



CENTRE FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

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**EVALUATION REPORT**  
**STUDY FIELD of ENERGY ENGINEERING**  
At Kaunas University of Technology

**Expert panel:**

1. **Prof. Abdalnaser Sayma (panel chairperson)**, *academic*;
2. **Prof. Dr. Luisa Fernanda Cabeza Fabra**, *academic*;
3. **Prof. Dr. Eleonora Guseinovienė.**, *academic*;
4. **Mr. Mindaugas Pranaitis**, *representative of social partners*;
5. **Mr. Henrikas Vaickus**, *students' representative*.

**Evaluation coordinator – Ms Ona Charževskytė**

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## Study Field Data

Title of the study programme	<b><i>Renewable Energy Engineering</i></b>	<b><i>Energy Technologies and Economics</i></b>	<b><i>Thermal Engineering</i></b>
State code	6121EX021	6211EX073	6211EX023
Type of studies	University studies in higher education	University studies in higher education	University studies in higher education
Cycle of studies	First cycle	Second cycle	Second cycle
Mode of study and duration (in years)	Full-time 4 years, Extended 6 years	Full-time 2 years	Full-time 2 years
Credit volume	240	120	120
Qualification degree and (or) professional qualification	Bachelor of Engineering	Master of Engineering	Master of Engineering
Language of instruction	Lithuanian, English	Lithuanian	Lithuanian
Minimum education required	Secondary education	Bachelor of Engineering	Bachelor of Engineering
Registration date of the study programme	2010-05-10	2015-08-06	2007-02-19

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## I. INTRODUCTION

### 1.1. BACKGROUND OF THE EVALUATION PROCESS

The evaluation of study fields is based on the Methodology of External Evaluation of Study Fields approved by the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC) 31 December 2019 Order [No. V-149](#).

The evaluation is intended to help higher education institutions to constantly improve their study process and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: 1) *self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI)*; 2) *site visit of the expert panel to the higher education institution*; 3) *production of the external evaluation report (EER) by the expert panel and its publication*; 4) *follow-up activities*.

On the basis of this external evaluation report of the study field SKVC takes a decision to accredit study field either for 7 years or for 3 years. If the field evaluation is negative then the study field is not accredited.

The study field and cycle are **accredited for 7 years** if all evaluation areas are evaluated as exceptional (5 points), very good (4 points) or good (3 points).

The study field and cycle are **accredited for 3 years** if one of the evaluation areas was evaluated as satisfactory (2 points).

The study field and cycle are **not accredited** if at least one of evaluation areas was evaluated as unsatisfactory (1 point).

### 1.2. EXPERT PANEL

The expert panel was assigned according to the Experts Selection Procedure (hereinafter referred to as the Procedure) as approved by the Director of Centre for Quality Assessment in Higher Education on 31 December 2019 [Order No. V-149](#). The site visit to the HEI was conducted by the panel using video conferencing on 28 April, 2021.

**Prof. Abdalnaser Sayma (panel chairperson)** *Professor of Energy Engineering, Head of Engineering, City, University of London, London, United Kingdom,*

**Prof. Dr. Luisa Fernanda Cabeza Fabra,** *Professor of thermal engineering, Head of GREiA research group, University of Lleida, Lleida, Spain*

**Prof. Dr. Eleonora Guseinovi n ,** *Professor of Electrical and Electronics engineering, University of Klaipeda, Klaipeda, Lithuania*

**Mr. Mindaugas Pranaitis;** *Head of Innovation and Service development division, Energijos skirstymo operatorius AB, Lithuania*

**Mr. Henrikas Vaickus,** *BSc graduate in Physics of Energy (Vilnius University) and MSc graduate in Financial Economics (ISM)*

### 1.3. GENERAL INFORMATION

The documentation submitted by the HEI follows the outline recommended by SKVC. Along with the self-evaluation report and annexes. No additional information was requested from the institution.

### 1.4. BACKGROUND OF THE STUDY FIELD/STUDY FIELD POSITION/STATUS AND SIGNIFICANCE IN THE HEI

#### ***General information about the significance of the study field***

Energy Engineering is an important engineering field in Lithuania. The energy transition requires highly skilled engineers to meet the demands of the job market as well as undertaking research and development projects. The changing energy market is a result of the following:

1. Lithuania has a long-term national strategy for energy independence by 2050, when imported electricity will be replaced by domestically produced electricity.
2. In interim target for 2025 is to have the country's electricity network operating reliably in synchronous mode with the with the European electricity system.
3. Power generation will rely on renewable resources, with wind making up most of the electricity generated. The plan is to produce 50% of electricity from wind by 2030, with the rest shared between other resources, primarily solar power, biofuels and hydroelectric power.
4. The Government's strategic plan prepared by the Ministry of Energy highlights the need to promote sustainable, competitive and efficient development of the energy sector

#### ***Information about the role of the HEI***

Kaunas University of Technology (KTU) originated from the University of Lithuania, founded in Kaunas, after the reorganization of the Higher Courses established in 1920. It is a university where the results of fundamental and applied research are integrated into the study process, with a strong focus on innovation creation, internationalization and interdisciplinary projects. The University has 9 faculties, a library, 8 research institutes, as well as administrative departments, employs 1,915 people and currently has 8,442 students, of whom 5,965 are bachelor's students, 2,035 are master's students, 319 are doctoral students, 74 are full-time students and 49 - non-degree students. Also, 665 students from abroad are currently seeking a KTU diploma.

The structure of the university and the activities of the staff are focused on research and innovation. Research at the University is carried out by almost a thousand academic staff from 9 faculties and 8 research institutes. In 2019, 959 scientific publications were prepared and published. KTU has participated in 184 international and national projects, such as Horizon 2020, EIT (Raw Materials), Interreg, intergovernmental cooperation programs and other projects, as well as participated in 63 COST activities. KTU has a number of foreign partners from 54 countries in Europe and beyond, and the University is a member of 10 organizations and associations such as CESAER, ECIU, BALTECH and others. This shows that KTU is the leading university in Lithuania in the field of international research. Since 2014, the University has been developing 67 start-up companies and key innovations, patented in the US, Europe and Asia. KTU had 23 national and 14 international patents in force.

KTU implements the first cycle study program “Renewable Energy” and two second cycle study programs “Energy Technologies and Economics” and “Thermal Engineering”. Admission to the first cycle study program “Heat Energy and Technologies” was also carried out until 2019, but in 2018 and 2019 there were not enough applicants for this study program and admissions were suspended. As this program did not gather a sufficient number of entrants for two years in a row, taking into account the demographic situation, recommendations of the social partners, students' opinions and optimizing the study program basket, at the meeting of the Council of the Faculty of Mechanical Engineering and Design on October 10, 2019 11-09 it was decided not to include the study program “Heat Energy and Technologies” in the package of study programs for 2020. In order to meet the market demand of the Lithuanian heat energy sector in the future, by special agreement of the Faculty of Electrical and Electronics and the Faculty of Mechanical Engineering and Design, the specialization “Sustainable Heat Systems” has been established in the study program Renewable Energy.

## II. GENERAL ASSESSMENT

*Energy engineering* study field and first cycle at Kaunas University of Technology is given **positive** evaluation.

*Study field and cycle assessment in points by evaluation areas*

No.	Evaluation Area	Evaluation of an Area in points*
1.	Intended and achieved learning outcomes and curriculum	4
2.	Links between science (art) and studies	4
3.	Student admission and support	4
4.	Teaching and learning, student performance and graduate employment	4
5.	Teaching staff	4
6.	Learning facilities and resources	4
7.	Study quality management and public information	4
	Total:	28

\*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;

2 (satisfactory) - meets the established minimum requirements, needs improvement;

3 (good) - the field is being developed systematically, has distinctive features;

4 (very good) - the field is evaluated very well in the national and international context, without any deficiencies;

5 (excellent) - the field is exceptionally good in the national and international context/environment.

*Energy engineering* study field and second cycle at Kaunas University of Technology is given **positive** evaluation.

*Study field and cycle assessment in points by evaluation areas*

<b>No.</b>	<b>Evaluation Area</b>	<b>Evaluation of an Area in points*</b>
1.	Intended and achieved learning outcomes and curriculum	4
2.	Links between science (art) and studies	4
3.	Student admission and support	4
4.	Teaching and learning, student performance and graduate employment	4
5.	Teaching staff	4
6.	Learning facilities and resources	4
7.	Study quality management and public information	4
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### III. STUDY FIELD ANALYSIS

#### 3.1. INTENDED AND ACHIEVED LEARNING OUTCOMES AND CURRICULUM

*Study aims, outcomes and content shall be assessed in accordance with the following indicators:*

*3.1.1. Evaluation of the conformity of the aims and outcomes of the field and cycle study programmes to the needs of the society and/or the labour market (not applicable to HEIs operating in exile conditions)*

##### *(1) Factual situation*

One of the priorities of KTU is sustainable development which promotes responsible, environmentally friendly behaviour and ecological culture. The study field of energy engineering, guided by the requirements and standards European higher education is in line with the university mission.

The SER states that, currently, renewable energy is probably the most progressive and rapidly expanding global field of technology and energy. During the studies, engineering knowledge, knowledge about the use of environmentally friendly types of energy, application of solar, wind, hydro, biofuel power plants, fuel cells, heat pump technologies in the fields of electricity and heat are developed. Knowledge is supplemented by practical classes in the most modern laboratories. The knowledge acquired during the studies helps to solve complex tasks of design and application of renewable energy sources and their management system.

The second cycle study program “Energy Technologies and Economics” has been implemented, which allows to train highly qualified specialists who are able to understand the latest technologies of sustainable energy, investment, planning and management processes.

According to the SER, the aims of the study programmes have been formulated in accordance with national and European legislation. the vision, mission and strategy of the University of Technology, the results of market research, recommendations of employers, trends in labour market changes and student surveys.

The first circle SP “Renewable Energy” is designed to provide knowledge and develop the skills required to solve practical tasks related to the design and operation of renewable energy sources and their management systems

The second cycle of SP Energy Technologies and Economics is designed to provide the knowledge and skills needed to address practical and scientific issues in the field of energy related to sustainable energy technologies, investment, planning and management processes.

During interviews with senior management teaching staff and other stake holders, the expert panel were satisfied that the claims in the SER are a good representation of the actual situation.

##### *(2) Expert judgement/indicator analysis*

The expert panel has been assured that the proposed study programmes conform with the mission of the university and are designed to meet the needs of the society and the labour market.

Efforts of the institution to create external cooperation and partnerships in relation to these study programmes is commendable.

### *3.1.2. Evaluation of the conformity of the field and cycle study programme aims and outcomes with the mission, objectives of activities and strategy of the HEI*

#### *(1) Factual situation*

The goals and objectives of the study programs in the field of energy engineering provided by the University correspond to the mission, activities and strategy of the University. The knowledge and experience of researchers and lecturers gained through international and national research and experimental development projects are transferred to study programs.

The knowledge and skills acquired by students allow them to work in the energy engineering sector and in the country's priority energy sector. The goals of the analysed study programs contribute to the following strategic priorities of the university: talented and motivated students, lecturers and researchers; unity of studies and science, cohesion with industry and business; inter-sectoral and interdisciplinary research and studies; international recognition in the development and transfer of foreground and future technologies; participation in global knowledge networks; performance quality and efficient management; an inspiring and friendly environment; dissemination of knowledge and values in society.

#### *(2) Expert judgement/indicator analysis*

Energy Engineering field of study aims and outcomes are in the conformity with the mission of KTU, which is to provide research-based studies of international level, create and transfer knowledge and innovative technologies for the sustainable development and innovative growth of the country, and provide open-minded, *creative environment inspiring leaders and talented individuals*

### *3.1.3. Evaluation of the compliance of the field and cycle study programme with legal requirements*

#### *(1) Factual situation*

The first cycle study programme includes a total of 240 credits, which is in line with the legal requirements. Field of study credits are 141 against the minimum requirements of 120. Internships and final thesis constitute the legally required 15 credits each. There are additional no-study field credits of 54 which is below the legal maximum of 120.

Second cycle programmes include the legal requirement of 120 credits of which 72 credits of specialised study, 30 credits dedicated to the final project and 18 credits for research. Mapping of learning outcomes reflects compliance with legal requirements.

#### *(2) Expert judgement/indicator analysis*

Both first and second cycle studies in Energy Engineering are in compliance with relevant legal requirements of the field and cycle study programmes.

### *3.1.4. Evaluation of compatibility of aims, learning outcomes, teaching/learning and assessment methods of the field and cycle study programmes*

#### *(1) Factual situation*

The aims and objectives of the first cycle study programme in renewable energy provided in Annex 1 are to provide knowledge and develop the skills required to competently address the design and application of renewable energy sources and their control systems, to evaluate scientific achievements in the field of renewable energy and the main factors of the business environment. The objectives of the second cycle in Energy Technology and Economics are to provide knowledge and develop the skills necessary to analyse the processes of sustainable energy technologies, investment, planning and management, to create solutions ensuring the sustainable development of the energy sector, to solve practical and scientific problems, to carry out research work. While the aims of the second cycle programme in Thermal Engineering are to provide knowledge of thermal engineering and develop the skills necessary to acquire the main research methods in this field, to analyse, model and solve thermal engineering tasks in particular technical fields using methods of mathematical modelling, system analysis and programming, to analyse, compare, evaluate, manage and improve technological processes and create thermal engineering systems.

KTU uses a mixture of delivery methods and assessment methods. Statistical data are provided for the first cycle and 2<sup>nd</sup> cycle programmes reflecting those conventional methods represent the majority of the delivery and assessment methods.

The relation between study subjects teaching methods and the learning outcomes are clearly shown in the special matrix in SER Annex 3. The matrix specifies the learning outcomes. They are in line with the provisions of the EUR-ACE Accreditation standard for engineering study programmes and cover six groups defined in the standards, in compliance with the parts provided for under the Description of Study Cycles.

Three key conventional study methods are employed for delivery of the theoretical materials: traditional lecture, consultation seminars, lecture by teacher-practitioner. A large share of the subjects (modules) includes active learning methods, such as individual project, technological project, design-based thinking, workshops, etc. and support the subject (module) learning outcomes to be achieved.

#### *(2) Expert judgement/indicator analysis*

*The presented aims to the programmes are appropriate. The aims of the study programmes are in line with the expected learning outcomes.*

### *3.1.5. Evaluation of the totality of the field and cycle study programme subjects/modules, which ensures consistent development of competences of students*

#### *(1) Factual situation*

First cycle programmes: general topics and fundamental are taught in the first part. Specialised topics are subsequently taught from 2<sup>nd</sup> year onwards and in the final year, more elective and personal development skills are taught.

In the second cycle study specialist subjects are taught in the 1<sup>st</sup> – 3<sup>rd</sup> semesters, while the research project is prepared in the 1<sup>st</sup> to 3<sup>rd</sup> semesters and conducted in the 4<sup>th</sup>.

*(2) Expert judgement/indicator analysis*

The structure of the study (bachelor and master) programmes ensures consistent development of competences of students.

*3.1.6. Evaluation of opportunities for students to personalise the structure of field study programmes according to their personal learning objectives and intended learning outcomes*

*(1) Factual situation*

In the first year of study of the first cycle programme, choices are made by students to fill the gaps in their knowledge. General study modules designed to develop general skills allow a number of choices. Additionally, Study programme alternatives are provided in the SER

Master students can personalise the structure of the field study programme by choosing alternatives to the field's modules or specialisations and topics of the semester's works and projects and the final degree project. They can also choose one of two paths of the study programme.

*(2) Expert judgement/indicator analysis*

Students of Energy Engineering study programmes (bachelor and master) have wide opportunities to personalise the structure of field study programmes according to their personal learning objectives and intended learning outcomes. From the interviews with the students and alumni, it was confirmed that students are making use of these opportunities.

*3.1.7. Evaluation of compliance of final theses with the field and cycle requirements*

*(1) Factual situation*

The preparation, defence, assessment and storage of final degree projects are regulated by KTU Guidelines for the Preparation, Defence and Storage of Final Degree Projects.

Both Bachelor and Master final theses are in line with what is expected in the field and cycle requirements. This is based on the sample thesis provided to the expert panel before the visit.

During the visit, it was confirmed to the experts that representatives of social partners take active role in specification of final degree projects in in their assessment.

*(2) Expert judgement/indicator analysis*

Bachelor and master final theses are in compliance with the field and cycle requirements. The active involvement of social partners is seen as a positive feature.

### ***Strengths and weaknesses of this evaluation area:***

#### ***(1) Strengths:***

1. Continuous efforts to create active cooperation with social partners and their involvement with final projects.
2. Students have wide opportunities to personalise their studies.

#### ***(2) Weaknesses:***

1. Referencing in final projects requires attention.

## **3.2. LINKS BETWEEN SCIENCE (ART) AND STUDIES**

***Links between science (art) and study activities shall be assessed in accordance with the following indicators:***

*3.2.1. Evaluation of the sufficiency of the science (applied science, art) activities implemented by the HEI for the field of research (art) related to the field of study*

#### ***(1) Factual situation***

According to the Self Evaluation Report, Energy Engineering study field at KTU has strong research activities. Employees participate in scientific conferences around the world and have received recognition from international companies, local municipalities and ministries for achievements in the field of energy. Within the last 5 years the turnover of doctoral students has been stable, scientific cooperation at the national level is better than average, the field of science meets the needs of the local community. Employees are also involved in the activities. Plans for research include the continuation of high-level research, modernization and development of research infrastructures and further cooperation between science and business in order to integrate the latest scientific developments into the curriculum. More than 60% of staff meets the requirements for doctoral students and about 40% supervise doctoral students, what is influenced by the stricter requirements for teacher certification at the university.

During the interviews, it was confirmed that the university administration created good conditions for the scientific activities. Staff and students participate in research projects. Their research reflects the results obtained during the implementation of projects, the topics of which are closely related to the study subjects. Staff and students closely cooperate with business and research partners thanks to a mutually good relationship.

#### ***(2) Expert judgement/indicator analysis***

There is a sufficient level of scientific research activities. KTU creates good conditions to do research at high level. The conditions created for staff in forming the pedagogical aspects of education are within the requirement of the HEI in order to achieve the learning outcomes. Participation in international research programs such as H2020 and others demonstrates a strong and focused commitment to the development of new technologies and research directions.

*3.2.2. Evaluation of the link between the content of studies and the latest developments in science, art and technology*

#### ***(1) Factual situation***

The Self Evaluation Report states that students can get acquainted with the latest scientific and technological achievements in the modules, the content of which is related to the latest scientific and technological trends, research projects, preparation of final theses, and practically with the latest technologies students can work in some departments of Electricity Systems and Energy in the research laboratories of the Energy Institute. Within the framework of modules such as “Bachelor's final project”, “Research project I” etc., students conduct theoretical reviews, analyse the latest scientific literature, summarize it and use it in their further research.

During the visit, the statements made in the self-analysis were confirmed during the meetings with the staff and students.

### *(2) Expert judgement/indicator analysis*

The ongoing study programs aim at continuity, scientific cooperation and integration of the latest scientific achievements. Great attention is paid to getting acquainted with the latest scientific achievements during the implementation of final theses and research projects. The study program is constantly updated with innovations.

### *3.2.3. Evaluation of conditions for students to get involved in scientific (applied science, art) activities consistent with their study cycle*

#### *(1) Factual situation*

Information from Self Evaluation Report state that students of KTU have the opportunity to get involved in scientific activities with the help of lecturers and researchers. The research mentor helps the student to start research activities, participate in conferences, write scientific publications, get acquainted with the University laboratories, career opportunities and perspectives of a researcher. The most active and motivated students are involved in research project activities, prepare publications, and participate in conferences. Over 10% of study programme students participated in various scientific activities during the reporting period.

During the visit and interviews with staff and students, it was confirmed that the final thesis is related to either research topics or issues relevant to the social partners. Students confirmed being involved in project activities, conferences etc. The representatives of students and social partners are involved in the Study Committee for the purpose of continuous and consistent improving the study program.

#### *(2) Expert judgement/indicator analysis*

The final thesis is related to either research topics or issues relevant to the social partners. Some students confirmed being involved in project activities. To disseminate the research results, the teachers of the study program organize international scientific conferences, which provide opportunities to share their research experience, and students have the opportunity to participate with presentation or get familiar with the latest research achievements. The representatives of students and social partners are involved in the Study Committee for the purpose of improving the study program.

During the visit, interview with students revealed that there involvement with research projects is not well organised, and it is usually dependent on individual staff research interests.

### ***Strengths and weaknesses of this evaluation area:***



### ***(1) Strengths:***

1. The required conditions are created for teachers and students to do scientific work.

### ***(2) Weaknesses:***

1. It is desirable for the social partners to be involved in research, not only through good relations, but also on the basis of regular and systematic cooperation.

2. There is a lack of clear strategy and vision for the student involvement in research activities as this is usually left to individual staff

## **3.3. STUDENT ADMISSION AND SUPPORT**

***Student admission and support shall be evaluated according to the following indicators:***

### ***3.3.1. Evaluation of the suitability and publicity of student selection and admission criteria and process***

#### ***(1) Factual situation***

The university follows government regulations in students' admissions. One of them is requirement of minimum competitive score of 5.4 which was introduced in 2019 and ensures, that only capable students are accepted into state-funded studies. Regarding the admission of Master students, the university applies flexible requirements. Energy technology and economics could be applied by a wide range of applicants, including undergraduates of economics, business and management. Both master study programs are open to college graduates with professional bachelor, because applicants even with smaller number of related credits (at least 30) are able to join the programme after additional studies or in the case of practical experience of at least 1 year. In addition, university pays attention to the scientific background of master studies' applicants, since 0.2 of their competitive score is based on scientific achievements.

The results of admission in 2017-2019 are generally stable. Renewable energy admitted 30, 26 and 26 students respectively; Energy technology and economics 24, 29 and 17; Thermal Engineering 7, 27 and 16 students. Those numbers do not reveal any significant trend. Also, for the master programs, those numbers could be considered quite high in the context of Lithuania. However, if the numbers of applicants are taken into consideration, it can be stated that there are reasons to be concerned, since numbers are decreasing, especially for Renewable energy: 152 applicants in 2017, 119 in 2018 and 111 in 2019. Number of total students in the study field are also decreasing.

Average competitive score of the entrants had upward trend during the evaluation period. However, it is hard to make any insights about competitive score of entrants, because during the period of 2017-2019, government was gradually increasing the minimum competitive score.

The university uses traditional approach for studies promotion: all information is provided on the website, the university attends study fairs, publish their study options on local studies' magazines. It is clear that public communication is very strong. Also, management emphasized, that they cooperate with high schools and social partners to promote energy engineering study field, follows annual statistic data of schools' graduates.

## *(2) Expert judgement/indicator analysis*

The admission system is flexible which could, in principle, attract a wide range of undergraduates. The concrete requirements are traditional, based on government regulations. There is a good example of scientific background evaluation during admission to master programs. The public information about study programs and admission requirements is sufficient.

During the evaluation period, there were no problems with students' admissions. Being the second-best university in Lithuania according to most rating announcements and strong public communication, its study programs have a good reputation, therefore the energy engineering study field had a relatively high number of applicants. As a result, the university could accept high numbers of students with high motivation (most of them noted programs as their first priority). On the other hand, there are signs of decreasing popularity of the study field, since number of applicants is decreasing and it could turn in to some problems in the future. Surely, the increased requirements for state-funded studies also have an impact. Meetings with the management revealed, that this possible danger is recognized and concrete actions are being considered. However, the mentioned measures may be not sufficient to address the impending problem. There should be a more systematic approach: for example, an action plan based on statistical data could lead to a more robust approach. A more comprehensive analysis of market needs could be also useful in the promotion process.

In addition, "Student voice" survey revealed that a large proportion of students would not recommend their studies for their friends. The management and students explained this that the unhappy part of students probably feel that their studies are hard to them or they expected it to be easier. It could reveal that students' selection process is not perfect and a part of admitted students have too low competitive score or low motivation.

### *3.3.2. Evaluation of the procedure of recognition of foreign qualifications, partial studies and prior non-formal and informal learning and its application*

#### *(1) Factual situation*

The procedure for recognition of qualifications acquired abroad, part-time studies and previous non-formal and informal learning is explained in detail, with clear limits and requirements. Each type of previous experience has a different approach of recognition according to its origin. There is a clear limit of maximum percentage of credits to be recognized. Regarding abroad and part-time studies, the content of studied modules is analysed, while informal, non-formal studies and work experience recognition focuses on competences assessment.

#### *(2) Expert judgement/indicator analysis*

The exclusively comprehensive description of recognition system reveals that it is well-developed and could objectively evaluate any previous experience. In the terms of foreign studies, a large number of recognised modules in 2017-2019 reveal that recognition system works without any problems. The university is ready to recognise modern ways of study on online platforms. Finally, students also could not mention any examples of trouble in the regards of studies recognition.



All current examples of recognition come from Erasmus+ program, which reveals that the foreign studies were recognised on a large scale during the last 3 years. Other types of experience were not valued and recognised.

### *3.3.3. Evaluation of conditions for ensuring academic mobility of students.*

#### *(1) Factual situation*

The main tool to ensure students' academic mobility is Erasmus+ program. Statistical data reveals that during evaluation period only in 2017 there were quite good results on students mobility – there were 15 participants in the study field. However, on 2018-2019 there were only 2. Also, during the period, only 1 student came for partial studies from abroad. It was mentioned that students are introduced with mobility opportunities during informational events, mobility scholarships are possible. However, there was no detailed information provided in the terms of students' mobility encouragement, counselling and support.

#### *(2) Expert judgement/indicator analysis*

The self-evaluation report reveals that the main reason of somewhat low academic mobility are the high percent of working students and their obligations to the employers. Surely, it is an obvious reason, since meeting with students revealed that they have good opportunities of employment and a career-oriented personal view. The same is with scientific activities, which are popular among the students.

On the other hand, the argument of work/research activities do not explain why there were many participants in 2017 and almost no participants in 2018-2019. Consequently, the management should make a deeper analysis in regard of mobility results and students' feedback, there may be other reasons.

Also, concrete measures should be taken in order to encourage students for mobility programs. Participants of previous year should share their experience; their feedback should be used to improve the system of mobility. The system of counselling and support should be clearly defined.

At this point it seems that students' academic mobility is possible, however it does not receive sufficient attention from management. Therefore, everything results in low mobility results 2 years in a row.

### *3.3.4. Assessment of the suitability, adequacy and effectiveness of the academic, financial, social, psychological and personal support provided to the students of the field*

#### *(1) Factual situation*

The university has a well-established mentors program "GUIDed", which allows for each student to get a personal mentor (there are 5 types of mentors according to the needs of a student.). For first year students, there is a special introduction to the studies. In general, students state that academic information is always sufficient and on time. In the case of issues with final assessments, there is a flexible, student-friendly system, which allows to change the time of exams or have a retake. Students feel encouraged to take a part in scientific activities.

Participations in conferences and articles writing is popular among students. Both students and management state that there is a close relationship between university staff and students, the informal communication is common, therefore academic support and cooperation is strong.

Academic and social scholarships are available for students. It should be emphasized, that academic scholarship of 250 Eur/month is quite big in the context of Lithuania. In average, up to 10 percent of students receive it, which is a standard in Lithuania. Students are satisfied with condition of dormitories; all service meet their needs. Moreover, dormitories have students' representatives. The university has many surveys in order to gather students' feedback, including their opinion about social/personal support, which shows and adequate attention for students' support. There is an active group of programs' elders who cooperate with administration in regard of student issues and academic process. Students have an opportunity to consult a psychologist in the case of personal issues.

During the meeting, students could not mention any negative experience in terms of students' support.

#### *(2) Expert judgement/indicator analysis*

In general, the structure of students' representation is strong. The gathered information reveals that students have a sufficient academic, social and personal support. The management has a contact with students on many ways.

### *3.3.5 Evaluation of the sufficiency of study information and student counselling*

#### *(1) Factual situation*

Just like academic support, study information spreading system looks solid. For newly enrolled members of community, "Introductory week" is held. During the studies, students are kept informed through personal emails, intranet, mentors, website, academic events. Assessment requirements are always announced on time and clearly. Students affirm, that they receive an adequate amount of feedback on each assessment, however, there may be more feedback on good examples. There is an opinion between students that sometimes they do not receive enough information about the following actions which are done after the collecting their feedback on surveys. A large number of students are employed during their study time, which reveals that career counselling and connection to social partners is strong. Students claim that they receive suitable attention from their counsellors and other staff during thesis writing.

#### *(2) Expert judgement/indicator analysis*

The study information system and student counselling is on a high level. The university use a wide range of different channels in order to ensure a sufficient information spread. It is another strength of the study field.

### ***Strengths and weaknesses of this evaluation area:***

#### ***(1) Strengths:***

1. The study field has a high-level system of information spread and students' counselling.

2. Students' support seems to be comprehensive. Students feel university support in all spheres of studies.

**(2) Weaknesses:**

1. In the long-term, there is a risk in keeping steady students' recruitment levels and the university does not have a credible action plan to improve the popularity of the study field other than providing presentations to school children
2. Students' academic mobility is volatile. A deeper analysis is needed in order to understand its reasons and assure perfect conditions for students to participate in mobility programs.

### **3.4. TEACHING AND LEARNING, STUDENT PERFORMANCE AND GRADUATE EMPLOYMENT**

***Studying, student performance and graduate employment shall be evaluated according to the following indicators:***

*3.4.1. Evaluation of the teaching and learning process that enables to take into account the needs of the students and enable them to achieve the intended learning outcomes*

*(1) Factual situation*

The Energy Engineering (first and second cycle) study programs provide a full-time or part-time form of studies with a different options of study methods which are described in the SER.

The University applies a system of cumulative assessment of study results, where the final assessment of the subject consists of intermediate and final assessment grades, multiplying them by weighting coefficients.

Students' independent work is organized by individual or homework, oral illustrated reports, problem-solving tasks, preparing reports, etc. Individual homework is the solution of practical tasks according to the theoretical material presented during the lecture. The SER presents several individual work methods of learning and its self-assessments.

Graduates have opportunities to continue their studies at the next level at the same university or choose international programs abroad.

*(2) Expert judgement/indicator analysis*

The study process and learning methods are clearly described and presented in the SER. The large selection of new and active teaching methods enables students to try a variety of new methods of learning. On the other hand, such a large choice may not lead to the most rational and appropriate methods.

To manage the appropriate student choices, a clear selection process and priorities must be provided for the students and with the active supervision of teachers.

*3.4.2. Evaluation of conditions ensuring access to study for socially vulnerable groups and students with special needs*

*(1) Factual situation*

The application of the study process to socially vulnerable groups and students with special needs is described. The information provided show that university provides equal opportunities for study and work for all members of the community, including socially vulnerable groups of students and students with special needs.

Relevant information provided at the KTU Student Information and Services Centre, general information is published in the section “Applicability of Studies for People with Special Educational Needs” on the KTU website for first-year students.

Proactive activities related to community education and fostering a culture of equal opportunities is used and social events are organized.

During the assessed period, there were no students belonging to socially vulnerable groups in the study programs in the field of Energy Engineering. There were also no students with special needs.

#### *(2) Expert judgement/indicator analysis*

The application of the study process to socially vulnerable groups and students with special needs is described. There were no students belonging to socially vulnerable groups or students with special needs at the time of the study evaluation. The university proactively organizes social events and conducts surveys related to this topic. This is a very relevant way to educate the community and be prepared for potential challenges.

#### *3.4.3. Evaluation of the systematic nature of the monitoring of student study progress and feedback to students to promote self-assessment and subsequent planning of study progress*

##### *(1) Factual situation*

The SER provides a clear description of the process of preparing an annual monitoring report by the, department of Studies prepares which is then presented to the Rectorate. This reports on student learning outcomes, violations of academic ethics, results of attendance and testing of equalization courses and other information important for the assessment of the quality of studies and the systematic monitoring of students' study progress.

In order to manage drop-out at the University, levelling courses in basic subjects are conducted, additional requirements for attendance are introduced and didactics of differentiated education is applied without lowering the quality cartel, the share of independent work is increased, and the ability to learn independently is strengthened.

##### *(2) Expert judgement/indicator analysis*

The progress of the students in the field is monitored and the process is clear, however the main criteria and tools that are used to measure and maintain study levels could be improved. In addition, comparison with other peers would provide a more complete picture and give ideas on methods to improve the process.

#### *3.4.4. Evaluation of the feedback provided to students in the course of the studies to promote self-assessment and subsequent planning of study progress*

### *(1) Factual situation*

Teachers of subjects provide students with feedback on their achievements by introducing assessments of independent assignments and exams, together with oral feedback, commenting on individual and general mistakes, and pointing out shortcomings.

Students are given time for individual or group counselling, commenting on and explaining regular or specific mistakes. A mentoring program with 5 types of mentor's share has been implemented at the university.

During the visit, employers expressed the view that students who have completed the study program are properly prepared to enter the market.

During the visit, the Expert panel found that there is no general guidance to teachers on providing feedback to students and that there were significant variations in the quality of feedback, and lack of encouraging good practice in the feedback.

### *(2) Expert judgement/indicator analysis*

Information on how students are provided with feedback on their performance is clearly provided. Information and process on further planning of study progress could be accurately described and presented.

Special attention needs to be paid to the ongoing mentoring program, which can be a great tool to provide feedback and improve.

A general guidance on feedback should be provided to teachers to ensure consistency.

### *3.4.5. Evaluation of employability of graduates and graduate career tracking in the study field.*

#### *(1) Factual situation*

In the field of study, the employment and career of graduates are monitored, and information related to graduate career tracking is provided. The collection of feedback on employed graduates and graduates' feedback on completed study programs is mentioned, however, no aggregated data are provided.

The main social partner and potential employee are mentioned. In addition, opinions on the need for energy specialists have been expressed in specialized conferences organized by university.

#### *(2) Expert judgement/indicator analysis*

Information on employability of graduates and graduate career tracking examples in the study field is provided. Information on the opinion of the graduates and the employers on the vocational training of the graduates and the competences acquired following the studies are collected through personal contacts. Collecting feedback through personal contact is a good and open way to express your opinion, however anonymous surveys could be a better way to show places for improvement.

The proactive approach of the university in organizing events with social partners and future employers help to refine and understand each other's expectations.

Close and direct communication with graduates and employers enables continuous improvement of the study program.

#### *3.4.6. Evaluation of the implementation of policies to ensure academic integrity, tolerance and non-discrimination*

##### *(1) Factual situation*

The University administration ensures compliance with the University Statute and KTU Interim Academic Regulations by internal acts regulating labour relations. Compliance with the Code of Academic Ethics is ensured by the Board of Academic Ethics. Members of the University community have the right to report to this board the fact of academic dishonesty. The University has a description of the procedure for detecting plagiarism of students' written works, a description of the procedure for the organization and execution of studies in the Study Modules, and tolerance and non-discrimination are ensured through the Equal Opportunities and Diversity Policy.

The employee or student notifies about the possible case of violation or persecution of equal opportunities in the electronic system existing at the university.

Summarised information on examined cases of violations of the principles of academic integrity and decisions made over the last 3 years of studies is provided.

##### *(2) Expert judgement/indicator analysis*

The principles and processes of the policy of ensuring academic integrity, tolerance and non-discrimination implementation is described comprehensive manner. The Provided documents and rules enable the members of the university to know and act according to the established rules. However, a single acquaintance may not always ensure full compliance. Re-introduction through tests, videos could improve everyone's understanding and adherence.

#### *3.4.7. Evaluation of the effectiveness of the application of procedures for the submission and examination of appeals and complaints regarding the study process within the field studies*

##### *(1) Factual situation*

The University has a description of the procedure for submitting and examining student appeals and complaints. The process of appeal or complaint is described.

The SER mentions that student representations regularly inform students that appeals, and complaints can be filed if a student notices an injustice in the assessment or misconduct in the declaration of good faith.

##### *(2) Expert judgement/indicator analysis*

The application of the procedures for the submission and examination of appeals and complaints regarding the study process is described. The involvement of student representations in addressing these potential issues is crucial.

To ensure their intervention, it should be made clearer how student representation can provide appropriate assistance.

### ***Strengths and weaknesses of this evaluation area:***

#### ***(1) Strengths:***

1. Close and direct communication with graduates and employers.
2. Involvement of employers in the assessment of studies.
3. A mentoring program with different types of mentors

#### ***(2) Weaknesses:***

1. Insufficient involvement and promotion in attracting potential students

## **3.5. TEACHING STAFF**

### ***Study field teaching staff shall be evaluated in accordance with the following indicators:***

*3.5.1. Evaluation of the adequacy of the number, qualification and competence (scientific, didactic, professional) of teaching staff within a field study programme(s) at the HEI in order to achieve the learning outcomes*

#### ***(1) Factual situation***

According to the Self Evaluation Report, KTU has 74 lecturers in the field of study from different faculties (i.e., Electrical and Electronics, Mechanical Engineering and Design, Economics and Business, Chemistry). There are 11 professors, 40 associate professors, and 24 lecturers. Moreover, 72 lecturers have the doctoral degree. The distribution of lecturers and the different levels of them is even between the three study programs.

Their background is not stated, but their research interests expand along all the topics needed in the teaching assignments. Their scientific outcomes are adequate to the field.

Moreover, they have the needed English level, with an average quite high. The distribution of subject matter among the teacher seems appropriate.

Interviews during the visit corroborated that the number, qualification and competence of the teaching staff folds within the requirement of the HEI in order to achieve the learning outcomes.

#### ***(2) Expert judgement/indicator analysis***

The teaching staff has the number, qualification and competence of the teaching staff which falls within the requirement of the HEI in order to achieve the learning outcomes. There is a good range of research interests and good level of English language. Moreover, there is a good distribution of levels between academic programs.

The teaching staff is sufficient, qualified, motivated and properly prepared to teach the intended study program. Most teachers have a sufficient level of English, but some could improve their speaking skills.



### *3.5.2. Evaluation of conditions for ensuring teaching staffs' academic mobility (not applicable to studies carried out by HEIs operating under the conditions of exile)*

#### *(1) Factual situation*

According to the Self Evaluation report, Erasmus+ program is encouraged as staff mobility tool. In the time-span 2016-2019, 30 lecturers went to foreign universities for internships, to teach according to exchange programs and to various scientific events, 12 of them under the Erasmus+ program. In the same period, only two lecturers from abroad visited KTU and for a short period of time (5 days and 2 days, respectively). During the same period, 3 seminars were given by researchers from abroad.

According to the interviews, this section in the Self Evaluation Report is very focused on the Erasmus+ program, but there are many other initiatives that allow lecturers to teach in other universities abroad (i.e. Germany, Estonia).

There is also a H2020 program with which they also teach in Germany, Slovakia and other countries.

Academic mobility is desirable to be expanded, it is clear from the meeting that opportunities are there, but the number of ingoing visitors is a little too small.

#### *(2) Expert judgement/indicator analysis*

Academic mobility could be improved, both in outgoing and ingoing visitors. There is no clear encouragement from the university, although the teaching staff seems to think that they get sufficient encouragement. Actions to encourage higher mobility in the staff is needed, especially in attracting researchers from abroad to participate in the study field, both in lectures and in research collaboration.

Academic mobility is desirable to be expanded, it is clear from the meeting that opportunities are there, but the number of ingoing visitors is a little too small.

### *3.5.3. Evaluation of the conditions to improve the competences of the teaching staff*

#### *(1) Factual situation*

The Self Evaluation Report states that KTU has a procedure to define the conditions and methods for improving didactic competencies. The Edu\_Lab Teaching and Learning Competences Centre, which has been operating for five years, is where KTU provides lecturers with didactic opportunities. In the period of study, a bit more than 50% of lecturers participated in courses organised in this centre.

Moreover, lecturers constantly improve their scientific competence by participating in scientific and scientific-practical conferences, scientific internships, long-term trainings, seminars in Lithuania and abroad. Participation here is about 60% of lecturers.

The lecturers improve their qualifications by doing research and participating in projects.

Interviews during the visit confirmed that Edu\_Lab also work with the different faculties to supervise learning outcomes and curriculums for different careers.



There is the possibility of performing courses in other universities remotely.

Moreover, there is a program for languages, which is used a lot for English.

Finally, the faculty organises courses more oriented to research topics: how to write a paper, how to write a research proposal, etc.

During the meeting, it became clear that the staff has sufficient opportunities to participate in project activities, which allows to improve competencies in lecturing.

### *(2) Expert judgement/indicator analysis*

The new Edu\_Lab has been somehow successful among lecturers, but mostly with one unique course. There is a need to expand the courses given so lecturers can continue the improvement of their competences. Maybe integrating the research training in Edu-Lab would help.

### ***Strengths and weaknesses of this evaluation area:***

#### ***(1) Strengths:***

1. The creation of EduLab has been successful within lecturers for their training in teaching aspects.
2. The lecturers raise their qualifications by doing research and participating in projects.

#### ***(2) Weaknesses:***

1. Academic mobility could be improved, both in outgoing and ingoing visitors.
2. At university there is an opportunity to improve qualifications by various means, but teachers do not always take full advantage of the opportunities they have.

### 3.6. LEARNING FACILITIES AND RESOURCES

*Study field learning facilities and resources should be evaluated according to the following criteria:*

*3.6.1. Evaluation of the suitability and adequacy of the physical, informational and financial resources of the field studies to ensure an effective learning process*

#### *(1) Factual situation*

The Self Evaluation Report stated that the studies in the field are developed in three faculties, all of them with class rooms and labs. There are 22 classrooms, 26 labs, and 6 computer classes. Laboratories are in all the topics of the study field. Equipment is very diverse and very complete. Videos provided show very complete laboratories in all the different fields.

Special staircase for people with reduced mobility is provided in all faculties.

There is a library with all required document, workplaces, remote access, etc.

Discussion during the interviews revealed that the equipment for basic sciences (i.e. physics) is sometimes old, but on purpose. The idea is for the students to have more access to the equipment to understand better the phenomena.

Lecturers and students have access to equipment located at industry (social partners) or the Lithuanian Energy Institute.

The organisation of the laboratories is carried out centralized from the faculty, which also do the laboratories scheduling. The equipment is listed in an open data base, where lecturers may find information, add notes, etc.

There is special training for staff working in laboratories with special safety needs (i.e., high voltage laboratory or laboratory with hydrogen). This training is paid by the university.

Each lecturer has an assistant in the laboratory (there is no agreement on this, it seems that some laboratories do not have an assistant). Each group has around 10 students. Lecturer and assistant work with students in the lab work. Students get training on safety and personal protection equipment.

The dormitories in campus are in good condition as they have been recently or are being renovated.

The library has good proportion of its content in electronic material (around 50%). Also, good volume of material in Lithuanian and English is available (with subscription for e-books in Lithuanian). The library has access to research databases (i.e. ScienceDirect, IEEE, Taylor & Francis, web of science) and references software (RefWord and EndNote) are available.

Internet access is available everywhere in the university and IT service provides high-quality support. It is interesting to highlight that all students have remote access to laboratory computers, so they can do lab work remotely.

#### *(2) Expert judgement/indicator analysis*

The numbers of classrooms and laboratories are adequate for the field of studies and the number of students. The equipment is broad and for all topics to work on. There is a clear maintenance staff and plan. Safety aspects are well taken care of and funded.

The library has all the needed resources and services. Also, the IT service is very good. Moreover, dormitories are good.

### *3.6.2. Evaluation of the planning and upgrading of resources needed to carry out the field studies*

#### *(1) Factual situation*

The Self Evaluation Report states that KTU has the aim of infrastructure renewal, new infrastructure between KTU and M-Lab is being implemented. There is a plan to start in 2021 for library upgrade.

During the interviews, staff stated that the laboratories were renovated in the past 10 years, today funding is available for maintenance. There is no clear plan for future renovation of equipment.

The upgrading of the infrastructure is more closely linked to the resources available in the projects, but still requires constant planning.

#### *(2) Expert judgement/indicator analysis*

The short-term maintenance and renovation are well planned and implemented. Somehow, there is not so much clarity on the long-term renovation; although the laboratories and other services are quite new and well today, such plan should be considered to ensure continuity.

### ***Strengths and weaknesses of this evaluation area:***

#### ***(1) Strengths:***

1. Excellent infrastructure.
2. Very good maintenance of the laboratory equipment and improvements to safety and organisation.

#### ***(2) Weaknesses:***

1. Lack of long-term plan for substitution of equipment.
2. The upgrading of the infrastructure is more closely linked to the resources available in the projects, but still requires constant planning.

## **3.7. STUDY QUALITY MANAGEMENT AND PUBLIC INFORMATION**

***Study quality management and publicity shall be evaluated according to the following indicators:***

### ***3.7.1. Evaluation of the effectiveness of the internal quality assurance system of the studies***

#### ***(1) Factual situation***

The university follows internal quality assurance system that is described in the Quality Manual. This system is based on the main EU higher education policy documents (Bologna and Copenhagen declarations, Berlin and Bergen communications, etc.), complies with the European Higher Education Quality Assurance Regulations and Guidelines and the main laws and legal acts regulating higher education in the Republic of Lithuania.

The ultimate authority for quality assurance of study programmes is the Senate through its Studies Committee. The Study Committee, headed by the Vice Rector for Studies, considers study programmes submitted for approval, analyses them and submits its recommendation to the senate. The Vice-Rector for Studies is responsible for the development of the study quality vision, strategy and quality standard and system. The purpose of the University Study Programs Committee is to provide the University management bodies with expert proposals on the issues of development of the University studies, formation of study policy, improvement of study programs. The Department of Studies is responsible for the development and implementation of study quality guidelines and study quality monitoring at the University, work with ensuring the competitiveness of study programs, monitoring of the University's study program portfolio, and efficient organization of studies at the university level.

The councils and deans of each faculty responsible for a study programme are responsible for the implementation of the University's research and study policy and efficiency of implementation at the faculty level.

Study programmes are annually reviewed and updated taking into account suggestions of the stakeholders.

Internal study quality assurance system is based on European Higher Education regulations and actively involves social partners and students in the process.

Improvements are based on surveys conducted of students and other stakeholders. University stakeholder feedback includes feedback and assessments from students, faculty and researchers, administration staff, alumni, employers and social partners. The surveys shall respect the principles of voluntary, anonymous, transparent and efficient respondents and shall take into account the employment of stakeholders, as well as the purposefulness of the collection of opinions and the quality of the tools used

## *(2) Expert judgement/indicator analysis*

The Self Evaluation Report outlined a robust quality assurance process that is documented in a Quality Manual and follows certain processes that lead to periodic quality checks and improvements. The various committees and managers and their specific responsibilities are clearly outlined. Involvement of students and other stakeholders is commended.

### *3.7.2. Evaluation of the effectiveness of the involvement of stakeholders (students and other stakeholders) in internal quality assurance*

#### *(1) Factual situation*

The university affirms in the Self Evaluation Report the importance of the involvement of external stakeholders in the process of improvement of the quality of studies through providing comments and advice. Stakeholders: Graduates and employers, feedback is

collected using organised roundtable discussions. Stakeholders also participate in the evaluation of theses and provide comments on the quality of the work done. In addition, the Certification commissions which assesses the qualification of teachers are formed with social partners.

The study quality assurance process ensures active participation of students in all levels of the University's governing bodies and operating commissions (council, senate, study program committees, various commissions). Alumni participate in University events (open lectures, conferences, meetings), share knowledge and experience with the academic community (career mentoring, reading lectures and reports, support for young talents, etc.), express their position on relevant issues. At the level of the study program, stakeholders are involved in all processes of study program development, quality assessment and quality improvement according to their level of competence. They are members of the SPC, members of the qualification commission, the faculty council. Employers participate in the teaching of individual topics of the study subjects of the program, can provide topics for the final theses of the students of the program and provide an opportunity to perform final thesis and research.

Students have the opportunity to provide their views anonymously about the quality of the individual study modules. The university also conducts 'Students Voice' survey about the quality of teaching and the quality of study programmes, facilities, environment and other aspects.

The Self Evaluation Report however states that there is low participation of students in the 'Students Voice' survey. It also states that out of those completing the survey, a significant proportion of students would not recommend their studies to a friend. It is also mentioned that management does not pay much attention to this survey results due to low participation.

#### *(2) Expert judgement/indicator analysis*

Expert panel is satisfied of the level of involvement of students and other stakeholders in the evaluation process of the programmes and of the effectiveness of the process.

However, there is a concern about the low participation in the 'Students Voice' survey and the lack of interest in the management in the results of this survey. It is recommended that the senior management should review their position on this survey and explore measures to increase students participation.

### *3.7.3. Evaluation of the collection, use and publication of information on studies, their evaluation and improvement processes and outcomes*

#### *(1) Factual situation*

According to the SER, the university publishes information on the study programmes on the website. This includes information for applicants about admissions requirements, fees, programme structure and accreditation data.

Other information published on the website include results of students' surveys and feedback from social partners on the relevance of the study programme to the labour market.

The institution conducts an annual review of each study programme and all modules including the coherence of the programme and modifications implemented as a result of feedback from students and social partners.

Each semester, the results of the feedback are presented to the Rector's Office and the KTU Student Representation, and later discussed in the dean's offices and study program committee (SPC). The central administration and each faculty are responsible for general changes and further actions in specific cases: the Vice-Rector for Studies together with the University SPC initiate study improvement actions, the Department of Studies takes into account the results of feedback when planning its annual actions, SPC annually provides field improvement actions and plans. Subsequent results are reviewed, other study improvement actions are discussed and planned.

A process is implemented in the content of each module where lecturers provide direct response to students on their feedback and the improvements resulting from that feedback.

## *(2) Expert judgement/indicator analysis*

The Self Evaluation Report and information gathered during the visit from senior management, teachers, students and social partners confirm that the collection use and publication of information about the study programmes and their improvements are adequate.

### *3.7.4. Evaluation of the opinion of the field students (collected in the ways and by the means chosen by the SKVC or the HEI) about the quality of the studies at the HEI*

#### *(1) Factual situation*

According to the Quantitative assessment of student satisfaction with the module use a 5-point Likert scale: Strongly Disagree (-2 points), Disagree (-1 point), Neither Disagree nor Agree (0 points), Agree (1 point), Really Agree (2 points). During the surveys conducted in 2017-2019, the average of the evaluations of the individual study modules of the first cycle study program was 1.06 points. This rating was obtained by counting the responses of 854 students. Accordingly, the average of the evaluations of the individual study modules of the second cycle study program of the same period is 1.17 points. It was obtained by counting the responses of 376 students. These are relatively high grades, meaning that students are satisfied with the quality of the study modules.

Along with the assessment score, students have the opportunity to comment on what they liked most about each study module and what could be improved

Students have the opportunity to express their opinion anonymously about the quality of individual study modules during the "Survey of Study Modules and Teachers", at the end of the autumn and spring semesters. At the end of the questionnaire, the student is given the opportunity to answer open-ended questions, i.e. to submit additional proposals on study modules and lecturers and thus ensure the processes of continuous improvement and updating of study quality. These periodic student surveys are organized by the University's Strategy Monitoring and Processes Division. Although the surveys are voluntary, they receive a high level of student activity: on average, about 90 percent in the first cycle study program and 86 percent in the second cycle study program.

The Self Evaluation Report reports in page 87 that in 2017-2019, 9 first-cycle students (43% of all graduates) and 20 second-cycle students (69% of all graduates) participated in the study

program quality surveys. Respondents were asked to complete the statement “I am in this study program” using a 5-point Likert scale for the answers: I am very dissatisfied (-2 points), I am dissatisfied (-1 point), I am neither satisfied nor dissatisfied (0 points), I am satisfied (1 point), I am very satisfied (2 points). The average number of answers in the first cycle study program was 1.11 points, in the second cycle study program - 1.10 points. This indicates a sufficiently high evaluation of the quality of the study program and satisfaction with the studies.

*(2) Expert judgement/indicator analysis*

The panel considers that the measures to address the recommendation from the previous review has been adequately addressed and the current process is in line with expectations. This includes releasing results on Moodle after assessments, providing group feedback and allowing students to query their scores and discuss them with lecturers to address the issue raised about student’s participation in assessment of the study subjects. The issue of forming a separate study programme committee of Energy Engineering consisting of representatives of the Faculties of Mechanical Engineering and Design and Economics and Business was not acted upon but an explanation was given that Committees are formed by fields of study or by merging adjacent fields of study. There are no interdisciplinary study program committees due to the university's desire to have a smaller number of committees.

***Strengths and weaknesses of this evaluation area:***

***(1) Strengths:***

1. Process of gathering feedback from stakeholders are well designed.
2. Students’ survey contains elements of collecting general feedback for module and programme improvement.

***(2) Weaknesses:***

1. Students’ satisfaction with their studies is low

## **IV. EXAMPLES OF EXCELLENCE**

Strong research culture supporting academic staff to conduct relevant research and allowing students to get involved in research projects.

A significant number of staff work in industry feeding their practical experience to students and forming a strong link between the educational programme and industry.

The institution makes efforts to create external cooperation and partnerships in relation to the study programmes under review.



## V. RECOMMENDATIONS

Evaluation Area	Recommendations for the Evaluation Area (study cycle)
Intended and achieved learning outcomes and curriculum	The institution should conduct market research to better assess the future recruitment potential and adapt the programme according to the future employment market needs
Links between science (art) and studies	
Student admission and support	<p>The low students' satisfaction with studies is an issue that is required to be addressed.</p> <p>A clear and consistent approach needs to be developed to give students feedback on their assessed work.</p> <p>An action plan needs to be developed to improve the popularity of the study field and address the reducing student recruitment</p>
Teaching and learning, student performance and graduate employment	The content of some modules needs to be optimised to reduce repetition of information and hence allowing the introduction of new topics such as Data analytics and regulations
Teaching staff	<p>Some staff require improvement in their English language speaking skills</p> <p>Academic mobility for incoming and outgoing staff require improvement</p>
Learning facilities and resources	Long term plan for investment in laboratory equipment is required
Study quality management and public information	

## VI. SUMMARY

There are strong research links with industry and international partners, particularly, several lecturers teaching in the programme are employed in industry and are actively involved with industry related research projects. This provides a good basis for underpinning education with relevant research.

The University pays good attention to continuous staff development and training including development of their research skills. This provides staff with high motivation to improve their career prospects and provide good quality education to students. There is also adequate financial and in-kind support to staff to initiate research.

Lecturers constantly improve their scientific competence by participating in scientific and scientific-practical conferences, scientific internships, long-term trainings, seminars in Lithuania and abroad. About 60% of lecturers participate in such activities.

The institution has extensive experimental facilities with large array of equipment used for students teaching and for conducting their projects. Students also get involved with experimental research projects.

Social partners are actively involved with supporting the educational programmes through providing expert lectures, supporting students' projects and participating in the theses assessment commission as well as providing regular feedback to the institution to improve the study programmes.

There is no framework for providing consistent feedback by staff to students on their assessed work and this is left to individual staff to improvise. The institution should pay more attention to this aspect and provide guidance which should include encouraging good practice as well as identifying areas for improvement.

Final thesis is usually related to either research topics or issues relevant to the social partners. Students get the opportunity to work on active research projects and to participate in conferences and workshops. However, this is typically left to individual staff to organise and there does not seem to be a coherent strategy or vision for the students' involvement.

Although the courses offered seem to be popular in the context of the Lithuanian student recruitment, there is a downward trend in applications and admissions. A matter of concern also is the result of the "Student Voice" survey which should that a large proportion of students would not recommend their studies to their friends.

There is low level of student mobility within the assessed programmes. This seems to be a result of having large proportion of students in employment while studying. However, despite this situation of working students has been the same in previous years, there seems to be a continuous decline in student mobility which may require identification of the reasons and addressing.

Academic staff mobility is focused on the Erasmus+ programme. Mobility could be significantly improved by developing an institutional strategy to widen the scope of mobility using other programmes and to encourage researchers to come to the university.

Expert panel chairperson signature:

Prof. Abdunaser Sayma