to submit an appeal against a performance assessment score and against the breaches of knowledge assessment procedure, as well as a complaint about the actions and omissions of an employee and executives of the University. During the assessment period there were no appeals submitted by SE programme students.

ANALYSIS AND CONCLUSION (regarding 4.2.)

Feedback surveys are published on the university intranet and analyzed at all four levels mentioned above (university, faculty, stud programme and course levels). According to the survey about the study process of the students who studied the SE study programme in 2022-2023 academic year, 73,45% of students agreed that the evaluation was objective, following the earlier announced evaluation forms and criteria (8,59% disagreed and 17,96% were undecided on this).

Despite the limitations of implementing GDPR (The General Data Protection Regulation) safeguards, the university has found ways to track the career paths of its graduates. Involving government agencies in the monitoring process adds additional credibility to the data collected. However, although the faculty has an alumni club, the biggest challenge, according to the authors of the SER, was getting feedback from alumni.

Therefore, the University puts sufficient effort into monitoring the employability and career development of graduates. Also, the mechanisms for ensuring academic integrity, tolerance and non-discrimination, as well as the handling of complaints at the university, are sufficiently regulated and, based on interviews, appear to be working.

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	

COMMENDATIONS

1. The study programme includes a three-stage internship for students.

RECOMMENDATIONS

For further improvement

1. Harmonize course descriptions to ensure a sufficiently adequate presentation of course content and teaching methods used.
2. When updating course content, special attention should be paid to ensuring that practical assignments are sufficiently challenging for students.
3. Fix language switching between Lithuanian and English on university web pages.

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

The University 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 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 ratio of the number of teaching staff to the number of students enrolled in the study programme course units is good (in 2020, 1:5.5; in 2021, 1:6; and in 2022, 1:5.5). The average age of teachers in the field of Study is 46 years. An approximate ratio of 1:3:6 for different categories of lecturers (professor, associate professor, lecturer) is appropriate. VGTU permanently employed teachers in the field of Study have, on average, 17.5 years of teaching experience, while at least 60% of the teaching staff have experience in professional practice. There is a low turnover of VGTU teachers in the field of Study due to age or attestation changes – changing one position for another.

VGTU 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. Teachers are also subject to a public competition.

According to the students who participated in the meeting, they are not satisfied with just one lecturer, while recognizing that as a specialist in the field, this lecturer is irreplaceable.

ANALYSIS AND CONCLUSION (regarding 5.1.)

The number, qualifications, and competence of teaching staff are sufficient to achieve learning outcomes. In particular, the ratio of the number of teaching staff to the number of students

enrolled in the study programme courses is good enough to ensure the quality of studies. The VGTU teaching staff have necessary pedagogical, scientific and practical experience.

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

The University has over 85 Erasmus+ agreements with foreign institutions in the field of Study and VGTU employees are encouraged to use the Erasmus+ mobility programme for teaching and training. In addition to the Erasmus+ program, VGTU teachers have other mobility opportunities (e.g., international projects, DAAD). Each semester, VGTU carries out selections based on strategic indicators for Erasmus+ teaching and training visits to the EU and partner countries, as well as the university-based Erasmus+ global visits program to non-EU countries. In the assessed period, more than 30 Erasmus+ teaching and training visits were carried out, while 13 foreign teachers were visiting VGTU. In particular, percentages of outgoing teaching mobilities in the assessed period were 8% in 2021-22, 24% in 2022-23, and 4% in 2023-24. While the numbers of incoming teaching mobilities in the assessed period were 0 in 2021-22, 11 in 2022-23, and 0 in 2023-24 academic year. The mobility of VGTU teachers depends on their personal initiative. The Faculty's international coordinator provides information and advice to the faculty's teachers on the selection process.

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

Improvement of the qualification (professional, scientific, educational) of the academic staff is regulated by the following documents: 1) the Description of Vilnius Gediminas Technical University Employee Internship Procedure; 2) Description of the Procedure for Setting Requirements to Organize Competitions for Vilnius Gediminas Technical University Teachers, Research Workers and Other Investigators to Take up a Position, to Certify them and Establish Minimum Qualification Requirements; 3) Description of Vilnius Gediminas Technical University Employee Qualification Improvement Procedure.

The University teachers are able to improve their didactic and general competencies (digital, intercultural, communication) by participating in various trainings organized by four Academic Support Centre teams: Group of Educational Competencies, E-learning Group and Career and Psychological Support Group, Audiovisual Technology Group. VGTU teaching staff with less experience are obligated to undergo professional development during one term - a 40 hours course on teaching practice. Moreover, VGTU teachers constantly improve their scientific and practical competence by participating in national and international conferences and seminars. The VGTU teachers also have the opportunity to improve their proficiency in the English language by participating in English language courses, where the university covers half of the fee to motivate the teacher's attendance. In 2022, the Academic Support Centre (ASC) started to organise awards for the best university teachers to promote excellence in teaching further.

For the development of academic staff, a special unit – an Academic Support Centre – is established and a web separate site (https://vilniustech.lt/about-university/academic-support-for-teachers/332802) has been created on the university website to support professional development of academic staff.

ANALYSIS AND CONCLUSION (regarding 5.2.)

The established Erasmus+ program and other international cooperation training ensure opportunities for academic mobility. VGTU has an appropriate selection procedure for participating in mobility programs. However, the number of VGTU teachers who participated in the Erasmus+ program and other academic exchange varies a lot. While the number of foreign visits was very high in the 2022-2023 academic year (24% of lecturers went on a teaching or training visit), in the 2023-2024 academic year it was relatively low (4%). The same holds for the number of foreign teachers visiting VGTU. The number of incoming academic staff was relatively high in the 2022-2023 academic year (13), while there were none in the following academic year. From the point of view of organizing teaching, the mobility of academic staff could be more evenly distributed over the years.

The University has developed several systematic measures to ensure accessible competence development opportunities for VGTU teachers.

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	

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 VGTU should be increased.

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

The study takes place in the classrooms and laboratories (computer labs) of the Faculty of Fundamental Sciences of VGTU. More and more students are however using their own devices with connection to the university network. During the implementation of the project

“Development of the computer network of Lithuanian research and study institutions” financed by the EU Structural Funds, the university network data transfer rate was increased by a factor of 10, and computer equipment was upgraded substantially. The study requires different software programs (over 200 titles), installed not only in computer classrooms and reading rooms, but also made available to teachers and students on their own devices.

In order to modernize the study process the self-service portal mano.vilniustech.lt is operating and a mobile version has been created as well. The portal provides all the organizational information of the study process and the tools for its implementation: lecture and examination schedules, study programmes, availability of classrooms, documents regulating the study procedure, etc.

Lectures for part-time distance learning students take place in a specially equipped studio, at the teacher’s workplace or from home, provided that the requirements of connection and video quality are satisfied. Streaming lectures on general university theory study subjects take place in several streaming auditoriums.

VGTU has adjusted its premises and other facilities for students with disabilities, especially for blind students. Moreover, four workstations for students with special needs have been provided in the library with the tools and software supplied by the project titled “Ensuring the Accessibility of Studies for Students with Special Needs” implemented by the State Studies Foundation.

The Central Library of the university has a large collection of books and is open on 24/7 base. The literature on the specialised study subjects required for the study programme is also available in the departments of the Faculty of Fundamental Sciences. Nowadays e-resources are beginning to play an increasingly important role, both in terms of convenience and popularity: students have full access to the publications of the own publishing house ‘Technika’, and to all e-resources provided by the library.

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

The University spends more than 167 000 Euro per year on the acquisition of various publications. Every year the library updates the access to various international databases of scientific publications, based on the feedback of the teachers and the frequency of use and the relevance of the databases subscribed to. This provides a way for both teachers and students to have access to the most up-to-date scientific materials.

In 2023, VGTU won the funding of the 3-year Lithuanian mission themes project “Safe and Inclusive e-Society”, where €7 million is allocated for the improvement and upgrade of infrastructure and laboratory equipment.

ANALYSIS AND CONCLUSION (regarding 6.1.)

The university provides sufficient resources for the study programme. The infrastructure on campus is appropriate and the current computer classrooms and infrastructure seem to meet the teaching and learning needs. The learning materials used in the study programme are updated on a regular basis to improve the quality of the study and to meet social and business needs. The necessary software tools are provided on campus, but there are measures taken so that they can also be used on teachers’ and students’ own devices. A movement away from licenced software tools towards more open tools could be beneficial in that respect as well.

Each academic year, teachers update the reading list for their study subjects, and the library resources are updated accordingly, both on paper and more and more also in electronic format.

Living conditions in dormitories are generally good. The University has four fully renovated dormitories and only fifth one is not renovated. Lack of financing from the Lithuanian government and lack of free rooms for relocation is the reason why renovations take so long to happen. Access to infrastructure for students with disabilities is ensured.

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	

RECOMMENDATIONS

For further improvement

1. Explore (and encourage the use of) more open source software tools (next to the use of licensed software products).
2. Increase the focus on the acquisition of electronic rather than paper books (and provide easy access for teachers and students).

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

Policy for quality assurance, the main principles for the quality assurance and management of studies, participants and their functions in quality assurance, design and approval of study programmes, as well as quality assurance of university processes (learning, teaching, assessment, student admission, recognition and certification, student support, information management, monitoring, etc.), teaching staff and learning resources are stated in the *Description of Internal Study Quality Assurance of Vilnius Gediminas Technical University*. Quality assurance is divided into four levels – university, faculty, department, study programme levels. The document is available on the university's website (also in English language).

Guidelines for composing documents are outlined in the *Recommendations About Study Programs and Subject Cards Preparation*. This thorough (29 pages) document covers all aspects of study programs (program name, objective, structure, learning outcomes, relations between subjects), of subjects (objective, relations between the learning outcomes of subjects and of study program, etc), of the study process organization and evaluation. The document also contains a large number of examples of the objectives of the study programme, the links between the outcomes of the study programme and the courses, the forms of teaching, the methods of teaching, etc.

Main decision-making bodies are determined for different levels – the Senate and the University Study Committee, Faculty Council and Faculty Study Committee, and the Study Programme Committee. The Study Programme Committee is the main institution that is responsible for the study programme quality. It meets at least once a year - usually more often - and analyses the student survey, teacher survey and other social partners' survey results, the data about students, the material base allocated for studies, provides recommendations to update and improve the study programme. The experts were presented with the minutes of the last two meetings of the Program Committee. For example, on the 9.09.2024 meeting, the following agenda was used: 1) Analysis of admission results, 2) Information on preparation for external review, 3) Analysis of student survey results, 4) Procedure for submitting thesis topics, 5) Other ongoing questions.

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

Students provide feedback through systematic student surveys. The results of summarized surveys are used to improve study programmes, facilitate the organization of the study process and strengthen the academic staff and its skills. The results of surveys are discussed at rectorate meetings, academic departments of the university, and study programme committees.

During the meeting with students, it was mentioned by students that they have the possibility to communicate if there are any issues in the modules of the Study programme. Students are aware of the implemented process and shared examples of programs being changed after they suggested areas for improvement.

Social partners provide internship opportunities to students, participate in final thesis defenses, participate in the Study Programme Committee at the faculty level and above, and are able to reflect on the quality of the Study programme. Additionally, informal communication occurs when social partners deliver guest lectures; examples of delivered guest lectures were provided during the meeting with the teaching staff. Social partners have conducted joint projects with the university. An Oracle APEX project was mentioned as an example during the meeting with social partners and students. Many lecturers are employees of ICT companies and are familiar with market needs and the required skill levels for entry-level employees. Combining this with a flexible approach to updating the study programme (teachers can change up to 20% of the Study programme at their discretion) means that the University is able to update the Study programme regularly according to the latest market needs.

The University receives feedback from INFOBALT, the association of digital technology companies. Given that the association unites about 170 DigiTech companies with more than 20,000 employees, the market insights gained from INFOBALT's feedback surpass direct feedback from individual ICT companies in terms of market coverage.

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

The University has collected study-related documents on a special webpage.

Public information about the study programme can be obtained either from the University website or from the Open Information Consultation Guidance System AIKOS where information up to the description of the content of each course can be found. Information related to the implementation of the study programme is stored in the information system “Alma Informatika”.

The expert reports on the evaluation of the study programmes can be found on the University website and are also freely available on the SKVC portal.

Some information about the study programme can be found on the department’s web site: the number of students admitted, the score of the last entered to the state funded place, career opportunities after graduation, etc. The experts were not able to find any statistics about students’ or employers’ feedback on the English language web site of the university.

However, the university websites have a fundamental deficiency - language switching on university websites does not work: when switching to English from a Lithuanian site, you were redirected to the university's English main page, and vice versa, when you were on an English page, you were redirected to the university's Lithuanian main page.

7.1.4. Student feedback is collected and analysed

According to the Description of the procedure for organizing surveys of VGTU, study process participants, mandatory surveys are provided: student survey about the quality of teaching; student survey about the implementation of the study programme; teacher survey about the quality of the study programme etc. The results of surveys are being analysed at the university on a regular basis. They are discussed at rectorate meetings, academic departments of the university, study programme committees, and meetings with students. Teachers and administrative staff can view survey results in the VGTU internal system, filter them according to various criteria, as well as download reports.

Students complete questionnaires at the end of each semester. This is a mandatory requirement for successful completion of the course. Other forms of student feedback are also used in addition to the uniform practice established at the university. For example, at the end of a lecture, lecturers leave 10-15 minutes for an informal feedback session. The lecturers were surprised by the student activity in such discussions. For example, students found the discussion of programming technologies too fast-paced, after which the lecturer reduced the volume of topics covered and devoted more time to the remaining topics.

The results of the survey on the learning process (11 questions) of students studying in the Software Engineering program were collected in the 2022-2023 academic year. According to the results, more than 70% of students agreed with all statements except one (“The learning load and pace of the study subject was suitable for mastering the material and completing the tasks”, with which about 68% of students agreed).

ANALYSIS AND CONCLUSION (regarding 7.1.)

The involvement of stakeholders, including students and social partners, in internal quality assurance is effective. Students provide feedback through systematic surveys, which are used

to improve study programmes and the organization of the study process. This feedback is discussed at various levels within the university, leading to tangible changes based on student suggestions. Social partners, including ICT company employees, participate in the Study Programme Committee and provide valuable insights into market needs. Additionally, feedback from INFOBALT, an association of digital technology companies, offers comprehensive market coverage.

This collaborative and flexible approach ensures that the study programme is regularly updated to meet the latest market demands, thereby enhancing the quality and relevance of the education provided.

However, publicly available information about the overall quality assurance system on the university's website is extremely limited – only five lines of general type is devoted to the quality of study programmes (https://vilniustech.lt/about-university/quality-assurances-and-services/98844).

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	

RECOMMENDATIONS

For further improvement

1. Publish on the University website an informative and comprehensive overview of the University's quality assurance system for study programmes.
2. Ensure correct language switching on the university website.

V. SUMMARY

The self-analysis report (SER) was relatively general, sometimes without references to relevant source documents and statistical data. At times the text was questionable, but without the necessary explanations. For example: one of the basic documents was allegedly the ACM's *Competency Model for Undergraduate Programs in Information Systems*, not the one for *Software Engineering*, which would be more appropriate considering the name of the study Programme ("Software Engineering"). Also, the included links in the SER were useless to most of the expert panel members, as they referred to documents in Lithuanian.

However, the questions received exhaustive answers during the interviews. In this regard, the head of the study programme, Prof. Dr. Nikolai Goranin should be particularly highlighted. His

explanations were well-reasoned and convincing. On the other hand, since his research area is information security, it was somewhat surprising to note that this crucial area was very poorly represented in the study programme.

The approach to the practicality of learning is somewhat controversial. On the one hand, the study programme includes three company internships, and social partners recognized the University for being more problem-oriented and practical compared to, for example, Vilnius University. On the other hand, a graduate found the study programme too theoretical; more attention could have been paid to project management and the development of critical thinking. At the same time, the lecturers have been steadily increasing the practicality of the courses; several specific examples were provided to the experts.

While the publication of scientific articles in high-level journals is at a good level - although it could be higher - the funding received through participation in projects within international research programs is relatively low, and this has been the case over several years (and is an order of magnitude smaller than, for example, Kaunas University of Technology.). It is also slightly alarming that, according to the QS World University Rankings by Subject in the field of computer science and information systems, VGTU fell from positions 551–600 in 2022 to positions 701–750 in 2025.

It is very positive that the university is doing a lot of work to promote the specialty in general education schools. This is done through a wide variety of activities: school visits by faculty and students, hackathons and career days for school students, conducting school lessons, excursions to the university for students, organizing open days, etc. When meeting with students, several of them admitted that participating in similar events was decisive in their choice of the study programme. It is also worth noting that several companies provide scholarships to students. The problem, however, is that, according to students, receiving a scholarship generally does not depend on the student's academic performance, as the motivation letter and interview are decisive. Therefore, the desire to receive a corporate scholarship does not motivate students to make efforts in their studies.

Finally, we would like to mention one recommendation here, the implementation of which does not require many resources, but is very important for the university's international visibility and, in fact, reputation - organizing the university's public website. The current situation, where, for example, when switching to an English website while on a Lithuanian page, you are always redirected to the home page of an English website, is completely unacceptable.

In conclusion, we would like to thank both the university and SKVC for the excellent preparation and implementation of the accreditation.

Panel chair: Prof. Dr. Peeter Normak 

(signature)