SKVC

STUDIJŲ KOKYBĖS VERTINIMO CENTRAS
CENTRE FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

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SOFTWARE ENGINEERING FIELD OF STUDY

VILNIUS 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 (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 onsite on 18 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(ies);
- Team responsible for preparation of the SER;
- Teaching staff;
- Students;
- Alumni and social stakeholders including employers.

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

1.4. BACKGROUND OF THE REVIEW

Overview of the HEI

Vilnius University (hereafter – *VU*) was established in 1579 and is the oldest and largest higher education institution in Lithuania. It is a public institution. From 1 January 2021, Šiauliai university was merged with VU (Šiauliai University was established in 1997, before which it had operated as Šiauliai Pedagogical Institute from 1954, and previously as Šiauliai Teachers' Institute from 1948).

The highest decision making bodies of the University are the Senate, the Council, and the Rector. The University has 15 core academic units (CAU): 11 faculties (Chemistry and Geosciences, Economics and Business Administration, Philosophy, Philology, Physics, History, Communication, Medicine, Law, Mathematics and Informatics, and Kaunas Faculty), Institute of International Relations and Political Science, Life Sciences Centre, Šiauliai Academy, and Business School), and 12 core non-academic units.

According to the data of 1 October 2024, there were 3 434 academic staff at the University (of which 2 559 were teaching staff and 875 were research staff) and 25 621 students (of which 2 581 were full-time foreign students).

The University offers undergraduate, postgraduate and doctoral studies in the fields of humanities, social sciences, natural sciences, medical and healthcare sciences, and technological sciences. More than 90 bachelor's and integrated study programmes as well as 110 master's and professional studies (pedagogical) programmes are available. Doctoral students can choose from among nearly 30 research fields, while resident students can choose from more than 60 residency study programmes. The university offers studies in 12 study field groups and 60 study fields.

Overview of the study field

Studies in the field under evaluation are carried out at the Faculty of Mathematics and Informatics (hereafter – MIF) and the Šiauliai Academy (ŠA). The predecessor of MIF was the Faculty of Mathematics and Mechanics, which was established in 1965, and ŠA in 2021. Software Engineering first and second cycle programmes are offered at the MIF (referred to as MIF B SE and MIF M SE, respectively). Additionally, first cycle Software Engineering studies are conducted at the Šiauliai Academy (referred to as ŠA B SE).

The MIF currently comprises four institutes (Computer Science, Mathematics, Applied Mathematics, Data Science and Digital Technologies), which conduct research in artificial intelligence, differential equations, cyber security, probability theory and mathematical statistics, data science, blockchain technology, number theory and some other topics.

The Institute of Computer Science comprises four departments (Computer Science, Computational and Data Modelling, Mathematical Computer Science and Software Engineering) and a Cyber Security Laboratory, and conducts research and studies in the field of software engineering. The main research fields are: software process modelling, assessment and improvement, formal methods in software engineering for distributed systems, modelling and computational calculations, security and usability in user experience design, quantum computing algorithms, legal informatics and artificial intelligence, deep machine learning and its applications.

The ŠA has two institutes, the Institute of Education and the Institute of Regional Development. The priority areas of science of the ŠA are: natural sciences and advanced technologies (environmental research, analytical problems in number theory, modelling and data science).

MIF publishes five mathematics and informatics scientific journals: *Nonlinear Analysis: Modelling and Control*, *Proceedings of the Lithuanian Mathematical Society*, *Statistical Works of Lithuania*, *Olympiads in Informatics*, and *Informatica*. VU is also a co-publisher of *Baltic Journal of Modern Computing* and *Informatics in Education*.

As of September 2023, the MIF employs 271 staff (35 professors and chief researchers, 57 associate professors and senior researchers, 45 assistants and researchers, 26 junior assistants and junior researchers, 37 lecturers, 18 partner teachers, 69 non-academic staff members, including 16 persons who also hold academic positions) and had a total of 2,228 students. As of 1 October 2023, the total number of non-academic and academic staff employed by the ŠA was 94 and 173, respectively.

Previous external evaluations

The MIF B SE and MIF M SE study programmes were externally evaluated by international experts in 2014. The programme ŠA B SE was evaluated in 2017 for registration purposes only. The study programmes evaluated for accreditation purposes were assessed positively and accredited for six years.

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.*

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 Engineering**	**Software Engineering**
State code	6121BX006	6121BX009
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, 3,5 years
Workload in ECTS	240	210
Award (degree and/or professional qualification)	Bachelor of Computing	Bachelor of Computing
Language of instruction	Lithuanian/English	Lithuanian/English
Admission requirements	Secondary education	Secondary education
First registration date	14 June 2002	24 April 2017
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**
State code	6211BX006
Type of study (college/university)	University
Mode of study (full time/part time) and nominal duration (in years)	Full-time/part-time, 2-3 years
Workload in ECTS	120
Award (degree and/or professional qualification)	Master of Computing
Language of instruction	English
Admission requirements	Higher (Bachelor's degree or equivalent) qualification
First registration date	6 March 2006
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	4
3.	Student admission and support	4
4.	Teaching and learning, student assessment, and graduate employment	3
5.	Teaching staff	4
6.	Learning facilities and resources	3
7.	Quality assurance and public information	4
	Total:	25

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

No.	Evaluation Area	Evaluation points
1.	Study aims, learning outcomes and curriculum	3
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	3
5.	Teaching staff	4
6.	Learning facilities and resources	3
7.	Quality assurance and public information	4
	Total:	25

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[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

The university has implemented measures to ensure study programme outcomes align with market needs. These measures include social partner (ICT company) participation in Study Programme Committees (at least one partner per committee), alumni surveys, and recruiting teachers from ICT companies. At the faculty level, the university encourages social partners to share their knowledge and insights through guest lectures, participation in final thesis defenses, and providing relevant topics for final theses.

During the meeting with social partners, it was mentioned that graduates of the University are notable for their complex problem-solving skills and their ability to solve problems that require non-obvious decisions. Social partners claim that this strong problem-solving skill is characteristic exclusively of Vilnius University graduates.

As outlined in a self-evaluation report, "Software Engineering graduates are highly valued in the labour market and their employability in computer science-related professions is high. Students start working and successfully combine their studies with a job in the IT sector already in the first cycle: 8% from Year 1; 38% from Year 2; 31% from Year 3, and 23% from Year 4."

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

The mission of the University is *"to strengthen the cognitive and creative potential of Lithuania and the world, foster academic and other spiritual and social values, educate active and responsible citizens of Lithuania and social leaders".* The university also adopted *the Strategic Action Plan for 2021–2025.* The latter outlines strategic directions, long-term objectives and their indicators, but does not specify any priority development subject areas.

While there are no specific courses that directly align study programme outcomes with the university's mission, a set of courses directs learning outcomes to fulfill the mission, goals, and strategy. Examples include various mathematics and algorithms courses (Software Engineering first cycle), Communication Skills and Ethics in IT Team, Software Projects and Quality Management (Software Engineering first cycle), and Project Management (Software Engineering second cycle).

As outlined in the self-assessment report (p. 19), graduates of the Software Engineering first cycle programmes should be able to work effectively in multidisciplinary teams to achieve common goals, realize the need for lifelong learning and engage in it, and understand ethical and professional responsibilities. Graduates of the Software Engineering second cycle programme should be able to interact with business and scientific representatives from other professional fields

to solve interdisciplinary problems, act ethically, and plan and organize complex activities involving various interrelated tasks.

During the meeting with social partners and alumni, it was mentioned that teamwork in lab tasks helps graduates gain valuable soft skills for working in teams, a highly desired attribute in the market. Social partners also emphasized the good problem-solving skills of university graduates, noting that career development further enhances their ability to solve complex interdisciplinary tasks.

ANALYSIS AND CONCLUSION (regarding 1.1)

The study programmes' aims and learning outcomes are effectively aligned with the HEI's mission, goals, and strategy, ensuring that graduates are equipped with the necessary skills and values to contribute to society and their professional fields.

The alignment of programme aims and learning outcomes with the needs of society and the labour market is well-supported by the university's proactive measures. These measures include the involvement of social partners, such as ICT companies, in Study Programme Committees, ensuring that at least one partner is present per committee. Additionally, the university conducts alumni surveys and recruits teachers from ICT companies to stay attuned to market demands.

At the faculty level, the university further strengthens this alignment by encouraging social partners to contribute through guest lectures, participation in final thesis defences, and providing relevant topics for final theses. These initiatives ensure that the study programmes remain relevant and responsive to the evolving needs of the labour market, equipping graduates with the skills and knowledge required to succeed in their professional careers.

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 programmes comply with all legal requirements as prescribed by Lithuanian legislation and university study regulations. This means that the programmes fully comply with the requirements applicable to the type of university, first- and second-cycle studies and academic and professional requirements in terms of their objectives, learning outcomes, curriculum design and courses stated in the following documents: 1) *Description of the Lithuanian Qualifications Framework*, 2) *Description of Requirements for the Completion of General Studies*, 3) *Descriptor of the Group of Study Fields of Computing*.

The study programmes leading towards a bachelor's degree have 210 resp. 240 study credits at the two locations; no fewer than 120 credits are allocated to field courses;15 credits are allocated to the final thesis (project), and also 15 credits to an internship. The number of contact hours (including online) is 35% resp. 41%, and self-study hours is 59% resp. 65%.

The study programme for a master's degree has 120 study credits upon completion, of which no fewer than 60 study credits are allocated to the field course units (modules) and only 20 credits

are allocated to the studies established by the University or chosen by the student. The number of contact hours (including online) is 23%, leaving about 77% for self-study hours. The final thesis project, although formally in the last semester with 20 credits, is in fact divided into four semesters, with a volume of 5, 10, 15 and 20 credits respectively, for a total of 50 credits.

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

The content of the courses, whether compulsory or optional, and their distribution over the semesters ensure consistent development of the general and subject-specific competencies required for the study programmes.

In each study programme, consistency between the different competences is ensured at an early stage in the design of the study programme. The descriptions of the courses relate to the intended competences and learning outcomes as described in the description of the study programme, so that the overall goal is achieved. The teaching and learning methods and forms of assessment are selected by the lecturers in consultation with the programme committee: they are based on Bloom's taxonomy and depend on the requirements for a particular study cycle and year. The links between the learning outcomes and those of the individual courses, including the teaching and learning methods and the assessment methods in each study programme are presented to the RP in a detailed matrix. Once a year, the programme committee reviews this matrix and reassesses whether all learning outcomes are sufficiently and evenly covered and whether the chosen teaching and learning methods, including the assessment of student performance, are still appropriate.

1.2.3. Curriculum ensures consistent development of student competences

In the first year of the first-cycle programme, students develop their individual skills and learn the theoretical and practical fundamentals of the field. From the second year, students also develop communication and collaboration skills needed by software engineering professionals, and take general university courses including social and natural sciences. The third year delves deeper into software engineering and culminates in a group software development project in which teams of students work on an assignment from an external social partner, communicate with the client to refine the assignment, manage the project activities independently, share responsibilities and demonstrate the system to the client at the end of the semester. Teamwork, active learning and a student-to-student approach are central to this project work. In the fourth year, there is room for electives or individual units of study, along with an internship and an undergraduate thesis. The curriculum is built up with compulsory courses, and individualised studies units, in order for students to develop their own personalised study programme. A list of optional courses offered by the Faculty is provided to the students. All required competences of the study programme are covered by the compulsory courses, but students can go in more depth on certain competences by choosing their individual studies units (e.g. in Computer Graphics, programming languages, etc).

In the first year of the second cycle, students take some theoretical courses and take a first step in their master's thesis project by choosing a topic and studying the literature. In the second year, they continue with some additional courses to deepen their expertise, along with developing leadership skills and further completing their research paper. The master's thesis in particular starts with a course unit of 5 credits in the first semester to develop a research plan, 10 credits in the second semester for the literature review, 15 credits in the third semester to present key results, and 20 credits in the final semester to write up the final research paper.

However, the courses are mainly aimed at developing specific sub-skills (e.g. computer architecture, theory of algorithms, human-computer interaction) or programming paradigms (e.g. procedural programming, object-oriented programming, functional programming). The study programmes lack clearly defined groups of interrelated courses that would lead to the development of skills necessary for the full-cycle software process, from defining and analyzing requirements to implementing the developed software solution. For example, the course "Software Engineering Process" is studied in the 7th semester, while the courses of software engineering are studied in the 3rd and 4th semesters.

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

Students have several opportunities to personalise their studies to promote general and subject-specific competences in line with their interests. From 2023 onwards, 60 study credits in undergraduate studies are allocated for individual studies tailored to the student's needs: the student may choose courses from the field of study, all courses offered by the University's CAUs, interdisciplinary study modules, general university studies (modules), complementary internships, participation in international exchange, etc.).

Students can also study different foreign languages. Academic English is a mandatory course in the first semester of the first-cycle program, but other foreign languages can be studied, as non-credit courses).

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

The principles of preparation, formation of a committee and defence of final theses in the field of study are defined by (1) the *Regulations for the Preparation, Defence and Storage of Research Papers of Students Studying at Vilnius University*, approved by the University Senate, and (2) the *Procedure for Administering Research Papers in the Vilnius University Study Information System*, approved by the Vice-Rector for Studies of the University. In addition, students are guided in the preparation of their research papers and theses according to (3) the *Provisional Description of the MIF Procedure for the Preparation, Review and Defence of Theses and Dissertations*, approved by MIF Council Resolution No (1.5) 110000-TPN-21 of 19 June 2021, and (4) the *Methodological Guidelines* for each cycle's written papers, which are updated as required. They contain the requirements for the content of the thesis and information about the process of preparing and defending the thesis. These documents alongside with all the relevant information regarding final theses and written papers are published on the relevant websites.

The first-cycle final thesis is aimed at developing the competences to apply the knowledge acquired during the study and independently acquire new knowledge in the relevant areas of software engineering and applications, to carry out independent research or applied work, to present the results and conclusions of the work in a coherent, reasoned and correct way, both in writing and orally, in accordance with the established requirements, in accordance with academic ethics, and to develop the competence of scientific, critical and creative thinking.

The second-cycle final thesis is aimed at developing the competences to apply the knowledge acquired during the study, select and use scientific literature (presenting, analysing, etc.), conduct research, independently solve the set assignments, formulate their own hypotheses, conclusions and recommendations, and present the results of their research and conclusions in a coherent, reasoned and correct way, in a correct language, both in writing and orally, in accordance with the established requirements, in compliance with academic ethics. It also aims to develop the competence of scientific, critical and creative thinking.

Students are encouraged to choose a topic for their thesis that is in line with their area of interest. A list of topics is made available to them. Before proposing their final topic, discussions between students and supervisors take place. Members of the Department make suggestions for improving topics, and eventually the Departmental meeting decides whether the topic meets the requirements of the field of study.

Throughout the thesis research process, students are advised by designated supervisors who are researchers in the field. Once the student has presented the final thesis, the supervisor gives permission to defend it. The thesis will first be uploaded into the University information system (VUSIS) which has an Electronic Plagiarism Detection System (EPDS), thus formal instruments are used to encourage academic integrity. When it passes this check, the final thesis is then sent to reviewers, who will indicate the main advantages and disadvantages of the final thesis. The ultimate check for compliance of the content of the final thesis to the study field is assessed by the final theses defence committee, made up of researchers, teaching staff, professionals- and/or practitioners, and representatives of social partners whose education or practical activities are linked to the study field. The final thesis is then defended in the open meeting of this Committee.

ANALYSIS AND CONCLUSION (regarding 1.2.)

The curricula generally comply with the legal requirements set out in Lithuanian legislation and university study regulations. The formal compliance of the second cycle thesis with the requirements set out in the *Descriptor of the Group of Study Fields of Computing* and the *General Requirements for the Conduct of Studies* is problematic. Formally the volume of the final thesis (50 credits) satisfies the *General Requirements for the Conduct of Studies*, but since 30 credits of them are allocated to subjects in other semesters intended to prepare for the final thesis, the experts consider that some parts of the final thesis are assessed twice.

The content of the courses, whether compulsory or optional, and their distribution over the semesters ensure consistent development of the general and subject-specific competencies required for the study programmes. The links between the learning outcomes and those of the individual courses, including the teaching and learning methods and the assessment methods in each study programme are annually reviewed and reassessed by the programme committee.

The gradual development of competences, i.e. knowledge in the field and skills of a software engineering professional, is somehow taken into account in the design of the study programme.

However, the study programmes do not have a clear structure with well-defined clusters of courses that would define distinct learning pathways for developing academic and professional skills. Study programmes should more clearly emphasize the focus on developing skills for designing holistic processes.

The students have a substantial amount of freedom to individualise their own study programme, which is a great asset. In order to guarantee that all students achieve the same levels of all required learning outcomes, the study programme committee ensures that all learning outcomes can be achieved in a sufficient way through the mandatory courses.

Examination of the examples of final thesis has ensured that the level of the final works are appropriate for the level of study. The topics of the final theses are in the field of software engineering. However, the titles of the theses were not always distinctive. For example, "Domain-Specific Language Design using Blockly" was the title of four theses. It is entirely acceptable for several students' final theses to deal with the same field, but the research object and/or problem setting are different, which should also be reflected in the title of the work.

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		

RECOMMENDATIONS

To address shortcomings

1. Make the curriculum design more explicitly visible with a structure of well-defined clusters of courses, grouped by subject and distributed over the programme in a logical way to increase knowledge from simple to complex over the years of study, and implement clear distinct learning pathways to develop academic and professional skills.

2. Bring the volume of the master's thesis in line with the requirements set out in the *Descriptor of the Group of Study Fields of Computing and General Requirements for the Conduct of Studies*, along with reducing the volume of study prescribed for the master's thesis in previous semesters.

For further improvement

1. Ensure that all intended learning outcomes are achieved in an effective, efficient and balanced way, through the mandatory components of the study programme and the many options students have to tailor an individual 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 for the period 2020-2022 that VU is in the second place in the area of Study with more than EUR 5.3 million of R&D contracts. The VU researchers are participating in Horizon Europe, COST, Baltic Research Programme, Erasmus+ and many other programs. 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) are increased over the years (2020 - 361.17 points, 2021 - 558.95, 2022 - 436.47). The publishing of VU researchers in WOS/Scopus with SCI have been steady over recent years: 65 SCI papers were published by 90 researchers in 2020 (avg is 0.72 per researcher), 80 SCI papers were published by 92 researchers in 2021 (avg is 0.87 per researcher), 70 SCI papers were published by 90 researchers in 2022 (avg is 0.78 per researcher). VU researchers are publishing in good quality journals, such as IEEE Transactions on Information Theory, Soft Computing, Informatica, Journal of Cybersecurity, Nonlinear Analysis: Modelling and Control, and Frontiers in Education.

While VU researchers are publishing at the computer science conferences, such as the International Conference on Application of Information and Communication Technologies, the European Conference on Cyber Warfare and Security, the International Baltic Conference on Databases and Information Systems, the International Conference on the Quality of Information and Communications Technology, the International Conference on Information Technologies, they are not publishing at the top conferences in Computer Science and Software Engineering. The research carried out by VU is directly related to the field of Study. For example, the fundamental and applied research, such as formal methods and tools (TLA+, Isabelle/HOL) for evaluation of the correctness and efficiency of algorithms for inter-system communication, Human-Computer Interaction, reversible computing methods, and computer modelling technologies, have been integrated into various courses. VU cooperates with external partners, universities (e.g., Aalborg University University of Barcelona, INRIA, Riga Technical University) and companies (e.g., UAB Axioma servisas, CERN) to carry out research in the field of Study.

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

VU 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 fractal processes in computer networks has been integrated into the course Computer Networks and Network Programming, research on deep neural network recognition has been integrated into the teaching of Artificial Intelligence, Control Algorithms for Robotic Systems). The content and learning outcomes of the study programmes are based on international guidelines such as SWEBOK and comparable to similar study programmes 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 Architecture and Software Security are already presented in the second cycle study programme Software Engineering, this is not the case for the first cycle study programmes.

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

Students are involved to scientific and applied research activities mainly through final projects and thesis, as well they can participate in R&D projects lead by VU lecturers with possibility to publish their work at international and national journals and conferences (e.g., Lithuanian Master's Research in Computer Science and IT, Young Researcher for Smart Society). Some examples of students' engagement in research are Analysis of Deep Neural Network Architectures and Similarity Metrics for Low-Dose CT Reconstruction, Systematic literature review of DevOps models, A study of the Redis Cluster cache system using formal methods, The decomposition card method for decomposing complex information systems, Deceptive templates in suggestive computing, Variability of non-functional requirements in service architecture style systems, Modelling graphene extraction process using generative diffusion models.

ANALYSIS AND CONCLUSION (regarding 2.1.)

Research within the field of study is at a sufficient level. VU researchers participated in many R&D projects and the majority of peer-reviewed articles are published in good quality journals. However, publishing at Software Engineering (SE) and Computer Science (SC) conferences should be increased, especially at the top conferences. Student participation in research follows the cycle, with more at the master's level and less at the undergraduate level. Sometimes 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. For example, topics such as software engineering operations planning/delivery/control are missing in the study programmes.

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	

RECOMMENDATIONS

For further improvement

1. Publishing at the top SE and CS conferences should be increased.

2. 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

According to the SER, student admission to the first-cycle studies in Vilnius University takes place during the joint admission period and is organised typically - with the admission procedure approved by LAMA BPO (Lithuanian Higher Institutions Association for Organising Joint Admission), also including the approved admission procedure of VU. Applicants to each study programme of the field are admitted by way of competition based on their entrance score. In the four year period (2020-2023), the highest entrance score of the students admitted to the first cycle study programmes was 12,00 (in 2022 for the state funded place) while the lowest was 5,45 (also in 2022 and also for the state funded place). The highest entrance score for students not funded by the state was 8,99 (in 2022) and the lowest was 5,81 (in 2021).

Entrance scores of the students admitted to the second cycle study programme are higher compared to bachelor's. The highest admission score to the state funded place was 29,96 in 2020 while the lowest score was 16,70 in 2023. Meanwhile to the not state funded place highest and the lowest was 18,38 in 2023.

Admission of foreign students to the English-language first-cycle programme of the Šiauliai Academy is carried out by the Student Admission Subdivision of the VU Study Quality and Development Division.

Admission to the second-cycle studies slightly differs. It is carried out in accordance with the *Regulations for Admission to Second-Cycle Study Programmes of Vilnius University*, approved by the Vilnius University Senate. Students with a bachelor's degree acquired in Lithuania can apply to the second-cycle studies through LAMA BPO and for a state-funded place.

The number of applications for English-language studies at ŠA B SE and MIF M SE has increased in recent years. In 2023 there were in total 1019 applications for first cycle and 97 for the second cycle studies in VU. Out of them, respectively only 222 and 30 were accepted.

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

VU has a very clear and fair system of recognition of foreign qualifications as everything is based on legal acts and conventions. The procedure for the recognition of education and qualifications related to higher education and acquired in the educational programmes run by foreign countries and international organisations in accordance with a right granted by the Minister of Education, Science and Sports of the Republic of Lithuania. When making decisions about academic recognition, the University adheres to the *Lisbon Recognition Convention*, the *Description of the Procedure for Recognition of Education and Qualifications Concerning Higher Education and Acquired Under Educational Programmes of Foreign States and International Organisations*, including the *Methodology of Evaluating Education and Qualifications Concerning Higher Education and Acquired Under Educational Programmes of Foreign States and International Organisations*, and other documents.

During the analysed period, 167 requests for the recognition of foreign qualifications were submitted by the applicants to field studies, of which 147 requests were granted (others were declined mainly because the qualification was low or diploma doesn't meet the requirements).

No more than 75% of the amount of the first and second cycle, integrated and joint study programmes may be recognized for students who have studied at another Lithuanian of foreign HE institution and wish to continue their studies at VU.

As the content of studies on the Erasmus program has to be as similar as possible to VU, when going on Erasmus+ mobility, students prepare a study plan beforehand and always consult with the chairperson of the study committee. If changes occur, they must be confirmed.

If coming back they lack half of a credit, some exceptions can be made but if the difference between subjects are greater - they have to retake the course back in VU.

Vilnius University has a procedure for recognising competences acquired by students through non-formal and informal education and for approving courses that help meet students' individual learning needs and expand their independent learning opportunities, applying the principles of lifelong learning. By recognizing prior competencies, students have more time to take additional courses that match their interests.

ANALYSIS AND CONCLUSION (regarding 3.1.)

All rules and requirements for the student selection and admission are transparent and easily accessible for anyone. They can be found on the University's website, study fairs and similar events. Most of the students in the meeting chose VU because of its reputation, "student for one day" kind of events and relied on others' opinion about the University.

University is planning to change the admission rules and procedure for Master study programmes from abroad as the interview with one applicant takes half an hour and the number of them is constantly increasing.

Vilnius University has clear and transparent student selection and admission processes but the rules for admission of foreign students could be revised as 30 minute interviews with applicants when the number of them from foreign countries is increasing, is very time consuming.

Recognition of foreign qualifications, periods of study, and prior learning is clear and understandable. Regarding non-formal education, this experience should be considered and added to the final grade of enrolment to 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

Field students of all cycles have the opportunity to spend a semester or a year studying abroad. In total, students can spend up to half of their study time in mobility programmes. Erasmus and Erasmus+ programs alone are available to students for a total of 12 months. The MIF has 96 Erasmus and other agreements with foreign universities.

There is also the possibility to gain international experience through VU's participation in the ARQUS alliance (composed of 9 EU universities). Students of the field also have access to 38 universities belonging to the COIMBRA network of the oldest classical universities in Europe.

Information on mobility opportunities is made public on the websites of the University and the core academic units, also in newsletters sent to the community and during informational meetings with students.

All courses offered for exchange students in foreign languages can be found on the VU website.

During the period under evaluation, 38 students in the field study programmes used the opportunity to go for partial studies under the Erasmus+ exchange programme. In 2023-2024 the number of outgoing students was 15 (countries the students have chosen to go to are: Estonia, Spain, Italy, Portugal, The Netherlands, Slovenia, Greece, Finland, Denmark, Switzerland, Japan). The number is low as students tend to start working in the first/second year of study.

In the 2023-2024 academic year, 71 students have chosen to study at the MIF for exchange, 55 of whom have chosen to study at least one course unit in the field of software engineering. Most of the students came from Spain, Italy, France, Singapore, Greece and Portugal, and there were also 1-2 students from Azerbaijan, Georgia, Hong Kong, Hungary, Latvia, Turkey and Hungary.

VU offers full-time study programmes for foreigners in the MIF M SE and ŠA B SE. In a 4-year period, there were 147 foreign students who studied full-time.

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

There are various types of support offered by the VU that all students of the field can draw. Students are provided with consultations on all issues related to studies (such as admission, choice of a study programme, financial support, academic leave, termination of studies, individual study plan, change of study programme, internships and extracurricular activities).

The university has a successful mentoring program aimed at developing students' general competencies and intelligence, improving their academic and personal achievements, motivation for study, helping them to adopt the mentor's experience and receiving valuable advice on planning their professional future.

Academic support and professional development is provided through training. Students are mainly interested in training on stress management, efficient learning, and presenting themselves to employers. They also mentioned in the meeting that the lecturers are always available and are open to talk, help and explain their grades.

On the other hand, master's students expressed that some subjects are outdated. The provided material is renewed often but manageable and can be used.

The main form of social support to students is financial benefits. In the academic years 2020-2023, students of the Software Engineering field of study received 426 incentive scholarships, 23 social scholarships, 36 one-off targeted grants and 62 nominal scholarships.

3.2.3. Higher education information and student counselling are sufficient

Information about studies is constantly provided at several levels: general information about the study process is provided centrally at the Study Department and Student Affairs and Career Office (SACO), whereas specific information generated by academic units is provided by the study

departments of the software engineering field academic units, and individual meetings with academic advisors or lecturers are held.

Information is constantly updated on the websites, Facebook and Instagram accounts, and sent by email in Lithuanian and English. Information about the study process is also provided to the students through VUSIS where they can access their personal data, relevant extracts from issued decrees, their study plan, exam schedule, exam results, etc.

ANALYSIS AND CONCLUSION (regarding 3.2.)

VU students are given all kinds of support. No negative aspects were noted, except - according to the opinion of students - for the living conditions on the upper floors of the dormitories. Students get enough information and counselling hours. Lecturers show interest to help students with their projects and give them additional consultations after the lectures. Strong connection between students and lecturers is obvious. If students encounter any problems and want friendly help from other students, the student association of Vilnius university always helps students and provides them with support they need. They also participate in analyzing the problems which occur during the year of study or are described in questionnaires after each semester. Students are delighted with the support they get. Study material is partially new. If lecturers can't update it, they inform students about the fact that it is outdated. There is still room for encouragement of students to participate in Erasmus+ mobilities.

Students are often encouraged by the lecturers to go on Erasmus+ mobility or to take any other mobility. Study programme committee plays a vital role as it helps students and makes the process of going abroad more than easy. Some Master's students expressed a desire to participate in the Erasmus+ mobility programme, but this was not possible due to limited funding.

Students admitted that the behavior and attitude of some teachers towards students was sometimes inappropriate.

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 University should implement mechanisms (such as annual development interviews) that will facilitate the professional development of every teacher.

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 main document on teaching and learning, the *Study Regulations of Vilnius University*, describes in detail the learning process and the roles of stakeholders (in this document, "learning outcomes" are mentioned 79 times!).

The first cycle of software engineering is full-time, while the second cycle is both full-time and part-time, organised in semesters. The studies of each course begins with an introduction of the course' aim, expected learning outcomes, study procedure, teaching/learning methods (lectures, practical classes, laboratory work, seminars, discussions, individual reading, group projects, case analyses, information retrieval, etc.), organisation of independent work, and assessment of students' achievements to students. Teachers also inform the students how individual and group consultations for students will be provided. For that purpose, MS Teams, email and other services are used. Seminars and practical exercises are conducted in small study groups (up to 20 students). Active learning and group work are extensively used.

However, in interviews, teachers were unable to mention any innovative teaching methods they use. This was surprising, as at least one lecturer, for example, claimed to use the online learning game platform Kahoot.

To assess academic performance and achieve learning outcomes, teachers use a cumulative assessment system, the elements of which are tests, laboratory work presentations, individual assignments, debate assessment, examination, etc. Moodle is used as an electronic learning management system.

To deepen practical skills, bachelor's study programmes also include company internships (in total of 15 credits). For the purposes of students' internship, cooperation is carried out with several institutions. Organization of internship, roles and responsibilities of the parties, and forms of related documents are presented in the *Study Internship Regulation of Vilnius University*. With the argument that master's students generally already have work experience, there is no internship in the master's study programme. Some teachers' teaching materials were also found to be somewhat outdated. Overall, students were satisfied with the study programmes and with the level of teaching; the high reputation of the university was particularly noted.

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

Financial benefits are also provided for students with disabilities. During the period under analysis, three students received this scholarship. Scholarships are administered by the Department of Disability Matters under the Ministry of Social Security and Labour.

In 2020, VU approved the six-year *Vilnius University Diversity and Equal Opportunities Strategy* 2020–2025, which adapts the study process to socially vulnerable groups by investing in the adaptation of the university environment, providing access to compensatory equipment, consulting students and teaching staff on the availability of studies, and providing students with the opportunity to study according to individual study plans.

The VU Community Development Department has a Disability Affairs Coordinator who is responsible for analysing and monitoring the needs of the community members with disabilities, ensuring their inclusion and appropriate conditions for study and work. The faculty is partially accessible to students with limited mobility, as they can only access the third floor due to the lack of elevators or ramps.

One person from a socially vulnerable group attended the meeting. According to him, he has no problems with working in the department, access to study materials and participation in the life of the university community. He also mentioned that if they have any difficulties, the administration and teaching staff will be happy to help, and they feel comfortable studying at VU.

The most important information for students with disabilities is available on the VU website.

ANALYSIS AND CONCLUSION (regarding 4.1.)

Students are given an overview of the organization of the course and the expected learning outcomes in the introductory lecture of every course. The teaching faculty members keep track of student progress in the course.

The fact that teachers could not mention any innovative teaching methods they use suggests that teachers are unfamiliar with modern teaching methods, such as the flipped classroom, gamification, inquiry-based learning, etc.

The fact that the master's program does not include a company internship should be considered a shortcoming of the curriculum. Internships in first and second cycle programmes should be of different types: the main objective of the first cycle is to gain experience in an authentic work environment, while in the second cycle it should be more like an innovation internship. The purpose of this internship will be to apply the knowledge acquired by students at the university to improve business processes at the internship location - testing methodology, developing regulations or process models, conducting an experiment, etc.

One of the drawbacks mentioned was the restrictions on the number of students in certain courses that they could choose from a list.

Although faculty members mentioned in interviews that students would like more laboratory hours, teaching and learning generally enables students to achieve the intended learning outcomes, including students from socially vulnerable groups.

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 English translations of documents regulating studies – including monitoring of learning process and giving feedback to students – are publicly available on the University's webpages (https://www.vu.lt/en/studies/academic-info-for-students/regulations).

Monitoring of learning process is conducted on three levels: 1) course level, 2) all students of a given year, 3) study programme level.

Course level monitoring is conducted by the teacher, using both formative and summative assessment. He also provides feedback to students about completed tasks, evaluate the progress

that the student is making, and point out areas for improvement. The principles of collecting feedback are set out in the *Description of the Procedure for Organising Feedback from Social Stakeholders on Improving Study Quality at Vilnius University*. This document covers all types of feedback (social partners include teaching staff): on written assignments, on answers to students' questions (including remotely), on consultations, on oral presentations, etc.

Progress on the level of all students of a specific year is monitored by the Study Department and Student Affairs and Career Office (SACO). Average grades and drop-out scores are calculated, and actions taken if necessary. Students who fail an exam and are required to retake it receive information letters about the different options for retaking the exam and the different forms of tutoring and counselling available to prepare for the retake, as well as information about on who to contact for assistance if needed (teacher, academic advisor, careers advisor or psychologist).

Monitoring of student progress at the level of a study programme is done once a year by the Study Programme Committee (SPC). SPC analyses feedback from the institutions where the internship was conducted, results of defence of their final thesis, assesses the number of the students who went on an academic leave or terminated their studies, the level of students' failures by modules, students' feedback, etc.

4.2.2. Graduate employability and career are monitored

As outlined in the Graduate employability and career tracking section of the self-assessment report (p. 73), "Graduate career tracking is implemented through the Career Management Information System (KVIS) tools." The link is provided in footnote - https://karjera.lt/web2/en/.

As it stated in the news section of the Vilnius University website (information dated November 2015 is available only in Lithuanian - Planuoti karjerą taps paprasčiau | VU naujienos, Karjera.lt – planuoti ir stebėti karjerą tampa paprasčiau | VU naujienos), "*From now on, students of Vilnius University and 24 other Lithuanian higher education institutions can independently use a career management tool – the Career Management Information System karjera.lt. <...> Karjera.lt is also useful for graduate career monitoring specialists. Using the system, it is possible to conduct graduate surveys (collect subjective data), analyze objective (obtained from state information systems, state or departmental registers) and subjective career monitoring data. This function allows you to analyze the available data from various aspects and use them in preparing reports, analyzing study programs, and improving their quality. Other interested persons can also get acquainted with the graduate career monitoring data - students, their parents, and representatives of organizations.*"

At the moment of study programmes evaluation, the website karjera.lt was unavailable and redirected to the career support section of the Vilnius University website, which lacks specific information on graduate employment. Given that the domain name owner of karjera.lt is Vilnius University, it is considered that the decision to make the website unavailable and redirect requests was thoughtful.

For employability tracking of graduates Vilnius University uses the Education Management Information System operated by the Ministry of Education and Science (EMIS, Lith. - Švietimo valdymo informacinė sistema, ŠVIS).

According to the EMIS data, in Lithuania one year after graduation, the number of graduates of VU Software Engineering who were employed in the main groups of the Lithuanian Classification of Occupations or started working independently was 77% of first cycle graduates in 2020, 78% in 2021, and 73% in 2022. Some 89% of second cycle graduates were employed in 2020, 67% in 2021 and 78% in 2022. The indicators vary somewhat by curriculum and gender of graduates. For

example, in 2020, 87% of MIF B graduates found employment or continued their education, while in 2021 this figure was 100%.

During the meeting with self-assessment report preparation it was mentioned that Vilnius University Career Center shares statistics on employment of students which is collected using surveys.

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 *Code of Academic Ethics of Vilnius University* and *Vilnius University Diversity and Equal Opportunities Strategy 2020-2025*. The *Code of Academic Ethics* defines cases of cheating, plagiarism, fabrication, bribery, and assisting another in dishonest academic activity.

Both university-level and faculty-level commissions have been established to handle relevant cases that work in accordance with *the Regulations of the Central Academic Ethics Commission of Vilnius University* and *the Regulation of the Academic Ethics Commission of Core Academic Units of Vilnius University*, as well as *the Regulation of the Central Dispute Resolution Commission of Vilnius University* and *the Regulation of the Dispute Resolution Commission of Core Academic Units of Vilnius University*. All these documents, as well as their English language versions, are freely available on the University's website.

The university uses URKUND to detect plagiarism. In the current academic year, the program committee of the Master's programme in Software Engineering issued a warning to two first-year Master's students who used artificial intelligence tools without declaring them when preparing the research plan for their Master's thesis and submitted the works created with the help of AI as their original.

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

The general principles for considering appeals are set out in the *Study Regulations of Vilnius University*, which is also freely available on the University's website.

A student who disagrees with the grade for a course may submit a reasoned written appeal in cases specified in the *Study Regulations* to the *Dispute Resolution Commission* of the faculty no later than three working days or seven calendar days – depending on the case – from the date of publication of the grade or other violation. If the decision of the Faculty's commission is not satisfactory, the student may appeal to the university's central commission. In all other cases, the period for filing an appeal may be up to a month or even longer.

The Dispute Resolution Commission of the Faculty has six members: three faculty members and three student representatives. In recent years, three complaints have been submitted to the commission, all of which found a favourable resolution for the student.

Complaints about ethics issues are processed by the Academic Ethics Commission of the Faculty. This commission has also six members: four faculty members and two student representatives.

Appeals and complaints can be submitted through the student information system.

ANALYSIS AND CONCLUSION (regarding 4.2.)

The Education Management Information System (EMIS) operated by the Ministry of Education and Science data show high graduate employment rates. A year after graduation, a high percentage of first- and second-cycle graduates are employed or self-employed, demonstrating the effectiveness of the university's programmes in preparing students for the labour market.

In addition to the Education Management Information System, the university conducts its own graduate surveys.

Using several sources of information shows an appropriate effort to monitor employability of graduates.

Regulations on learning and teaching, including their translations into English, are easily found in the public domain on the Internet. However, some students from abroad pointed out that even though the subject is taught in English, they sometimes have to translate provided material from Lithuanian to English. Students also expressed the opinion that the approach was sometimes too theoretical and the teaching material was outdated. They also wanted more guest lecturers.

In conclusion, while there are some areas for improvement in the accessibility of employability data, the overall monitoring and outcomes of graduate employability and careers are positive, reflecting the university's commitment to aligning its programmes with market needs.

It should also be noted that SER was partially inadequate in its description of feedback. It states that "The rules for providing feedback are laid down in the VU Study Regulations". In fact, this 16-page document contains only one sentence about feedback: „Every studying person shall have the right to familiarise themselves with their course unit (module) learning outcome and receive feedback on the assessment of the tasks". And the actual document, regulating feedback, is not mentioned at all in the SER!

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

To address shortcomings

1. The faculty should review the proportions of theoretical and practical learning in courses and ensure continuous updating of teaching materials.

2. Based on the goal of developing students' innovation capacity, consideration could be given to reintroducing business internships into the master's curriculum. The goal would not be simply to gain work experience, but to design and develop innovative solutions.

For further improvement

1. The university should implement mechanisms that would ensure that lecturers are informed about modern teaching and learning methods and support their implementation in teaching.

2. The university must ensure that in the case of an English-language study programme, all necessary learning materials are available to students in English.

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

VU 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 ratio of the number of teaching staff to the number of students enrolled in the study programme course units is satisfactory (in 2020 1:6.5, in 2021 1:6.8, and in 2022 1:7.4). Out of 90 teachers participating in the field of Study, 35 are permanent members (39%). VU permanent teaching staff in the field of Study have, on average, 21 years of teaching experience, while at least 70% of the teaching staff have experience in professional practice. In the assessed period, the turnover rate was 20-25% of the total number of teachers. It is difficult to retain positions in the field of Study due to the high demand in companies for professionals in software engineering.

The VU teaching staff in the field of Study have pedagogical, scientific and practical experience. They are highly qualified and members of prestigious national and international organisations (the Lithuanian Academy of Sciences, the Research Council of Lithuanian, the International Steering Committee of The European AI Forum), and members of journal editorial boards. Prof. R. Baronas is Editor-in-Chief of the scientific journal Nonlinear Analysis: Modelling and Control. 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. Master study programme Software Engineering is taught in English. All teachers in this study programme have English language skills at the B2 level or above.

ANALYSIS AND CONCLUSION (regarding 5.1.)

The number, qualifications, and competence of teaching staff are sufficient to achieve learning outcomes. The VU teaching staff have pedagogical, scientific and practical experience. They have on average 21 years of teaching experience, and at least 70% of the teaching staff have experience in professional practice. They are highly qualified and members of prestigious national and international organisations, as well as journal editorial boards.

The relatively low proportion of lecturers with permanent employment contracts (39%) is somewhat unexpected, given the relatively high level of research work being carried out.

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

VU has over 140 Erasmus+ agreements with foreign institutions in the field of study and VU employees are encouraged to use the Erasmus+ mobility programme for teaching and training. In addition to the Erasmus+ program, VU teachers have other mobility opportunities (e.g.,

international projects). In the assessed period (2020-2023), 29 teaching and training visits were carried out (24 in other universities in Lithuania and 5 abroad), while 5 foreign teachers were visiting VU. All 5 visits to the universities abroad were teaching visits; there were no learning visits. The mobility of teachers depends on their personal initiative. They can obtain information about the exchange opportunities from the international relations coordinators. A week-long study visit or study visit for up to two months for participation in training courses and seminars can be applied for funding under the Erasmus+ programme.

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

The VU teachers are able to improve their didactic competencies by participating in various trainings (e.g., Active Learning Methods Training, Dealing with Culturally Mixed Groups of Students, Blended Learning in University Studies) organized by the Centre of Educational Competence of VU. There is also a special training programme for new teaching staff. From 2021, the teaching staff can get specific funding for the preparation of courses to increase student engagement and for the use of active teaching-learning methods. Moreover, VU teachers constantly improve their scientific and practical competence by participating in national and international conferences, scientific internships, and seminars in Lithuania and abroad. VU does not systematically record teachers' participation in professional development events and training. However, VU teachers' professional and competence development are evaluated and certified every five years.

ANALYSIS AND CONCLUSION (regarding 5.2.)

The established Erasmus+ program and other international cooperation training ensure opportunities for academic mobility. However, teachers in the field of study should participate more widely in the Erasmus+ program and other mobility programmes, also using learning visits to learn about foreign experience. VU ensures accessible competence development opportunities for teaching staff through various trainings organized by the Centre of Educational Competence of VU. However, during the meeting with the teaching staff, most of them could not explain how they implemented innovative teaching methods (e.g., challenge-based teaching, problem-based teaching, flipping methods in teaching) in their lectures. Teachers' participation in professional development events and training should be systematically recorded, as well as courses where innovative teaching methods have been applied. In such a manner, the competence development of VU teachers and the application of innovative teaching methods can be monitored.

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	

RECOMMENDATIONS

For further improvement

3. The number of teachers in the field of Study participated in the Erasmus+ program and other international cooperation training, teaching and learning visits should be increased.

4. The number of foreign teachers visiting VU should be increased.

5. Motivate teachers to improve their didactic competencies and apply innovative teaching methods to their lectures.

6. VU should systematically record teachers' participation in professional development events and training and the courses in which innovative teaching methods have been applied.

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 Faculty of Mathematics and Computer Science has four buildings in three locations in Vilnius in its disposal. There are plans to move to a new building. This was expected to happen in 2024, but has not yet materialised. However, construction work was still ongoing, which sometimes interfered with meetings. The high level of construction noise was also considered the main reason why students' assessments of the quality of facilities in the 2023 survey were significantly lower than in 2022: while in 2022 approximately 75% of respondents assessed the quality of facilities positively and 0% negatively, in 2023 these figures were approximately 30% and 15%, respectively. Šiauliai Academy is located in the central part of Šiauliai and consists of four adjacent buildings.

Most classrooms are equipped with multimedia equipment, cameras, computers and microphones. Since the beginning of the pandemic, teaching staff have been able to give lectures and workshops in a hybrid mode. However, there are practically no electrical outlets for students in the lecture halls. Students also complained about their lack.

The second major problem students considered was the occasional poor living conditions in dormitories, which are partially unrenovated.

Vilnius University (Faculty of Physics and Faculty of Mathematics and Informatics) operates the most powerful supercomputer in Lithuania, open access CPU and GPU computing resources include over 1700 CPU cores with more than 13 TB RAM, while GPU resources include 32 NVIDIA Tesla V100 32GB graphics cards with 1.5 TB RAM. The university website lists several services provided by the HPC High Performance Computer cluster under the section Entrepreneurship//Innovation and Research/R&D Infrastructure and Services, such as development of data analysis models in HPC environments, optimisation of business process data representation, customization and experimental evaluation of business systems moving to cloud computing environments, etc.

According to information provided in the self-assessment report, "From September 2022, 500 CPU hours and 60 GPU hours per month are granted to each member of the MIF community (teaching staff and students) for research or study purposes, without any need to submit additional requests", however during the visit it was discovered that currently 1000 CPU and 100 GPU hours per month are granted to staff and students.

Students have easy access to electronic learning materials and other IT resources; the labs allow students to work with Linux and Windows operating systems and use a variety of software for study purposes. Each student gets 500 MB of space for study purposes and can create and configure their own websites. Students and academic staff can also use the supercomputer for research or teaching activities free of charge. Students can also take advantage of the opportunity to join the Red Hat Academy programme and become certified.

The VU Information Technology Service Centre provides a range of IT services for teaching staff and students (e-mail, conferencing, website hosting, remote lectures, etc.). All members of the VU community have access to the Office 365 environment and can use the software assigned to them on demand. The Vilnius University e-Learning and Examination Centre provides lecturers with a Moodle-based virtual learning environment.

A large number of topical and top-ranked (indexed in the Web of Science database) scientific journals are available to VU students and lecturers in subscription database collections used by researchers. In total, Vilnius University currently subscribes to 87 e-resource databases, with some specially dedicated for this study field, like ACM Digital Library, IEEE Xplore Digital Library, etc. All electronic resources are available through the library, but also from home.

In 2017, Vilnius University adopted the Open University for People with Disabilities strategy, which provides a university-wide long-term commitment to systematically ensure equal opportunities for people with disabilities (e.g. with the vu.lt/negalia online portal). Students are given the opportunity to use various compensation techniques to adapt the study process to their individual needs. Special efforts have been made for visually impaired or less mobile students.

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

Planning of resources needed for these study programmes is carried out annually. According to the needs and capabilities of the Faculty of Mathematics and Computer Science, both hardware and software in classrooms and computer laboratories are constantly updated and installed at least once a semester before the semester starts.

The Faculty struggles to allocate budgets to refresh multimedia equipment and upgrade teachers' computers. After the pandemic, surveys of students showed a less favourable opinion of the quality of facilities. The faculty is waiting to move into the new building and in the meantime is investing in renovating classrooms and improving workstations.

The Faculty has a supercomputer infrastructure (see above) and is investing a lot of money to maintain and improve it using EU structural funds.

One of the recommendations of the previous review was to solve the problem of two separate places by one new building. Unfortunately, the project for the new building was "frozen" for several years, with its launch expected in 2024, but the building is still under construction.

ANALYSIS AND CONCLUSION (regarding 6.1.)

The Faculty is struggling with its two different locations. A new building was promised, but construction is still ongoing. In the meantime, the Faculty is doing what it can to keep the infrastructure and equipment adequate and up-to-date for teaching and learning activities in the programmes. Much attention has been paid to students with special needs, especially visually impaired and less mobile students. Some classrooms have few or no electrical outlets for students, making it difficult for students to use electronic devices.

There are currently two types of dormitories: renovated and non-renovated ones. Mostly only the first two-three floors are renovated. If anything breaks down, help is provided as soon as possible. According to students, the dormitory's price-quality ratio is very good.

The faculty develops and manages a supercomputer cluster that also provides computing services to other academic institutions outside the university. This gives the faculty exceptional opportunities to develop and offer computationally intensive solutions and services.

The library provides sufficient actual and appropriate resources, both on paper and in electronic format, in general and specifically for the study programmes, accessible on premise, but also from home.

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. The open access CPU and GPU computing resources available in Vilnius University are invaluable assets to the academic community. The initiative to grant High Performance Computing resources to each member of the MIF community, including teaching staff and students, without the need for additional requests, is particularly commendable. This generous allocation significantly enhances the capacity for research and study, fostering an environment of innovation and discovery.

RECOMMENDATIONS

To address shortcomings

1. The faculty's learning environment has largely depreciated, so the university should accelerate the completion of a new academic building.

For further improvement

1. Optimize the use of the supercomputer cluster capabilities for both scientific and educational purposes, including the provision of computationally intensive services to other institutions, taking into account legal and other constraints.

2. Complete the renovation of the university dormitories.

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 University does not have a comprehensive quality assurance document – different quality issues are addressed in different University documents. The document *Studies Quality Assurance Policy and Quality Improvement Strategy at Vilnius University* (2013-2015) is expired. An overview of these issues is provided on the public website (https://www.vu.lt/en/studies/quality-of-studies).

The main responsibility for ensuring quality lies with the *Department for the Quality and Development of Studies* at the University level and with the *Study Programme Committees* at the Faculty level. According to the *Regulations of the Study Programme Committee of Vilnius University*, the latter should contain at least three teaching staff members, at least one external social partner representative and at least one student representative. All study programme committees of the evaluated study programmes have more than three academic staff and exactly one student representative and exactly one social partner representative. The Šiauliai Study Programme Committee also contains one graduate representative. The functions of the study programme committees are thoroughly described in the abovementioned Regulation. Although the Regulation requires a study programme committee to meet at least once a semester, in reality it usually happens more frequently. For example, the Programme Committee for Master's Studies in Software Engineering met in both January and February 2025.

The experts were presented with the minutes of the last two meetings of all program committees. For example, at the meeting of the Šiauliai Informatics Study Field Program Committee on December 3, 2024, changes in the content of subjects were discussed, as well as the distribution of subjects in the software development and IT management curricula between semesters.

Over the past three years, the program committees have made numerous proposals to the Faculty Council and the Council of Šiauliai Academy for the development of curricula and the improvement of teaching activities. Many of these proposals have already been implemented: The content of the MIF B SE course "Practical Computer Science" was substantially updated, the provisions for the preparation of the bachelor's thesis were changed to reconcile previously divergent views, the wording of some course headings and topics was adjusted to make them less general and more relevant to the actual content of the courses, the course "Functional Programming" became mandatory (initially it was optional), optional courses "Type-Driven Programming" and "Introduction to Quantum Computing" were introduced, etc.

A separate document *The Guidelines on Artificial Intelligence Using at Vilnius University* is approved for providing recommendations on the appropriate use of artificial intelligence tools in research, teaching and learning. The document states – among other aspects – also students', lecturers' and administration's responsibilities.

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

The main document that addresses feedback from social partners is the *Description of the Procedure for Organising Feedback from Social Stakeholders on Improving Study Quality at Vilnius University*. Social partners are considered very broadly, including academic and non-academic staff of the university, students, their parents, graduates, employers, representatives of

professional associations, state institutions, representatives of trade unions, etc. The document addresses the collection of feedback, analysis of feedback data, dissemination of results and their use for improving the quality of studies.

During the meeting with students at the university, it was mentioned that the university uses surveys at the end of each semester to collect students' feedback about modules. Students provide feedback on modules, and then teachers comment on the suggestions. If a suggestion is accepted, the teacher initiates changes in the program.

Additionally, students can complain about the quality of modules through student representatives. If there are multiple complaints on the same topic, the student council raises the issue to a higher level. Students receive feedback regarding changes in the study program through the university's social network and news published on the university's website.

Also, surveys are conducted to collect information related to the quality of study programs from graduates.

Social partners are deeply involved in the study process as teachers, guest lecturers, and representatives in Study Program Committees which benefits the continuous improvement of study programs.

Representatives of social partners mentioned during the meeting that they deliver guest lectures, participate in bachelor thesis defences, know a contact person to propose topics for guest lectures, and coordinate delivery.

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

Study related information is collected and processed in the University's study information system VUSIS that contains Study Programme Administration that enables to compose, review and edit study programme plans. Another application allows to view and edit personal data of students, their grades in academic disciplines, registration for optional disciplines, topics of final theses, as well as issue certificates and diploma supplements, recognize studied disciplines in other higher education institutions, inform students about the results of consideration of their applications, final assessments, etc. Teaching staff have electronic workspaces where they can enter exam results, upload course descriptions, view lists of students studying the course they teach, and receive feedback on their results.

The university's admission requirements and step-by-step application process are described in detail on the university's website, separately for local and international student candidates. Students' satisfaction with the quality of studies and employment statistics is published in the annual (public) VU performance reports. However, the statistics cover the entire university, not by study programmes.

Students of Šiauliai Academy receive periodic e-newsletters about events taking place at the University, exchange programme opportunities, competitions, etc.

Although it is claimed in the SER that "The results of study assessment are announced publicly on the vu.lt page", the RP was not able to find it. It turned out that this information is not available on the public web, but on the university intranet.

7.1.4. Student feedback is collected and analysed

Teaching staff have electronic workplaces where they can apart from other functions, receive feedback results. Those results are also announced publicly on the vu.lt page, CAU websites, as well as on the University intranet page and in the information system VUSIS.

At the Šiauliai Academy, the SPC, together with the VU ŠA, collect, compile and evaluate information related to the students' opinion about the study programme and its lecturers, as well as information related to the needs of business representatives related to the study programme.

Twice per study year (at the end of each semester), VU conducts a centralised survey of first- and second-cycle students (surveys are done using the VU online survey system, which is integrated into VUSIS).

Periodic feedback at the University is collected from students, residents, doctoral students and graduates through surveys. Students, being the most interested party in the quality of studies, in collaboration with faculty and the CAU administration, contribute to identifying emerging learning quality issues and finding solutions to them.

Starting with the academic year 2023-2024, it is planned to carry out a regular standardised survey of students about the quality of internship placement at the end of the study semester when internship placement is planned; it will be carried out by the VU SACO using VUSIS.

According to the lecturers, 60-70 percent of students leave feedback but only about 15 percent give substantial feedback.

Lecturers tend to take into account those surveys and actually change their teaching methods, material or the way they provide that material. For example, students complained that they would not be able to use what they were taught in their work, so this year the teacher tries to point out why they need to learn it, why the methods are the way they are, etc.

During the conversation with the students, it was mentioned that the study program committee generally does not provide feedback to students about the changes it has made. However, the lecturers are willing to inform the students about what they have done to eliminate the problems raised by the students who completed the survey.

ANALYSIS AND CONCLUSION (regarding 7.1.)

The involvement of stakeholders, including students and others, in internal quality assurance at Vilnius University is effective. The university has a comprehensive document, the *Description of the Procedure for Organising Feedback from Social Stakeholders on Improving Study Quality*, which outlines the process for collecting, analyzing, and utilizing feedback from a wide range of social partners. It is considered that the procedures for cooperation with social partners to obtain feedback and improve study quality are established and utilized.

The university employs surveys at the end of each semester to gather students' feedback on courses, and additional surveys are conducted to collect information from graduates about the quality of study programmes. Social partners are actively involved in the study process as teachers, guest lecturers, and representatives in Study Programme Committees, contributing to the continuous improvement of study programmes.

Students provide feedback on courses, and teachers respond to these suggestions. If a suggestion is accepted, the teacher implements changes in the study programme. Some teachers also review

and discuss course changes with students during the last lecture, allowing groups to discuss the impact of these updates.

As for the composition of the study programme committees, they could include more representatives of social partners; alumni representatives could also be included in all study programme committees.

Overall, the structured and inclusive approach to collecting and utilizing feedback ensures that the involvement of stakeholders in internal quality assurance is both comprehensive and effective.

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	

RECOMMENDATIONS

For further improvement

1. To increase cooperation with non-university institutions and contribute to the development of curricula, include more representatives of social partners and graduates in study programme committees.

2. Renew he document *Studies Quality Assurance Policy and Quality Improvement Strategy at Vilnius University*.

V. SUMMARY

The academic activities in the IT field developed at Vilnius University are primarily described by the keywords *reputation*, *internationality of research activities*, and *theoretical orientation*.

The university's relatively good reputation stems largely from the fact that Vilnius University is the oldest university in the Baltic States, but also from the fact that it employs several internationally known and recognized professors. The university's reputation and the reputation of its professors were also the most frequently cited arguments by students when choosing Vilnius University to study.

The internationality of research activities is reflected in several factors:

- the Faculty of Mathematics and Informatics publishes or is the co-publisher of several international scientific journals in mathematics and computer science,
- the Faculty organises several international conferences and other events each year,
- several professors belong to the governing bodies of international professional organizations and scientific journals,
- a relatively large number of scientific publications are published in high-level scientific journals.

Considering the above, it was somewhat surprising that the publication of scientific articles in conference proceedings was relatively low.

Theoretical orientation has both a positive and a negative aspect. In particular, it should be noted that basic research is primarily based on the theoretical approach. Also, the theoretical approach supports the development of analytical and problem-solving skills of students. As a result, graduates of the assessed study programmes are very competitive in the labour market. Representatives of employers who have recruited graduates from different universities rated the graduates of Vilnius University as the best. On the other hand, the students themselves considered the content of the courses too theoretical, even in the case of the master's program; students also expressed their desire to get more guest lectures from the best experts from outside the university. Nor are students practically involved in research. One of the reasons for this is certainly the fact that the research of the lecturers is mostly at a high theoretical level and the proportion of applied research is relatively small. The social partners who met with the experts also believed that the faculty's cooperation with the Vilnius Business Park could be closer.

There is a very high demand for graduates of evaluated software engineering study programmes. The first cycle study programme is 4 years long, which is why the qualifications of graduates are somewhat higher than the average for those who have completed a 3-year first cycle degree that is common in Europe. The content of the courses and their distribution over the semesters ensure consistent development of the general and subject-specific competencies required for the study programmes. However, the courses in the study programmes are not grouped and distributed across the study programme in a logical manner to allow for the definition of clearly distinct learning paths for the development of academic and professional skills.

The teaching staff is generally qualified; the proportion of internationally recognized and top-level researchers is relatively high compared to other universities in Lithuania in the subject area. However, the level of teaching seems to be relatively uneven, alongside subjects that students

really enjoyed (such as Software Testing), there were a few courses that students were very critical of.

The resources used for academic activities are also of relatively uneven quality: while the High Performance Computing cluster used for research and development activities far exceeds actual needs and allows for the provision of computationally intensive services to other institutions, the learning infrastructure is depreciated. The provision of high-volume computing services to other faculties and non-university institutions using the faculty's supercomputer is commendable. Although the university has decided to create and put into use a new academic building, its completion has been delayed.

Although the University does not have a comprehensive quality assurance document – different university documents address different quality issues – an essentially comprehensive quality approach is in place at the university. The involvement of stakeholders, including students and others, in internal quality assurance at Vilnius University is effective. The university collects, analyzes, and uses feedback from many social partners. Social partners are actively involved in the study process as teachers, guest lecturers, and representatives in Study Programme Committees, contributing to the continuous improvement of study programmes. However, although the study programme committees also include representatives of social partners (including alumni), their number could be larger to achieve broader representation of working life.

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

VI. EXAMPLES OF EXCELLENCE

The open access to High Performance Computing resources provided by Vilnius University are invaluable assets to the academic community. The initiative to grant High Performance Computing resources to each member of the MIF community, including teaching staff and students, without the need for additional requests, is particularly commendable. This generous allocation significantly enhances the capacity for research and study, fostering an environment of innovation and discovery.

Vilnius University's dedication to supporting its academic community through cutting-edge technology and resources is truly inspiring.