CENTER FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

EVALUATION REPORT

TRANSPORT ENGINEERING STUDY FIELD

at KAUNAS UNIVERSITY OF TECHNOLOGY

Expert panel:

1. **Prof. Dr.-Ing. Haldor E. Jochim,** *(panel chairperson)*,
2. **Prof., Dr.Sc.Eng. Irina Jackiva (Yatskiv),** *academic,*
3. **Assoc. Prof. Dr. Vasilij Djačkov,** *academic,*
4. **Mr Edmund Lisovski,** *representative of social partners',*
5. **Ms Irina Duma,** *students' representative.*

Evaluation coordinator -

Ms Ona Charževskytė

Report language – English

Study Field Data*

Title of the study programme	Programme " **Vehicle Engineering**"	Programme " **Vehicle Engineering**"
State code	6121EX020	6211EX021
Type of studies	University studies, bachelor	University studies, master
Cycle of studies	First	Second
Mode of study and duration (in years)	Full-time (4)	Full-time (2)
Credit volume	240	120
Qualification degree and (or) professional qualification	Bachelor of engineering science	Master of engineering science
Language of instruction	Lithuanian, English	Lithuanian, English
Minimum education required	Secondary education	Bachelor's degree
Registration date of the study programme	19 05 1997	19 05 1997

** if there are **joint** / **two-fields** / **interdisciplinary** study programmes in the study field, please designate it in the foot-note*

CONTENTS

I.INTRODUCTION 4

1.1. BACKGROUND OF THE EVALUATION PROCESS 4

1.2. THE REVIEW TEAM 4

1.3. GENERAL INFORMATION 5

II. GENERAL ASSESSMENT 6

III. STUDY FIELD ANALYSIS 8

3.1. STUDY AIMS, OUTCOMES AND CONTENT 8

3.2. LINKS BETWEEN SCIENCE (ART) AND STUDY ACTIVITIES 13

3.3. STUDENT ADMISSION AND SUPPORT 16

3.4. STUDYING, STUDENT PERFORMANCE AND GRADUATE EMPLOYMENT 17

3.5. TEACHING STAFF 22

3.6. LEARNING FACILITIES AND RESOURCES 23

3.7. STUDY QUALITY MANAGEMENT AND PUBLICITY 25

IV. RECOMMENDATIONS 29

V. SUMMARY 30

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 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) visit of the review team at the higher education institution; 3) production of the evaluation report by the review team and its publication; 4) follow-up activities.*

On the basis of 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 such study field is not accredited.

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

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

1.2. THE REVIEW TEAM

The expert panel was completed according he Experts Selection Procedure (hereinafter referred to as the Procedure) approved by the Director of Centre for Quality Assessment in Higher Education 31 December 2019 Order No. V-149. The Review Visit to HEI was conducted by the panel on 19/11/2020.

1. Prof. Dr.-Ing. Haldor E. Jochim, FH Aachen University of Applied Sciences, Professor of Railway Engineering, Dean of Civil Engineering (team leader), Germany
2. Prof. Dr. Sc. Eng. Irina Jackiva (Yatskiv), Transport and Telecommunication Institute Riga, Vice-Rector for Sciences and Development Affairs, Director of MSc in Transport and Logistics, Professor of Mathematical Methods and Modelling Department, Latvia
3. Assoc. Prof. Dr. Vasilij Djačkov, Klaipeda University, PhD in Technical Sciences (Specialization Transport Engineering), Lithuania
4. Mr Edmund Lisovski, JSC "Altas komercinis transportas", Product Development Manager, Vilnius, Lithuania
5. Ms Irina Duma, Technical University of Cluj-Napoca (Faculty of Automotive Engineering, Mechatronics and Mechanics), Master student of Advanced Techniques in Automotive Engineering, Romania.

1.3. GENERAL INFORMATION

The documentation submitted by the HEI follows the outline recommended by the SKVC. Along with the self-evaluation report and annexes, the following additional documents have been provided by the HEI before, during and/or after the site-visit:

No.	Name of the document
1.	Course Card of Railway Infrastructure
2.	Module List of Bachelor and Master Programme

1.4. BACKGROUND OF STUDY FIELD/STUDY FIELD PLACE AND SIGNIFICANCE IN HEI

General information about the significance of the study field

Transport Engineering is an important engineering field in Lithuania, for various reasons.

1. Motor-cars (automobiles) have been a vital means of individual transport for many decades. Private car ownership is high with a tendency to increase further with rising income. Thus the engineering of motor-cars has become a major branch of mechanical engineering.

2. On a national and regional level, the technical service and repair of motor-cars has been gaining importance due to the rising number of cars. Well-trained specialists in this field are in great demand.

3. Taking into account the challenges by climate change it is obvious that the technology of motor cars must change in due course. Apart from becoming more efficient, the technology will have to move towards alternative means of energy fast. That change requires a huge amount of new thinking, resources and equipment in teaching and research.

4. Lithuania is the main transit country in the Baltics. The share of transport-related business is higher than the international average in this country. That is especially the case in goods traffic, thus leading to special attention to this part of automotive engineering when analysing study programmes and research.

Information about the role of the HEI

Kaunas University of Technology (KTU) has evolved from Higher Education Courses established in 1920 (later renamed the University of Lithuania).It consists of 9 faculties, the library, 8 research institutes as well as the departments of administration and support. The University currently has about 8,500 students and more than 1,900 employees.

The study programme of Transport Engineering is conducted by the Department of Transport Engineering in the Faculty of Mechanical Engineering and Design.

The programme focuses on the vehicles rather than infrastructure; infrastructure such as roads, bridges etc. are dealt by the Civil Engineering Faculty. There is some teaching of infrastructure in the (small)

modules of specialisation, of which there are three, including railway engineering, in the sixth semester of the Bachelor programme.

II. GENERAL ASSESSMENT

The Transport Engineering study field **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.	Study aims, outcomes and content	4
2.	Links between science (art) and study activities	4
3.	Student admission and support	4
4.	Studying, student performance and graduate employment	4
5.	Teaching staff	4
6.	Learning facilities and resources	4
7.	Study quality management and publicity	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 develops systematically, has distinctive features;
4 (very good) - the field is evaluated very well in the national and international context, without any deficiencies;
5 (exceptional) - the field is exceptionally good in the national and international context/environment.

The study field of **second cycle** *Transport Engineering* 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.	Study aims, outcomes and content	4
2.	Links between science (art) and study activities	4
3.	Student admission and support	4
4.	Studying, student performance and graduate employment	4
5.	Teaching staff	4
6.	Learning facilities and resources	4
7.	Study quality management and publicity	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 develops systematically, has distinctive features;

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

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

III. STUDY FIELD ANALYSIS

3.1. STUDY AIMS, OUTCOMES AND CONTENT

Study programmes' 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

Transport engineering (branches: road transport, railway transport, transport technology system and traffic engineering safety) is an activity aimed at developing and using the tools, measures and systems consuming the natural resources and using natural phenomena effectively as well as safely in order to meet humans' need for transportation by land.

Land transport plays an important role in the country's economy and the specialists of this field are in high demand in the labour market in Lithuania and abroad. Lithuanian National Road Carriers' Association LINAVA, Lithuanian National Association of Forwarders and Logistics LINEKA, public company Lithuanian Railways are emphasizing the necessity to prepare highly qualified specialists in the area of transport, including second-cycle studies.

The Vehicle Engineering (VE) programme's relevance is supported by meetings and discussions with the stakeholders within the organized career days and various transport development projects. During the visit most of the stakeholders have expressed satisfaction in the bachelor and master degree specialists coming from the Kaunas university of technology (KTU) Vehicle Engineering study programme.

Some stakeholders express the need for bachelor graduates being able to apply their skills in the field of transport servicing. Others expressed the need for master graduates to have better leadership skills.

(2) Expert judgement/indicator analysis

The aims and outcomes of the Bachelor and Master Vehicle Engineering study programmes are in conformity with the needs of the society and the labour market.

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 aims and outcomes of the Vehicle Engineering bachelor study programme are to provide knowledge in transport engineering; and to develop the ability to find and apply new engineering solutions for safe, fast, economical and environmentally friendly movement of people and goods in the design or improvement of vehicles, systems and elements.

(2) Expert judgement/indicator analysis

Vehicle Engineering study (bachelor and master) programmes 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 expected learning outcomes are in compliance with the provisions of the Study Cycle Description as well as the Description of the Study Field of Transport Engineering. The structure of the VE study programmes is in compliance with the requirements of the evaluation and accreditation standards as well as the trends in transport system development. During the interviews the experts inquired about the implementation of the EUR-ACE Accreditation Standard, a framework and accreditation system that provides a set of standards of high-quality engineering programmes in Europe, but learned that this standard is not much known or used in Lithuania. However, they find that the programme would probably fulfil this standard if the University put forward an application. (Information about the EURACE can be obtained from http://www.enaee.eu/eur-ace-system.)

The Bachelor study programme in Vehicle Engineering has 240 study credits, with the credits allocated for achieving necessary outcomes: the field study subjects, practices, the final degree project, the general Subjects of University Studies, subjects of Social Sciences, subjects in Mathematics and Physical Sciences and the specialization subjects of Vehicle Design and Control and Railway Transport.

The Vehicle Engineering (master) study programme has 120 study credits, with the credits allocated for achieving necessary outcomes: the field studies providing the learning outcomes established under the field description, the final degree project, the research works and subjects of other fields established by the University.

(2) Expert judgement/indicator analysis

Bachelor and Master Vehicle Engineering study programmes are in compliance with applicable 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 of the study programmes are to provide knowledge in transport engineering, to develop the ability to find and apply new engineering solutions for safe, fast, economical and environmentally friendly movement of people and goods in the design or improvement of vehicles, systems and elements (first-cycle programme); to provide knowledge in transport engineering, abilities to identify and solve the issues of functionality, reliability and safety of vehicles, components and systems, assess and forecast the condition and behaviour thereof, design and conduct research by applying the appropriate methods and equipment, empowerment in conduction of an engineering and scientific activity at transport enterprises, organisations and research institutions (second-cycle programme).

The relation between study subjects teaching methods and the learning outcomes are clearly shown in the special matrix in Annex 4.1.1. 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) include active learning methods, such as individual project, technological project, design-based thinking, creative workshop, etc. and support the subject (module) learning outcomes to be achieved.

(2) Expert judgement/indicator analysis

The assignment of the aims to the programmes is 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

Applied thermodynamics and fluid mechanics (semester V) should be taught before Engines of vehicles (which is now in semester IV), since, for example, for studying internal combustion engines, there is a need for a basis of applied fluid dynamics and thermodynamics, so according to the experts they should be taught in reverse order, since, for example, for studying internal combustion engines, there is a need for a basis of applied fluid dynamics and thermodynamics.

Vehicle and Traffic Safety has generally quite a broad meaning. It looks quite challenging to study this subject in only one semester. It could be considered to split the module between Bachelor and Master cycles (one module in each). The same might be said for the module Vehicle Dynamics, Interaction and Energy Efficiency.

By analysing subject/modules descriptions the experts have found that the list of literature sources is not up-to-date for some study subjects curricular: Engineering Graphics, Introductions to Vehicle Engineering, Automatic Control Fundamentals, Traction Theory of Railway Rolling Stocks, *Semester Project. That is very important, taking into account quickly developing technologies in the latest periods. To stay in the latest technology trends it is proposed to revise subjects curricular by introducing knowledge from recently published literature sources. The remark is valid for the following subjects: Engineering graphics, Introductions to Vehicle Engineering, Automatic Control Fundamentals, Traction Theory of Railway Rolling Stocks.*

(2) Expert judgement/indicator analysis

The structure of the study (bachelor and master) programmes ensures consistent development of competences of students. It is recommended to keep all the programme subjects descriptions up-to-date. Some rearrangements in the programme subjects might lead to better performance of the study programmes.

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

Bachelor students can personalise the structure of the field study programme by choosing Bridging courses in the first semesters, general university study modules, Alternatives of the study programme, Additional study module in the scope of up to 6 credits, Additional internship and Topics of the semester works and projects and the final degree project.

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 – field expert or interdisciplinary expert (MA+ competence). Additionally they can do an internship.

(2) Expert judgement/indicator analysis

Students of Vehicle 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 using MA+ competence possibilities.

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 and the Mechanical engineering and design faculty's Methodological Requirements for the preparation and Defence of Final Degree Projects (SER p. 15, https://fmed.ktu.edu/).

Bachelor final theses are in line with the field and cycle requirements; however, attention is to be paid to the quality of the final paper (content, form and representation). Use of Google search results and Wikipedia in the reference list should be avoided (B-2018 Design of Funicular Railway System - 8.pdf)

Master final theses are in line with the field and cycle requirements; however, attention is to be paid to problem investigation and analysis of results with the aim to improve characteristics or parameters of the research objects. Research with the aim 'to be doing research' should be avoided. An example of research for its own sake can be found in the master thesis (M-2018 Study of Vehicle ESP System and Analysis of Dynamics in the Vehicle by Simulation Using Vedyna - 10.pdf): the result is that the ESP system is effective, no improvements of the research object and no recommendations are provided.

Most of the final theses (bachelor and master) are done well and in compliance with the remarks made above.

During the visit the SER team and the teaching staff explained that the final thesis preparation process is conducted continuously during the entire master studies process and students are presenting the results during check meetings before the final paper defence.

(2) Expert judgement/indicator analysis

Bachelor and master final theses are in compliance with the field and cycle requirements, but the quality control of the final thesis preparation process should be further improved by more thorough check of content, form, representation and use of literature sources (in bachelor theses) and by more thorough check of scientific content of the results (in master theses).

Recommendations for this evaluation area:

1. The quality assessment procedure during the preparation of the final theses (both bachelor and master) should be strengthened. Attention should be paid on the quality of the final paper (content, form and representation, and the use of peer-reviewed literature sources). During the preparation of the master final thesis the scientific value of the

research is to be assured, and more attention should be paid to the analysis of the research results.

2. It is advised to keep all the programme subjects descriptions up-to-date. In some of them (e.g. Engineering Graphics, Introductions to Vehicle Engineering, Automatic Control Fundamentals, Traction Theory of Railway Rolling Stocks, Semester Project) this does not appear to be the case.

3. Applied thermodynamics and fluid mechanics (semester V) should be taught before Engines of vehicles (which is now in semester IV), since, for example, for studying internal combustion engines, there is a need for a basis of applied fluid dynamics and thermodynamics.

4. Quality control of the final thesis preparation process should be further improved by more thorough check of content, form, representation and use of literature sources (in bachelor theses) and by more thorough check of scientific content of the results (in master theses).

3.2. LINKS BETWEEN SCIENCE (ART) AND STUDY ACTIVITIES

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

The previous assessment of research and development (R&D) activity in transport engineering was carried out in 2018. The quality of research activity was given 2 points, the economic and social impact of R&D activity – 3 points and the viability of R&D activity – 4 points., according to p. 19 of the SER.

Academic publications by members of the faculty are presented in Appendix 1 and a list of publications of 2019 was presented on the experts' request. The list of academic publications of academic staff members teaching in the programme includes 24 publications (in 2019 15 papers were published: 9 in journals Q1 and Q2; 6 – in proceedings). The topics of the publications are generally related to the courses delivered by the academic staff members.

Active scientific work takes place on national and international level with research associations, committees, and consortia, of which the following are mentioned in the SER:

- *Committee for the EU's Program for Research and Innovation Horizon 2020 "Smart, green and integrated transport"*
- *NATO STO Applied Vehicle Technology Panel – AVT. etc.*

However, most of the scientific work takes place on a national level.

The researchers working in the Transport Engineering field are heads and members of the organizational committees of international scientific conferences or programme committees, chairs or members of the editorial boards of international periodic or regular scientific publications, for example editorial boards of scientific journals "Transport", "Problems of Mechatronics (Armament, Aviation, Safety Engineering)", "Journal of Technology Innovations in Renewable Energy", ,"Transport and Engineering

(Railway transport)", Fédération Internationale des Sociétés d'Ingénieurs des Techniques de l'Automobile (FISITA), etc.
The Faculty organizes internationally recognized Conferences, which are also a good motivation for teaching staff since they can present their research outputs.
There is good cooperation with different business companies and state institutions: Lithuanian Railways, Transport Competence Agency, Ministry of Transport and Communications of the Republic of Lithuania, Kaunas city municipality administration etc.
The publications are unevenly distributed among lecturers.

(2) Expert judgement/indicator analysis

Research activities and participation in international research projects have resulted in the creation of innovative solutions in the study process. Several examples were mentioned in the SER.
From the information the panel has received it appears that there is significant research output of the Faculty. However, it is not evenly distributed among staff and gives the impression of being in a process of build-up. There may be room for improvement in the future.

***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 research conducted by the KTU is directly related to the studies delivered in the field of Transport Engineering – the topics, research methodologies and the results obtained are integrated into the first and second cycle study programmes in accordance with the respective learning outcomes. The directions of scientific research are in line with the development aims of the Transport Engineering in KTU and relevant to the study direction. Some examples:

- *Development of sustainable mobility models for a transport system,*
- *Development of energo-mechanical models of interaction between the elements of the vehicle-driver-environment system,*
- *Research of the dynamics and energy efficiency of vehicles with alternative fuels and hybrid powertrains,*
- *Research of components of intermodal transport systems,*
- *Development and implementation of new technologies based on the contemporary principles of mechanical and mechatronic system modelling, dynamic synthesis and optimisation as well as the latest military science, optical electronics, IT, imaging, and other achievements in science and engineering.*

The teachers who conduct active research in the aforementioned topic areas systematically update the study subjects under their supervision and contribute to relevant changes in the programme contents/curriculum by relying on their own experience in research and other researchers' results and insights.

In the interview with stakeholders and teachers strong cooperation with industry companies and experts in the field was reported and supported orally by a few examples.

(2) Expert judgement/indicator analysis

The mechanisms for the involvement of the teaching staff in scientific research are clear and adequate.
There are examples of strong cooperation with industry companies and experts in the field.

***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

The University has created the conditions for the programme students in the field for getting involved in scientific activity: a 'creative space' at the Laboratories of Transport and Mechatronic Systems Research and Transport Systems has been allocated for this purpose, providing the possibility to use the available literature and methodological resources, laboratory equipment and software.
The "Experimental hybrid car", "Electric car", "Electric ATV", "Student Formula" and other creations created by the students during the term or final projects were successfully presented to the academic community by participation in the research and innovation fairs KTU Technorama, scientific festivals Researchers' Night and Spaceship Earth.
In 2020 the "G-force racing simulator" project conducted by first-cycle students was awarded a special prize by the startup incubator called 'KTU Startup Space' during the Technorama fair. The students at KTU who are engaged in innovation creation are offered team coordination, mentor consultations, expert support, training, events and assistance in terms of search for partners.
Students (usually second-cycle students) have the opportunity to participate in the projects and long-term research conducted by the researchers/teachers in the study field. The students present the results of their activities at the annual Young Scientists' Conferences "Industrial Engineering" (Pramonės inžinerija) and international scientific conference "Transport Means", and the works are published in the conference proceedings.
During the interviews, the SER staff asserted that students are involved in research, including publishing, but declined to give an exact number of students doing so. The experts did not receive viable information from the students either about this.

(2) Expert judgement/indicator analysis

Mechanisms to promote the involvement of the students in scientific research include a course about specific projects and annual research conferences. The students mentioned their involvement in different research activities, but especially stressed the annual research conference.
The university appears to try to involve students in scientific activities , but the number of students actually involved is unclear.

Recommendations for this evaluation area:

- International cooperation could be more active and livelier.
- Explore the possibilities of international cooperation that would offer the students more opportunities for international exchange and to expand directions for Erasmus+ exchange.

- The role of research methods should be emphasized more in the 1st cycle programme.

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 admission procedure for the first cycle is in line with the national regulations (centralised admission), while the one for the second cycle is based on the university autonomy, taking into consideration prior learning (within the first cycle) with a system of competitive scores, which consists of the weighted average of the first-cycle assessments multiplied by various coefficients (explained in detail on p. 26 of the SER).

According to the information given in Tables 2.3 and 2.4 on p. 27 SER, the percentage of foreign students, especially for the second cycle, has increased considerably in the past three years.

(2) Expert judgement/indicator analysis

The number of applicants for both study cycles (bachelor's and master's) has decreased during the last three years, however these numbers for KTU are relatively high and cover the study offer.

The experts appreciate the rise of foreign students in recent years.

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 foreign qualifications is detailed in the Self Evaluation Report provided by KTU. Partial studies are considered to be those studies achieved, for example, through mobility programmes such as Erasmus+.

(2) Expert judgement/indicator analysis

N/A

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

(1) Factual situation

KTU organises awareness sessions for academic and internship mobility of students, periodically. However, a relatively low number of participants in mobility is noticed (maximum 3% in the past three years).

(2) Expert judgement/indicator analysis

The low number of applicants for international mobility suggests that the efficiency of advertising mechanisms for international mobility might not work as it would be desirable.

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

There is a support mechanism for each kind of problems that students might encounter - existence of tutors, mentors, psychologists, accommodation offered to students who are not from Kaunas and social activities organised by KTU.

(2) Expert judgement/indicator analysis

Even though the psychological support for students is very well detailed and available both for group and individual sessions, the number of 2 psychologists within KTU might not be sufficient to cover all students' needs.

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

(1) Factual situation

Study information is mainly shared through a booklet disseminated among freshly admitted students.

There is no information provided regarding the advertisement of the study field for possible candidates.

(2) Expert judgement/indicator analysis

Even though the number of applicants to both study cycles might be considered as sufficient, some additional advertising activities for attracting possible candidates may be useful.

Recommendations for this evaluation area:

Some additional advertising activities for attracting possible candidates for the programme and for international mobility may be useful.

3.4. STUDYING, 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 faculty offer full-time studies for first and second cycle students. Several forms of timetable are applied: day time studies; evening studies; weekend studies.

The SER team ensured that the faculty applied an evening studies timetable for the second cycle studies.

The SER report stated that interactive learning was applied and that new methods for evaluation of achievements had been implemented, such as portfolio of works or competences beside the traditional ones.

In the interviews the experts discussed the Moodle virtual learning environment with the SER staff. Both sides agreed that the system was essential in enabling the organisation of distance learning more efficiently. The University also uses an Academic Information System (AIS system); its functionality and the correlation between the two systems were also discussed.
The SER report mentioned that during the studies, the students have a chance to participate in the product development project based on the student's activities.
During the meeting with students the expert panel inquired about samples of product development projects such as Student Formula or electric go-cart. Only two of them have an opportunity to implement their idea of a simulator stand with financial support by the faculty. During the interviews with the students the expert panel was also told about one student project and a participation in exhibitions leading to awards from the Lithuanian Ministry of Transport and Communication. Projects by PhD candidates (young lecturers) about drones, automated vehicles and traffic flow analyses were also reported.
The faculty provided sufficient information about processes of learning outcomes and assessments in their report.

(2) Expert judgement/indicator analysis

The Processes the faculty uses are generally well-developed and are suitable for achieving the intended learning outcomes. The senior management; SER staff and students convinced the panel that all groups are familiar with the instruments and processes and use it in the way the report describes.
During the interviews with the students the expert panel got information only about a small number of successful product development projects based on the students' activities. Expert panel therefore recommends focusing on involving students into development projects. This will increase the visibility and attractiveness of the university as well as ensuring the involvement of students.

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

(1) Factual situation

KTU aims to provide equal opportunities for studies and work to all the community members, including the disadvantaged groups of students and the students with special needs.
Besides building infrastructure and governmental supported scholarships there are other kinds of support the University has implemented.
The KTU Student Information and Service Centre provides counselling to all KTU students (regardless of their gender, disability, race and other features) and they are regularly notified about the opportunities to join the initiatives at the University and the events of KTU community. The Community organises 2-3 social events on the topic of equal opportunities in cooperation with KTU Students' Association per year.
According to the SER (p 38), there is a permanently active survey for the students with disabilities and/or learning difficulties on the KTU website at https://studentams.ktu.edu/sveikata/#studiju-pritaikymas-turintiems-negalia-ar-individualiu-ugdymosi-poreikiu. The goal of this survey is the identification of personal

needs and help while correcting the process of studies, adapting it for individual cases, more prompt and effective response to the needs of these students

(2) Expert judgement/indicator analysis

The Faculty ensures access to study for socially vulnerable groups and students with special needs in accordance with Lithuanian regulations.
KTU University is known to be accommodating to people with special needs. It has continuously implemented the Equal Opportunities and Diversity Policy. The expert panel got the impression that the university gives this topic sufficient attention. However, the self-evaluation report should give specific website addresses if it states them as a significant part of their profile.

***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 university provided sufficient information about the systematic nature of the monitoring of student study progress. The report explains some mechanisms of evaluation.
The university provides an annual report monitoring the students' learning outcomes (in line with the structures of the faculties and the study cycles).
The Study Programme Committee (SPC) is constantly monitoring the students' achievements in the AIS: overall grade point average, data of the current semester's intermediate and final assessments, records of the attendance in classes; they are forwarded to the Early Warning System administered by the faculty's Study Centre.
To avoid loss of students, the University provides the bridging courses of basic subjects. The Faculty also introduced new measures to this end, such as an individual study plan for each student. The panel discussed the reasons for termination and interruption of studies with the various groups of the Faculty at length and got competent answers.
The Academic Information System monitors the indicators of the students' assessments of modules and attendance in classes analyses the individual situation of students, thus identifying weak students and their timely assistance. Apart from that statement, the SER does not provide information about specific faculty feedback to weaker (or other) students.
The expert panel misses statistical evaluation data for the evaluation period in order to be able to objectively assess trends.

(2) Expert judgement/indicator analysis

The report explains the mechanisms that are in common use. Classic tools for monitoring and prevention are in place. The aim of the assessment system is to reduce the loss of students and help the underdeveloped students on time to close learning gaps, mainly by offering bridging courses in basic subjects and individual support for weak students. The report does not contain information about the assessment of intermediate and advanced students. At SER mentioned To control the loss of students, the University provides the bridging courses of basic subjects and Early warning system.

Given that there are no evaluation statistics for the evaluation period the experts cannot objectively assess trends.
Since the experts do not have drop-out data they cannot evaluate how effective the systems mentioned are. The faculty should provide such statistical data in the coming reports.

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

The report describes the scale of grading criteria scale and the cumulative evaluation scheme designed for prompting systematic work throughout the semester.
The evaluation criteria of students' achievements are announced at the beginning of the semester – during the first class the teacher introduces the students to the aim, topics, independent assignments schedule and their influence on the final grade of the study module.
The study programmes and descriptions of the goals and knowledge are fully available to the students via the Academic Information System (AIS).
Feedback about the students' achievements is provided to them by the teachers by means of introducing them to the grades of the independent assignments completed and written exams, accompanied by oral feedback.
The final degree preparation process has been established by regulation, including the defence procedure as well as the assessment methodology.
Each student has a project supervisor that consults and leads him. For public defence, the student shall submit the paper to the Head of the Department of Transport Engineering. The Head organizes a public seminar for preliminary assessment of the project and appoints the reviewer in view of the topic of the thesis. The supervisor and reviewer of the student's final thesis provide their review letter with the grade. The project assessment consists of three parts: project assessment grades by the reviewer, by the qualification committee, and the defence assessment grade.

(2) Expert judgement/indicator analysis

The Faculty provided ample information about the evaluation of the feedback provided to students in their report. The report provides clear goals to students in case of lectures and in thesis preparation.
The expert panel had the opportunity to check Bachelor and Master Theses.
Bachelor topics are up to date, some of them have correlation with extracurricular activities of students and stakeholders. There is a solid scope of work and engineering strength calculations using relevant software such as SolidWorks, CATIA, VISUM and VISSIM.
The topics of the Master theses correlate with students' work activities and stakeholders. There is a solid scope of work and the majority of thesis show simulations using relevant software.
There are uncertainties with the validity of the conclusions or the list of selected literature in at least one master thesis (Study of Vehicle ESP System and Analysis of Dynamic in the vehicle by simulation using Vedyna), but this is a normal phenomenon in the learning process.

With these processes, the Faculty generally fulfils the needs of the evaluation of the feedback provided to students.

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

(1) Factual situation

The graduates tracking system considers both Lithuanian and international students in terms of employability.

(2) Expert judgement/indicator analysis

Thanks to the existing alumni platform, the university keeps in touch with graduates by sharing updates and other relevant information. The contact is continuous and does not only take place when collecting feedback about their employment. The systematic use of that tool for keeping in continuous touch with graduates, especially with the international ones, can be considered as an example of good practice.

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

(1) Factual situation

Regarding prevention methods, each student signs an academic integrity declaration, together with the learning agreement, which ensures that students are aware of the provisions in terms of ethics and academic integrity at university level.

Any complaints regarding violations of the academic integrity, tolerance and non-discrimination principles can be submitted online, using the AIS system.

(2) Expert judgement/indicator analysis

Neither in the self-evaluation report nor in the interviews there were reports about cases where the official prevention mechanisms had to be applied . Therefore, no conformation, criticism or recommendation can be put forward in this respect.

***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 procedure for submission of appeals and complaints regarding the study process is detailed, together with a time limit for a feedback of 10 days (p. 43). General/ institutional-wide recommendations are dealt with at university level, while specific cases focus more on the specificity of each faculty/ department/ programme (study content, teachers etc.).

In the interview the programme management asserted that all master's programs within the university have begun to focus more on research in the past years.

(2) Expert judgement/indicator analysis

Even though there are procedures in place and they are available through the Academic Information System (AIS), students seem to not observe their feedback implemented by the university, therefore their completion rate might be lowered.

Recommendations for this evaluation area:

The faculty should provide statistical data in the coming reports; they would help to assess the effectiveness of implemented processes, real situations and trends.

3.5. TEACHING STAFF

Study field teaching 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. Entrance requirements are well-founded, consistent and transparent.*

(1) Factual situation

In the period of assessment, 9 lecturers work as regular teachers, 4 are visiting teachers who pursue engineering and scientific activities at transport companies. 5 external teachers holding practical experience and applied industry knowledge also participate in the study process.
A considerable number of lecturers know at least one other foreign language in addition to the English language: Russian, German, Polish, Italian, French.

(2) Expert judgement/indicator analysis

The qualifications of the academic staff are on a good level and comply with the requirements for the implementation of the programmes, enabling the achievement of the aims and learning outcomes of the study programs and the relevant study courses.
The needs of teaching staff in professional and didactic development are identified in a target-oriented manner.

3.5.2. *Evaluation of conditions for ensuring teaching staff's academic mobility (not applicable to studies carried out by HEIs operating under the conditions of exile).*
(1) Factual situation

In the period of evaluation, 17 programme teachers were away for teaching visits at foreign universities - the number of the teachers of the field subjects in 2017, 2018, 2019 was 6, 5 and 6 respectively. The teachers, delivering the field subjects, also participated in other academic mobility activities. The Partner Universities and Research Entities were visited: University of Porto (Portugal), Technical University of Munich (Germany), University of Southern Denmark (Denmark), The Federico Santa María Technical University (Chile), the Institute of Motor Transport/Warsaw University of Technology (Poland), NASA's Ames Research Centre (the U.S.), FiBreMoD School Leuven (Belgium) etc.

(2) Expert judgement/indicator analysis

The teaching staff is very active in academic mobility. However, it seems that there is not enough ingoing teaching staff for the subjects in the Transport Engineering programme.

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

(1) Factual situation

Qualification of academic staff is raised during different seminars and by involving them in international projects. Some examples of research results related to the education process are provided in the SER.

Competences of the teachers of the field programmes are developed systematically – the University provides the conditions to take part in the training held by EDU_Lab, Centre of Excellence for Teaching and Learning: competences in didactics, subject delivery in English, study programme design, virtual (e-) learning tools and methods, cultivation of skills in virtual learning, cases analysis, problem-based learning, design-based thinking, etc.

The University applies a language policy for all types of personnel to have English language knowledge at least on level B2 and all employees have possibilities to join the English languages courses organised by University.

(2) Expert judgement/indicator analysis

It is necessary to strengthen the participation of lecturers in all activities with industry, support them with the due importance of integration of the latest technologies, knowledge and practical experience in the studies.

Recommendations for this evaluation area:

Develop and launch of special program for inviting leading researchers and professors, guest specialists from business, also from abroad, to fill part time consulting positions and enhance the competencies of KTU staff and research.

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 faculty has a sufficient number of classrooms for lectures, laboratory works and seminars. The classrooms and laboratories are well developed for lectures.

There is just one problem with the location of some of the study premises being apart from the central building in the city centre.

The central library has extended opening time to meet the scientific and study needs of the university community. All electronic resources, scientific journals, electronic books, and databases are available for the students and teachers remotely.

Professional BA practice is carried out in the 7th semester. The duration of the professional practice is 8 weeks. Proposed practice placements are announced at the beginning of the final semester. Usually, students find the practice placement on their own, however the Faculty helps students with the placement in case of selection problems.

The access for students to methodological materials is ensured by the provision of printed publications, via e-mail or online, in the Moodle environment.
Students of academic groups are recommended to create the group email address, where the teacher of the respective study module uploads the information, individual assignments, other methodological information required for the students.

(2) Expert judgement/indicator analysis

Lectures take place at two campuses in different parts of the city. This might complicate the study process for first year students and some teachers though is not addressed as a problem in the self-evaluation report. In the interviews, the faculty staff did not identify this as a major problem. Since the experts did not have the opportunity to see the campuses themselves due to the pandemic they cannot check that (implicit) assessment.
The Laboratories are rich in modern hardware and software equipment. The Faculty has a budget dedicated for research and R&D projects.
There is good cooperation with Social partners as a result - they actively support practice placements. There is a particularly deep and long-term cooperation with the Lithuanian Railways.

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

(1) Factual situation

KTU is constantly investing in the renovation of infrastructure; currently, several large infrastructure modernisation projects are being implemented, such as the prototyping laboratory centre KTU "M-Lab" that will include the infrastructure adapted for the research, technological and experimental development works (R&D).
The engineering workshop "Fab Lab" (Fabrication Laboratory) is established at the University. Both laboratories help to educate the highly-qualified electronics specialists, encourage creativity of the students interested in electronics and to acquire practical skills. There are three laboratories at the "Fab Lab": Electronics Technologies, Avionics and Nanosatellites, and Electromagnetic Compatibility Laboratories.
Beside the scheduled extension of software licenses and laboratory equipment in the near future students in the field of Transport Engineering will have access to PTV Visum, Vissim and Vistro software.

(2) Expert judgement/indicator analysis

The planning and upgrading of resources for carrying out field studies is making progress. In general, resources are well-developed and in the near future will be more suitable for encouraging creativity of the students and helping them to acquire practical skills.

Recommendations for this evaluation area:

For methodological material, the faculty use e-mail or Moodle environments.

The panel recommends focusing on one platform for central information because, according to general experience, one information channel is usually preferable as to the consistence of information. .

3.7. STUDY QUALITY MANAGEMENT AND PUBLICITY

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 provided ample information about the quality assurance systems in their report. The report explains the roles and competences of the committees for the various tasks of quality assurance: Senate (including the Committee for Studies), Vice-Rector for Studies (SPV), Study Programme Committee (SPC) and the Department of Academic Affairs.
With this structure, the university resembles the general organisation of quality issues at universities in Europe.

On the faculty level, the Dean and the Council of the Faculty of Mechanical Engineering and Design are responsible for the programmes and the consultation of students, other members of the faculty's community and social stakeholders.
The faculty prepares a yearly plan for the improvement of the quality of its study programmes.
The SER report stipulates that students are involved in the activities of the University's governing bodies at all levels and its operating commissions.
Surveys are carried out regularly with graduates and employers; their feedback results are used for the improvement of specific study programmes. Taking part in the surveys is voluntary and anonymous.

Additionally, there are yearly meetings and round table discussion with social stakeholders. External social stakeholders also have the opportunity to participate in the defence of the final degree projects.

During the interviews the management of the formal instruments and processes was discussed with the senior management and the SER staff. The group of teachers complemented the interview results with examples, such as the continuous coaching of students during their theses in cooperation with externals (such as Lithuanian Railways). One Master thesis mentioned in section 3.1.7. was found insufficient in its scientific conclusions by the panel; being accepted by the teachers is an example for the processes not working faultlessly every time.

The students confirmed their positive experience and participation with the process.

(2) Expert judgement/indicator analysis

The instruments and processes the university uses are generally well-developed and are suitable for improving the quality of teaching. The senior management and SER staff convinced the panel that all groups are familiar with the instruments and processes and use it in the way the report describes.

However, the panel could not find explicit information about quality issues in connection with dropouts. During the interviews the faculty staff preparing the report stated that the reasons for students dropping out are overwhelmingly due to personal circumstances. The panel does not contradict this assertion but recommends to include drop-out analyses into the existing studies and their appraisal.

3.7.2. Evaluation of the effectiveness of the involvement of stakeholders (students and other stakeholders) in internal quality assurance. Evaluation of the planning and upgrading of resources needed to carry out the field studies.
(1) Factual situation

The university lays great emphasis on the fact that students, graduates and employers not only participate in programme quality assessment and improvement but also trigger improvements related to the programmes' contents and learning outcomes.

Apart from the standard format of committees, the SPC and the Department of Transport Engineering organise seminars, where the scientists, engineers, researchers and practitioners, as well as future specialists cooperate and discuss the latest research/activity results and experiences.

The faculty emphasise the influence of the Lithuanian Railways on the quality of studies. During the discussion with the employers a representative of the Railways was present and confirmed that position, referring to the use of railway facilities and regular and frequent collaboration in internships and theses. Another example of useful collaboration brought forward by the employers is their participation in career days of university organises.
The position of the students is referred to in section 3.7.3.

(2) Expert judgement/indicator analysis

The report and the confirmation by stakeholders convinced the panel that the involvement of stakeholders including students is adequate.

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 self-evaluation report (p. 62), the website of the university provides the public results of the surveys on studies and the opinion of stakeholders about the relevant competences in the labour market with regards to each study programme, though it does not reveal the specific site link.

In general, the Vice-Rector for Studies, in cooperation with the University's Study Programme Committee, initiates the actions for the improvement of studies, while the Department of Academic Affairs considers the results of feedback while planning its yearly actions. The Faculty deals with specific cases of the programme. The results are later reviewed again and used in the planning of further improvement of the programmes.

During the interviews the students confirmed that they take the opportunity of participating in surveys and open discussions regularly (usually twice per year). Sometimes they have to remind the faculty administration to publish results, but always successfully. The actions inferred from the surveys do not always reach those students who take part in the respective survey, due to time lags of analysis and publication. Nonetheless, the students appreciated that the results and subsequent actions deliver positive results for students succeeding them and said they would of course be happy to continue participating.

(2) Expert judgement/indicator analysis

The dean was asked by the panel how it is decided whether a quality issue is 'general', for being dealt with by the university as a whole, or 'specific', for being dealt with by the faculty. He replied that he would regard anything that he can deal with on his own, using the resources of the faculty, as 'specific'. From the point of view of the panel that is a self-confident and pragmatic position showing that the faculty solves their problems in just such a way. Evidence of the report is also sufficient for the panel to ascertain good quality of the processes.

Asked by the experts bout a specific example of an improvement process of the kind explained in general terms in the self-evaluation report, , the faculty reported about a change of structure of the masters' study programmes decided and carried out in the whole university, with the aim of strengthening research. Further specifics were not reported.

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

(1) Factual situation

The University explains the conduction of their surveys in a detailed way in the self-evaluation report (p. 62), including the scales they use. Satisfaction of the study programme achieved an average score of 0.92 (first cycle) and 1.07 (second cycle) within a scale from -2 to +2 in the most recent survey. Another survey question about the recommendation of the programme to future students gave results of 2.78 (first cycle) and 3.58 (second cycle) within a scale of 1 (worst) to 5 (best). Satisfaction with the study modules lay between 1.02 (first cycle) and 1.40 (second cycle), again within a scale from -2 to +2.

(2) Expert judgement/indicator analysis

Generally, surveys among students tend to show moderately positive results, since there is a bias in terms of being 'kind' to people we know personally, so that giving bad or even negative marks is shunned. Keeping that in mind, for being 'good' a result must be significantly better than the scale average. The scales achieved in the surveys lie around 1 on a scale from -2 to +2 (current satisfaction) and around 3 on a scale between 1 and 5 (recommendation). The current satisfaction is thus clearly good, whereas the willingness to recommend the courses to others is average. Since the recommendation question does not deal with evaluating individual people, one can assume that the 'friendliness bias' is not so strong here. Furthermore, students tend to appreciate the value of their competences more towards the end and after the completion of their courses, which also shows in the improvement of that indicator from the first to the second cycle. Overall, this result is thus also satisfying; considered realistically, it is questionable whether there is actually much room for improvement.

Recommendations for this evaluation area:

No specific recommendation.

IV. RECOMMENDATIONS

1. *The quality assessment procedure during the preparation of the final theses (both bachelor and master) should be strengthened. Attention should be paid on the quality of the final paper (content, form and representation, and the use of peer-reviewed literature sources). During the preparation of the master final thesis the scientific value of the research is to be assured, and more attention should be paid to the analysis of the research results.*

2. *It is advised to keep all the programme subjects descriptions up-to-date, since in some of them (e.g. Engineering Graphics, Introductions to Vehicle Engineering, Automatic Control Fundamentals, Traction Theory of Railway Rolling Stocks, Semester Project) this does not appear to be the case.*

3. *The reversal of the order of the modules of Applied thermodynamics and fluid mechanics and Engines of Vehicles may lead to better performance of the study programmes.*

4. *Explore the possibilities of international cooperation that would offer the students more opportunities for international exchange and to expand directions for Erasmus+ exchange.*

5. *The role of research methods should be emphasized more in the 1st cycle programme.*

6. Some additional advertising activities for attracting possible candidates for the programme and for international mobility may be useful.

7. The faculty should provide statistical data about drop-outs and other success parameters of its students in the coming reports; they would help to assess the effectiveness of implemented processes, real situations and trends.

8. *It is recommended to develop a special programme for inviting leading researchers and professors, guest specialists from business, also from abroad, to fill part time consulting positions and enhance the competencies of KTU staff and research.*

9. *For methodological material, the faculty use e-mail or Moodle environments.*
The panel recommends focusing on one platform for central information because, according to general experience, one information channel is usually preferable as to the consistence of information.

V. SUMMARY

The experts perceived the University as a solid institution with solid programmes.

The aims and outcomes of the Bachelor and Master Vehicle Engineering study programmes are in conformity with the needs of the society and the labour market and are solidly reflected in the programmes' details. Most Bachelor and Master final theses are also of good quality. Bachelor topics are up-to-date, some of them correlate with extracurricular activities of students and stakeholders. There is a solid scope of work and engineering calculations using relevant software. The topics of the Master theses also correlate with students' work activities and stakeholders' interests. The quality control of the final thesis preparation process should be further improved to entirely eliminate the already small number of irrelevant papers.

In some cases rearrangements of the programme subjects might lead to even better performance of the study programmes. It is therefore recommended to keep close track of all the programme subjects' descriptions.

The research output of the Faculty is significant and there is strong cooperation with industry companies and experts in the field. The perceived uneven distribution of research among staff suggests a process of build-up. There may be room for improvement in the future.
The methods of student involvement in scientific activities are adequate, but the number of students involved is not high enough yet.
It is noticeable that the percentage of foreign students, especially for the second cycle, has increased considerably in the past three years. On the other hand, the number of applicants for international mobility is still low.

Lectures take place at two campuses in different parts of the city. This complicates the study process for first year students and some teachers.
On the positive side, the laboratories are rich in modern hardware and software equipment. The Faculty has a budget dedicated for research and R&D projects. The planning and upgrading of resources for carrying out field studies is on the right way. In general, resources are well-developed and in the near future will be more suitable for encouraging creativity of the students and helping them to acquire practical skills.

There is good cooperation with social partners; they actively support practice placements. There is a particularly deep and long-term cooperation with the Lithuanian Railways. Being in touch with graduates, especially with the international ones, is a good practice example.

Students' current satisfaction is good, whereas the willingness to recommend the courses to others is just average. Students tend to appreciate the value of their competences more towards the end and after the completion of their courses, which also shows in the improvement of that indicator from the first to the second cycle. Overall, this result is satisfying.
The qualifications of the academic staff are on a good level and comply with the requirements for the implementation of the programmes, and it enables the achievement of the aims and

learning outcomes of the study programs and the relevant study courses. But for enhancing internalization it is necessary to develop and launch special programmes for inviting leading researchers and professors, as well as guest specialists from business also from abroad.

The quality processes the faculty uses are generally well-developed and are suitable for achieving the intended learning outcomes. The feedback loops involving students' opinions appear to work well. However, the faculty should provide more detailed statistical data in the coming reports; they would help to assess the effectiveness of implemented processes, real situations and trends. It is also recommended to include drop-out analyses into the next report.

Expert panel signatures:

1. **Prof. Dr.-Ing. Haldor E. Jochim,** *(panel chairperson),*
2. **Prof., Dr.Sc.Eng. Irina Jackiva (Yatskiv),** *academic,*
3. **Assoc. Prof. Dr. Vasilij Djačkov,** *academic,*
4. **Mr Edmund Lisovski,** *representative of social partners'*
5. **Ms Irina Duma,** *students' representative*.