CENTER FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

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EVALUATION REPORT

STUDY FIELD

MECHANICAL ENGINEERING

At University of Applied Engineering Sciences in Kaunas

Expert panel:

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2. **Prof. dr. Jasmina Casals-Terré,** *academic,*
3. **Prof. dr. Bojan Dolšak,** *academic,*
4. **Dr. Vaidas Liesionis,** *representative of social partners'*
5. **Ms. Erika Tichanovič**, *students' representative.*

Evaluation coordinator – *Ms. Evelina Keturakytė*

Report language – English

Vilnius

2021

Study Field Data*

Title of the study programme	***Material Processing Engineering***
State code	6531EX006
Type of studies	Higher education college studies
Cycle of studies	First
Mode of study and duration (in years)	Full-time (3 years) Part-time (4 years)
Credit volume	180
Qualification degree and (or) professional qualification	Professional Bachelor's Degree in Engineering Sciences
Language of instruction	Lithuanian
Minimum education required	Secondary education
Registration date of the study programme	28-06-2008

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

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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 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 review team 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 team on *December 2, 2020.* Due to the coronavirus pandemic, the Review Visit was organised online using video-conferencing tool (Zoom).

1. **Prof. dr. Oluremi Ayotunde Olatunbosun**, *Honorary Senior Fellow in the Department of Mechanical Engineering at the University of Birmingham, UK.*
2. **Prof. dr. Jasmina Casals-Terré,** *Associate Professor (Accredited as FULL PROFESSOR by AQU), Department* of *Mechanical Engineering, Universitat Politècnica de Catalunya (UPCBarcelonaTech, Spain*
3. **Prof. dr. Bojan Dolšak,** *Dean of the Faculty of Mechanical Engineering, University of Maribor, Slovenia.*
4. **Dr. Vaidas Liesionis,** *LT AB Astra general Manager, Lithuania.*
5. Ms**. Erika Tichanovič,** *student of Vilnius University of Applied Sciences.*

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 and during the site-visit:

No.	Name of the document
1.	Study subjects descriptors in English
2.	Statistics on Mechanical Engineering field studies students dropout and causes in year of 2017–2020

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

Kauno technikos kolegija / University of Applied Engineering Sciences in Kaunas (hereafter referred to as the KTK) is a higher education institution having 100 years old traditions, that has lived through 4 stages of development: 1920–1945 Higher Technical School; 1945–1990 – Kaunas Polytechnic; 1990–2002 – Higher Technical School; since 2002 – University of Applied Engineering Sciences in Kaunas.

KTK is an educational institution providing public services, training specialists in the field of technical engineering, awarding a Professional Bachelor's degree in engineering sciences in accordance with Level VI corresponding to the Lithuanian Qualifications Framework. KTK is a leader in training engineering field specialists in the area of technological sciences, in line with the present mission of KTK – to provide engineering competences for the well-being of a smart society.

Since September 1, 2009, a unique study programme "Materials Processing Engineering" (the only one in the region) has been implemented at KTK, designed to train high-level mechanical engineers who could adapt to a society based on innovative technologies through continuous professional development.

The first cycle Professional Bachelor's study programme *Materials Processing Engineering* (state code – 6531EX006) (hereafter referred to as the study programme) was evaluated five years ago. The study programme has been reorganized taking into account the laws of the Republic of Lithuania and expert recommendations: learning outcomes have been revised and updated and the latest research results have been systematically integrated into the study content.

The self-evaluation report (hereafter - SER) for the present evaluation was carried out by a self-evaluation team appointed by the order of the Director. The self-evaluation group consisted of the one professor, two teachers, one student and one social partner and was headed by the Head of the SER group.

II. GENERAL ASSESSMENT

Mechanical Engineering study field and **first cycle** at University of Applied Engineering Sciences in Kaunas 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	3
2.	Links between science (art) and study activities	3
3.	Student admission and support	4
4.	Studying, student performance and graduate employment	4
5.	Teaching staff	3
6.	Learning facilities and resources	4
7.	Study quality management and publicity	4
	Total:	**25**

*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 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

The aim of the study programme is to prepare competent experts and practitioners of high-tech control and production equipment operation and maintenance, who are able to professionally apply material processing methods, analyse and evaluate technological processes. Such specialists are in high demand in Lithuania, Europe and all over the world. The growing industrial production capacity of the Lithuanian economy will continue to increase the need for material processing engineering specialists. The learning outcomes of this study programme are designed to train specialists with the following capabilities: production of new parts and organization of technological processes for assembling machines; selection of standard technological equipment, robots and design of non-standard equipment; production technology management; production technology management using modern computer technologies; production processes and production equipment and computer modelling. After assessing the market trends, business needs and the curriculum of the study programme, "Invest Lithuania" awarded the study programme with the Investors' Spotlight quality label, confirming that the study programme and its graduates meet the expectations of the market, business enterprises and non-profit organizations.

(2) Expert judgement/indicator analysis

Materials processing engineers are in high demand to meet the expanding need of Lithuanian industries for specialists in this field and the study programme and its graduates have been certified by the social partners as meeting the needs of 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

KTK's strategy focuses on quality improvement and the consistent changes needed to ensure quality in the implementation of its mission "engineering competences for the benefit of a smart society". The aim and learning outcomes of the study programme are designed to produce graduates who would be able to contribute to the implementation of the smart society aims. By monitoring changes in the needs of the labour market the learning outcomes are adjusted to meet changes in the desired competences of specialists, thus ensuring the implementation of the KTK's main strategic aim "to be a leader in engineering studies in the Baltic region, actively sharing knowledge and contributing to the advanced development of society and industry".

(2) Expert judgement/indicator analysis

The field and cycle study programme aims and outcomes conform with the mission, objectives and strategy of the KTK.

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

(1) Factual situation

The design of the study programme meets the requirements of *Description of Study Cycles* (Order No. V-1012 of the Minister of Education and Science of the Republic of Lithuania, 2015), *General Requirements for the Conduction of Studies* (Order No. V-1168 of the Minister of Education and Science of the Republic of Lithuania, 2015), and the *Descriptor of the Study Field of Engineering* (Order No. V-964 of the Minister of Education and Science of the Republic of Lithuania, 2016).

The scope of the study programme is 180 credits taken over 6 semesters (30 ECTS each) for full-time studies or 8 semesters (21-24 ECTS each) for part-time study. Credits for subjects of the study field amount to 141 ECTS and credits for subjects (practices) for deeper specialization in the study field amount to 15 ECTS. The academic workload of a full-time student's semester is 30 credits (800 academic hours), of which on average about 60% is devoted to contact work and about 40% - to student's individual work. For part-time studies the proportion for contact and individual work is on average 35% and 65%. The study plan is constantly under review and any changes made are compliant with the Order of the Minister of Education and Science of the Republic of Lithuania "On the Approval of the Descriptor of General Requirements for the Provision of Studies."

(2) Expert judgement/indicator analysis

The field and cycle study programme complies with legal requirements.

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 learning outcomes of individual subjects are linked with the learning outcomes of the study programme. A variety of teaching/learning methods are employed to deliver the outcomes including lectures, practical work, design, team projects, individual assignments, presentations etc. Appropriate assessment methods (coursework, presentations, exams) are selected so that achievement of the learning outcomes can be monitored in a systematic manner. The student's learning outcomes (knowledge, understanding, abilities) are evaluated using a ten-point criterion evaluation scale as approved by the Minister of Education and Science of the Republic of Lithuania by the order No. ISAK-2194. A system of cumulative assessment is used with different outcomes assessed cumulatively. The final grade consists of mid-term and examination grades.

(2) Expert judgement/indicator analysis

Teaching/learning and assessment methods used in delivering the subjects are appropriate to achieve the study programme aim and 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

The recommendations of the last expert review of the study programme regarding the learning outcomes (hereafter – LO) have been implemented. The study programme learning outcomes have been developed in accordance with the Descriptor of the Study Field of Engineering approved by the Minister of Education and Science of the Republic of Lithuania

(September 10, 2015 Order No. V-964) and complies with the European accreditation standard for engineering study programmes (European Accredited Engineer (EUR-ACE)), as well as other applicable legal acts. The study programme subjects are arranged in such a way that the content of the study subjects fulfils the study programme learning outcomes and the study subjects are arranged in a sequence such that the competences are developed in a logical manner and subsequent study subjects are based on the learning outcomes achieved in the previous study subjects. The matrix of relations between the study programme outcomes and subject outcomes is presented in Annex 6 (SER) and it shows how the envisaged competences are developed in individual subjects. However, some LOs: (B2 - Be able to apply knowledge and understanding for the analysis of engineering problems and to select proper methods, experimental, laboratory and manufacturing equipment for their solution; B3 - Be able to apply analytical and simulation methods for solving mechanical engineering study area engineering problems.) are missing from the matrix whereas they are listed as LOs for Material Processing Software Systems and Final Thesis. The matrix should be reviewed.

(2) Expert judgement/indicator analysis

A variety of teaching and learning methods as well as compatible assessment methods are used to deliver the aims and learning outcomes of the study programme. A revision of the individual subject LOs and the matrix is recommended to harmonise the study programme LOs with the study subject LOs.

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

Students have the opportunity to personalise their studies by choosing specializations, electives and optional subjects at KTK, by studying on an individual schedule, or by choosing part-time studies. They could also study some optional subjects at another higher education institution. The study programme offers 2 specializations of which students must choose one. Optional subjects can be chosen from the general KTK subjects such as language courses. For the development of practical skills, students can choose internships or voluntary internships in companies. Students also have the opportunity to study abroad under the Erasmus+ programme. Studies according to an individual schedule are provided to advanced full-time students on application to the Dean of the faculty. Full-time and part-time students have the opportunity to study remotely using Microsoft Teams, Moodle, and other Office 365 tools. KTK students with the highest academic results can take advantage of a unique agreement concluded with Kaunas University of Technology for joint studies.

(2) Expert judgement/indicator analysis

Students have plenty of scope to personalise the structure of mechanical engineering field studies to suit their personal goals and intended learning outcomes.

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

(1) Factual situation

Preliminary topics of final theses are discussed at the meeting of the Study Programme Committee and presented to students in the autumn semester of the last study year. Students have the opportunity to choose a topic and a thesis supervisor. The social partners are actively involved in students' final theses by organizing internships related to the problematic issues within their companies which become topics for the student's final theses. During the period of 2017 - 2019, the social partners did not place orders for final theses, as students

performed specific tasks during the final internship in companies, which were integrated into the final theses in the design part. Therefore, in the future, the social partners will be encouraged to submit delegated tasks to students as outsourced final thesis. Final theses are assessed by a committee consisting of at least three external specialists in the field of study of the study programme. The SER highlighted that the final theses topics are relevant to the companies and that in 2018–2019 lecturers from foreign higher education institutions reviewed two final theses each year. Most of the final theses were found to be focused on design of manufacturing processes for repair of machine parts which reflect practical application in real production but they were standard application of common manufacturing processes and lacked innovation.

(2) Expert judgement/indicator analysis

The final theses are focused on practical applications in real production and help to solve real problems of the social partners. However, most were standard application of common manufacturing processes and were lacking in innovative ideas.

Recommendations for this evaluation area:

1. *Review the matrix of learning outcomes to harmonise the study programme learning outcomes with the study subject learning outcomes.*
2. *While it is good that most of the final theses are focused on solving real problems of social partners, students should be encouraged to go beyond standard application of common manufacturing processes to include innovative materials and processes.*

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 applied research and experimental development activities carried out by the study programme teachers are directly related to the implemented study programme, and their results are used in the preparation and updating of the study programme subjects, involving students in activities, and improving the qualification of teachers. One such research is titled "Student-Oriented Study Culture". This is more of a social science research rather than engineering research but is good for improving the study process and ensuring the quality of student-centred studies. Another listed activity is the programme "Metalworking Machine Worker" in which continuous (152 hours) practical and theoretical professional training is provided for industry workers. The applied research activities of the KTK take place in cooperation with academic, social and business partners. The study programme lecturers advised companies in making technical-technological decisions. Teachers share their experience by conducting courses and trainings. Two teachers of the study programme worked as experts in the Lithuanian Engineering Industry Association LINPRA and in the Lithuanian Society of Engineering Graphics and Geometry LIGGD project "Development of Interactive and Animated Drawing Teaching Aids". Three teachers worked as teachers / experts in the International Nord + project "Education based and mutual cooperation". Most of these activities can be classified as consultancy and provision of additional competences and qualification improvement rather than scientific research. They can also contribute to the improvement of teaching of the study programme's study subjects. According to the planned programme of applied research and experimental development of the KTK in 2018–2021, the

study programme plans to conduct research on the following topics: efficiency of modern materials processing technologies; training of specialists and their need; education, study quality assurance and evaluation. In the list of significant works produced by teachers of the study programme, most of the publications were presented at the annual conference "Engineering and Educational Technologies" which is organised by KTK. None of the publications is in an international scientific journal. It would also appear that some of the published papers are from students' bachelor theses (e.g. "Metal Lathe Ways Restoration Using Metallization process"). Students are encouraged to present their bachelor theses in the periodical "Best Student Research Papers: Design Solutions".

(2) Expert judgement/indicator analysis

A large proportion of the activities of the teachers of the mechanical engineering field studies can be classified as consultancy and provision of additional competences and qualification improvement. Most of the publications of the study programme teachers are related to pedagogy and are published in the KTK annual conference "Engineering and Educational Technologies". However, the level of scientific and applied research is low, with no publications in international scientific journals. It appears that the main activity is related to the final bachelor theses of the students which are mainly design projects related to the manufacture or repair of machine parts. More challenging projects involving new technologies to improve industrial processes could be developed with the social partners.

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

(1) Factual situation

KTK organizes events such as: scientific conferences "Engineering and educational technologies", Engineering applied research forums or other similar events where scientists as well as representatives of companies such as the Lithuanian Engineering Industry Association LINPRA, Lithuanian Confederation of Industrialists participate. Teachers may learn about scientific and technological innovations at these events and incorporate them into the content of the subject taught and passed on to students during lectures. Excursions and visits to companies are organised during which students can observe the latest technologies deployed by Lithuanian companies. Integrated lectures are also organised at which representatives of Lithuanian and foreign countries from companies and scientific institutions give lectures and share experiences.

(2) Expert judgement/indicator analysis

None of the research being carried out by the mechanical engineering field studies teachers can be classified as latest developments in science or applied science. Most of the research is oriented towards pedagogy and may help in improving the quality of teaching and learning. The visits to industry and integrated lectures also give the students opportunities to hear about and observe some of the latest technologies 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

Students, under the guidance of teachers, are encouraged to participate in various scientific events, such as scientific-practical conferences. Most of the students' theses involve solving technical problems for companies. The best of them are published in the journal "The Best Student Research Papers: Design Solutions". Two students of the study programme together with teachers participated in research on issues related to the specialty and presented the

obtained results in two republic scientific-practical conferences. One student gave a presentation (in English) at the international student conference "Youth in a Changing Society" 2019. This comprises 4 percent from all students studying at the study programme. From 2018 the study programme started organising an international Competition "The Best Materials Processing Engineer" for students of foreign scientific institutions, colleges and universities of the Republic of Lithuania, students of vocational schools studying materials processing or similar engineering study programmes. This competition is supported by the KTK, social partners and the KTK Alumni Association.

(2) Expert judgement/indicator analysis
Students of the mechanical engineering field studies have the opportunity to present work from their final theses at the international conference "The Best Materials Processing Engineer" organised by the KTK. This gives them the opportunity to showcase their work to an international audience of their peers and also learn from others.

Recommendations for this evaluation area:
1. *Teachers of the mechanical engineering field studies should ensure that the students' final theses are not simply design of manufacturing processes of industrial machinery but also include rigorous application of innovative technology.*
2. *Teachers of the mechanical engineering field studies should initiate research projects with the social partners to apply new technologies to improve industrial processes.*
3. *Teachers of the mechanical engineering field studies should collaborate with social partners to apply for national research grants and try to publish in international scientific journals even if they are not the top journals.*

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
Admission to the study programme is through the Centralised Admissions Information System (LAMA BPO). The study plan of the study programme is available on the university website. There is a link to the LAMA BPO portal from the university website. The report of the last expert evaluation of the study programme is also available on the website. The study programme is also publicised through promotional materials, KTK Facebook profile, KTK Instagram profile, articles about the KTK, etc. The study programme is also promoted by participating in events: national and international study fairs, exhibitions, science popularization festivals, "Career Days", the KTK students and staff visits to schools, gymnasiums, vocational schools, organizing education activities for pupils, excursions to the KTK or companies of potential employers. The number of admitted students peaked in 2018 at 33 but has dropped back to 21 in 2019 and 10 in 2020.

(2) Expert judgement/indicator analysis
There is some information about the mechanical engineering field studies on the university website to stimulate the interest of prospective students (but no LOs) and a link is provided to the LAMA BPO website for student selection and admission criteria and process. Publicity is also done through Facebook, Instagram and publications. The mechanical engineering field studies are being publicised through social media, school visits, open days etc.

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

KTK evaluates and recognizes the competences acquired by individuals according to the established procedure, following the general principles of accessibility, flexibility, transparency and objectivity, comparability, voluntariness. Learning achievements and competencies for the study programme are assessed using various methods of assessment of theoretical knowledge and practical skills: interview, assessment of competence portfolio, testing, practical tasks, etc. The Procedure for Recognition of Learning Outcomes (formal recognition) is applied to persons who have graduated, studied or are studying in other Lithuanian or foreign higher education institutions, according to higher education study programmes, as well as to persons who have studied at the KTK and wish to continue their studies in the KTK in the same or another study programme. These procedures have been successfully applied in a number of cases in recent years to both part-time and full-time students. During the three years that are analysed, the competences of five students were evaluated and recognized. Three students out of five took the opportunity to recognize a maximum of 75 % of the study field (branch) subjects of the study programme. The submitted documents and demonstrated knowledge complied with the procedure approved by the KTK. The results in all cases were recognized. An appeals procedure is in place for persons seeking recognition of non-formal and informal learning competences if they are not satisfied with decisions taken. No appeals were recorded during this period. The study programme attracted 18 part-time students from other institutions in 2018 to 2020 as well as 2 full-time students who had their qualifications recognised.

(2) Expert judgement/indicator analysis

The procedure for recognition of foreign qualifications, partial studies and prior non-formal and informal learning is well established and fair. It provides good conditions to attract international students to the mechanical engineering field studies.

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

(1) Factual situation

Information on mobility opportunities is published on the KTK website, on information boards, during career events, by organizing meetings with students in individual study programmes or consultation with the International Relations Coordinator. Student mobility is promoted by organising information seminars every semester, during which students are introduced to the requirements of the Erasmus+ programme and students who have studied and/or completed their internships share their personal experience. The numbers of outgoing students in 2017, 2018 and 2019 were 2 (4.2%), 3 (6,25%) and 3 (6.9%) respectively. In 2018 there were 2 incoming students from Ukraine for full-time studies representing 4.6% of students of the study programme. Also in 2019 and 2020, one student each came for part-time studies. Reasons for insufficient study mobility include low number of companies meeting the specifics of the study programme, difficult compatibility of study subjects with the programmes of foreign higher education institutions and students' reluctance to leave Lithuania because they do not want to lose their job. The low level of incoming students is due to insufficient publicity of the study programme in the EU and outside it at the first cycle of non-university studies, and the complicated procedure of admission to Lithuanian higher education institutions for non-EU citizens.

(2) Expert judgement/indicator analysis

Academic mobility of students is actively encouraged and opportunities are widely publicised. However, participation rate is quite low for various reasons such as students having jobs. Further incentives should be given to encourage students to participate in international mobility programmes. Publicity for the mechanical engineering field studies should be increased by improving the English version of the website to give comprehensive information on the study programme and raising its international profile.

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

KTK awards incentive scholarships of the following types and sizes are awarded to students: basic - 70 Euros, faculty - 130 Euros, KTK - 200 Euros. Scholarships are awarded based on the student's study results or other academic achievements by the order of the director, following the provision of the study organization office. During the period of 2015–2019, 18 study programme students were awarded nominal bonuses or practice scholarships for 2480 euros on the basis of cooperation agreements with companies. One-off social benefit – up to 200 euros can be awarded to students in difficult financial situation on the proposal of the dean of the faculty, according to the students' requests and submitted documents. Scholarships can be awarded for achievement in sports, cultural or social activities, or for representing KTK in events or participating in international projects, conferences etc. Each new student is assigned a teacher-mentor and student-mentor to help them adjust to the study environment. Students can also receive psychological support during the subjects taught (social psychology, teamwork, business ethics), in consultation mode.

(2) Expert judgement/indicator analysis

Sufficient financial, academic, social and psychological support is available to mechanical engineering field studies students of KTK.

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

(1) Factual situation

Information about the study programme and other relevant information are available on the KTK website www.ktk.lt. Also, relevant information can be seen by entering the KTK on the information screen in the main hall. Each first-year student receives a publication "First-year memo" which gives comprehensive information needed by the student (also available at http://ktk.edupage.org). According to the KTK Mentoring Program, course and group mentors are appointed to share information and help students with their difficulties. Information on student consultation with staff is also provided.

(2) Expert judgement/indicator analysis

A system is in place to provide sufficient study information and counselling to students of the mechanical engineering field studies.

Recommendations for this evaluation area:

Publicity for the mechanical engineering field studies should be increased by improving the English version of the website to give comprehensive information on the study programme and raising its international profile to attract more international students.

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 aims of the study subjects are achieved by a combination of classical and modern teaching/learning methods. The study methods used to achieve the learning outcomes of the subjects are provided in subject descriptions given to students. Active teaching learning methods employed include group work, individual project, study trips, problem-based teaching, problem solving, interactive lecture, reflective teaching, case study, etc. Each study subject is organized in such a way that theoretical knowledge acquired by the student in lectures is consolidated through practical classes and individual work. Individual work comprises about 40% of the hours of study for full-time students (65% for part-time students) in most subjects and up to 100% in professional activity practice and final thesis. After graduation graduates may continue their studies at universities, choosing bridge courses and studies for master's degree. The KTK and Kaunas University of Technology (KTU) in 2018, being the first in Lithuania, without establishing a new legal entity, concluded a cooperation agreement (agreement No. SV5 - 308), which will shorten the study duration for the most talented KTK students wishing to study for a master's degree. This opportunity appears by creating conditions for the KTK students to listen to the subjects at KTU during their studies. This is a unique opportunity for the KTK students.

(2) Expert judgement/indicator analysis

Mechanical engineering field studies students are provided with the study subject descriptions which detail the intended learning outcomes and the schedule of lectures, labs and individual work. A variety of teaching and assessment methods are adopted in delivering the study programme which encourage students to be active participants in the study programme and are appropriate to achieve the intended learning outcomes. There is enough provision for individual work which contributes to the achievement of the intended learning outcomes.

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

(1) Factual situation

Students with special needs can receive targeted benefit by completing the necessary application. Financial support includes social scholarships, state-supported loans, study scholarships, etc. In 2018, two students (one full-time and one part-time) were exempt from the tuition fee in the autumn semester and two part-time students who came from Ukraine (war zone) were exempt from the tuition fee for the academic year. The number of students with special needs is not large, due to the specifics of the study programme. Distance learning / learning methods are applied to students with special needs.

KTK participated in the State Studies Foundation project for students with disabilities "Increasing the Accessibility of Studies". For students with mobility impairments, the KTK has a special staircase and a table accessible by wheelchair. There are 3 workplaces for students with disabilities in the lecture hall. The dormitory has a special wheelchair access and a room for a disabled person.

(2) Expert judgement/indicator analysis

KTK has made considerable effort to ensure that socially vulnerable groups and students with special needs have access to study at the KTK. Financial help is available to students with special needs. Facilities are provided for the disabled such as access to buildings, toilet facilities, library facilities etc. Students with special needs can also individualise the study process to suit their needs.

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

Study results are stored in the Academic Information System (AIS). In this system, students can register for the semester, monitor their results, choose optional subjects, specializations, see contributions, study plan and its implementation. Students' progress is constantly monitored during their studies by the Study Organization Office. The academic progress indicators of full-time students are recorded in two stages: the interim assessments at the 8-9 week of each semester and at the end of the session. Students are ranked at the end of the session for the award of state funding based on their academic results. Drop-out of students is closely monitored and specific academic, financial and other support are given to enable students continue their studies. When necessary, the following support measures are provided: academic (for insufficient basic competencies); introduction to studies (introduction to the KTK, study programme, organization of studies, documents regulating studies, databases, library, etc.); mentoring programme (for successful social adaptation and integration into the KTK community); individual conversations (psychological), solving personal problems of student adaptation.

Detailed, comprehensive statistics on academic progress data is reflected in the KTK annual activity reports, where the information on the average performance of academic groups, the dynamics of progress, and the students who achieved the best academic results is presented.

(2) Expert judgement/indicator analysis

Students' study progress is closely monitored using the Academic Information System. Students are able to monitor their own progress and the Study Organisation Office can raise concerns to enable support to be offered.

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

Students can monitor their intermediate assessment results, obtained during the semester, in the Academic Information System (AIS), and therefore can self-assess their competencies in order to plan further learning. Feedback between the student and the teacher takes place during consultations, discussions after reports, presentations, individual work, and individual consultations. Timely feedback ensures the assimilation of knowledge, and gives motivation to improve the level of achievement.

(2) Expert judgement/indicator analysis

The AIS provides a platform for students to monitor their study progress in order to plan their study for improvement of performance where necessary.

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

(1) Factual situation

Graduates of the study programme are employed in the public and private sectors without major barriers and many of them find work during their studies or practice. Employment surveys of the study programme graduates are conducted every year, at least 6 months and 12 months after graduation. Primary data are collected using the questionnaire survey method and secondary data – using the structured telephone survey. Information on the employment of graduates is published by the Government Strategic Analysis Centre STRATA. Data on the employment of graduates of the study programme is presented in Table 5 of the SER. It is noted that a high proportion of graduates are in high calibre employment or self-employment. Almost all graduates are employed so the graduates are in high demand. Graduates and employers are also surveyed about how well the competences acquired in the study programme satisfy the need of the job market. The graduates felt their competences satisfied the needs of the job market. They employers revealed that KTK graduates are responsible and organized, but show little initiative for further development that is necessary in modern industry. They also pointed out that in today's labour market, knowledge of metal processing is no longer sufficient, it is necessary to know the specifics of processing other materials, such as plastics.

(2) Expert judgement/indicator analysis

The mechanical engineering field studies tracks the career of graduates by conducting surveys 6 and 12 months after graduation and through government statistics on graduate employment. Employability of graduates of the mechanical engineering field studies is virtually 100%. However, survey of employers reveal that the graduates show little initiative for further development that is necessary in modern industry. They also mentioned that knowledge of processing of non-metallic materials is needed in modern day industry. This suggests that processing of non-metallic materials e.g. plastic should be introduced in the curriculum.

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

(1) Factual situation

KTK has a Code of Academic Ethics which students and teachers must comply with. It provides for liability for violation of the principle of fair competition, copying, plagiarism or any other form of academic dishonesty related to the assessment of learning outcomes. Complaints about violation of ethics are dealt with by the Professional Ethics Committee according to the "KTK Procedures for the Submission and Handling of Complaints Regarding Ethics Violations". No violations were reported during the period 2016–2019.

(2) Expert judgement/indicator analysis

Policies to ensure academic integrity are well defined in the KTK Code of Academic Ethics and the processes put in place for enforcing the codes of ethics are transparent.

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

Students who are dissatisfied with their academic results may appeal in accordance with the "KTK Procedures for the submission and handling of complaints regarding ethical violations".

The procedure applies equally to full-time and part-time students. No appeal was raised in the period 2016–2019.

(2) Expert judgement/indicator analysis
The appeal and complaints procedures regarding the study process are well defined and transparent.

Recommendations for this evaluation area:
1. *Employers reveal that the graduates show little initiative for further development that is necessary in modern industry. The learning outcome related to lifelong learning should be emphasised.*
2. *Processing of non-metallic materials e.g. plastic should be introduced into the curriculum.*

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 SER Annex 7, there are 22 teachers associated with the study programme, 18 of whom teach the study field subjects, which constitutes 5.07 full-time positions. 7 (31%) teachers have a doctoral degree, 11 (50%) have a master's degree, the remaining 4 (19%) have a degree equivalent to a master's degree; 8 (36%) teachers have pedagogic qualification; 12 lecturers have at least 3 years of practical work experience in the field of the taught subject. All teachers teaching in the study programme have experience in pedagogical work. All teachers of the study programme have worked for at least 3 years and hold at least 0.5 full-time position. Out of all mechanical engineering study field subject teachers, 12 teachers have at least 3 years of practical work experience in the field of the taught subject, 6 teachers hold at least 0.5 full-time position. This meets the legal requirements for teachers of the study programme.

Currently, 25 full-time students and 49 part-time students study in the study programme. The ratio of the number of teachers of the field study subjects and the number of students studying in the study programme is 11.6, which is calculated according to the "Methodology for Evaluation of Actual Resources of a Higher Education Institution" approved of the Minister of Education and Science of the Republic of Lithuania. This ratio complies with the requirements of study conditions and quality of organization established in the methodology.

Taking into account the remarks of the previous period, two specialists from companies were invited to teach subjects of the mechanical engineering study field. Also, a young promising specialist from industry replaced a retiring teacher. 3 new teachers with practical work experience in manufacturing companies have joined the study programme. Teachers from abroad are also invited to teach, for example, lecturers from Riga Technical College and Riga Technical University were invited in the last two years. The new teachers shared their experience in updating the content of the taught subject, supplemented the teaching/learning material on advanced engineering technologies, and shared their experience in applying new teaching/learning methods. Middle aged teachers are still dominant among the teachers. Most of the lecturers are proficient in Russian, 32% in English and 18% in German.

(2) Expert judgement/indicator analysis

The teachers of the mechanical engineering field studies meet all legal requirements. Some new lecturers have joined the mechanical engineering field studies from industry since the last review and experiences of pedagogy and practical skills have been shared. Proficiency in English has improved among the lecturers but there is a need for further improvement.

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

Academic mobility of teachers is ensured by enabling participation in various international activities, exchange programmes and projects, in accordance with the procedure for the implementation of the Erasmus+ programme for the mobility of students and staff of higher education institutions. Teacher mobility also takes place through participation in various projects. Three teachers of the study programme participated in the International Nord+ Junior 2015 project "Education based and mutual cooperation" No. NPJR02015/102648, which ended in 2017. Teacher mobility stimulates the development of personal and subject competences, expands intercultural understanding and inter-institutional cooperation. According to SER Table 6 there were 18 outgoing and 14 incoming mobilities in the last 3 years, an increase from 18% to 45% for study programme teachers involved in mobility programmes.

(2) Expert judgement/indicator analysis

Teachers are encouraged to participate in international mobility and the participation rate of teachers of the mechanical engineering field studies has increased to 45% in the last 3 years. There has also been an increase in incoming teachers with 14 incoming mobilities in the last 3 years. This is encouraging but can be improved on.

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

(1) Factual situation

Practical – subject-based experience is gained by participating in internships and carrying out consulting activities with social partners. Teachers prepared sets of teaching/learning material or a published textbook which is equated to the development of qualification. Seminars are organised for the dissemination of good practice, sharing experience in the study programme meetings, preparing methodological material and surveys. Teachers of the study programme also carry out applied research activities related to the implemented study programme, the results of which are used for updating study subjects. During the evaluated period, 20 teachers of the study programme (90%) improved their qualification, mostly in subject, pedagogical and scientific fields.

(2) Expert judgement/indicator analysis

Opportunities are provided for teaching staff to participate in various activities (internships, consultancy, publication of teaching/learning materials, attending professional development courses etc.) to improve their competences. Most teachers are taking advantage of these opportunities.

Recommendations for this evaluation area:

Teachers of the mechanical engineering field studies should be encouraged to improve their proficiency in English language and to participate more in international mobility programmes.

3.6. LEARNING FACILIETIES AND RESOURCES

Study field learning facilities and resources shall 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

Classes of the study programme take place in the classrooms installed in the main building of the KTK, in the laboratories and in two hall classrooms installed in the dormitory of the KTK. The main building is equipped with a modern hall classroom and new student leisure and recreation area are installed in the new building. The KTK is equipped with laboratories for physics, information technology, computer aided design, electrical engineering, electronics, hydraulics, automation and simulation of production processes, CNC machine tools. Two laboratories have been renovated: welding and metalwork, which are used by students of the study programme. The KTK participated in the State Studies Foundation project for students with disabilities "Increasing the Accessibility of Studies". For students with mobility impairments, the KTK has a special staircase and a table accessible by wheelchair. There are 3 workplaces for students with disabilities in the lecture hall. The dormitory has a special wheelchair access and a room for a disabled person.

Five practices are included in the study plan of the study programme to achieve the learning outcomes: Training, Measurement, Professional activity, Production technologies and Final. Training practice is performed in the KTK, other practices are performed in other companies that meet the specifics of the study programme. Students can choose companies for their practice from a list of companies with which the KTK has a contract or any company that meets the requirements of the study programme. Measurement, Professional activity, Production technologies and Final practices are performed in companies such as JSC "Mašinų gamykla", JSC "Kauno staklės", JSC "Baltec CNC technologies", JSC "Dirmeta" etc.

Electronic publications can be accessed in the virtual library Virtualioji biblioteka (ktk.lt) and libraries of the Republic of Lithuania (https://ktk.library.lt). KTK teachers and students can use VGTU publishing house electronic book collections (http://www.ebooks.vgtu.lt/). Books and other publications can be read in the library or borrowed at home for a set period of time. KTK subscribes to EBSCO Publishing database, Emerald database, and Taylor & Francis database.

The learning facilities are updated and supplemented with the funds of the KTK and by implementing projects financed by the Lithuanian and European Structural Funds.

(2) Expert judgement/indicator analysis

The lecture rooms, laboratories used for the delivery of mechanical engineering field studies are adequate. The laboratories are supplemented by facilities of social partners for practical training of the students. Adequate accessibility to study facilities is provided for students with special needs through adaptation of premises and facilities. The library resources are also well developed with a wide variety of electronic resources, books and databases. Financial resources for updating the facilities come from KTK funds and funds from implementing projects financed by the Lithuanian and European Structural funds.

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

(1) Factual situation

The planning and updating of the resources required for the mechanical engineering field studies, taking into account the changing needs of students and teachers, is coordinated with the KTK's resource planning strategy. Teachers and students express their needs during interviews and surveys, student representation etc. The head of the study programme submits the need for study programme to the head of the department, who submits the summarized need for all the KTK study programmes to the directorate for consideration. Apart from resources provided by KTK, some social partners have provided resources to upgrade facilities, e.g. JSC "Festo" opened the "FESTO Hydraulic and Pneumatic Systems Laboratory" in 2018, JSC "Baltec CNC Technologies" helped to acquire semi-production equipment in 2017, including CNC lathes and associated equipment and software, 3D multifunction printer with integrated robot manipulator and additional functional accessories. There are further plans to install a technical measurement laboratory by increasing the work spaces in cooperation with social partners.

(2) Expert judgement/indicator analysis

Facilities for delivering the mechanical engineering field studies are being continually upgraded by the KTK administration with the help of social partners, taking into consideration the needs of the students and teachers of the study programme.

Recommendations for this evaluation area: none.

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 main document setting out the principles of internal quality assurance is the Quality Manual, which covers the following areas of study: increasing efficiency of activities, continuous improvement and meeting the needs of stakeholders. The internal quality assurance is performed according to the "KTK Descriptor of the Procedure of Study Programme Management" and the "KTK Methodology of Internal Evaluation of Study Programmes". There is a management structure which delineates the responsibilities of the various entities (Study Programme Committee (SPC), Study Programme Department, Deputy Director for Study and Science and Academic Council) and the relationships between them. The interactions of the SPC with the teacher, students and social partners are also delineated. The following tools are used for the study quality assurance process: reports of teachers, heads of departments, study programme development and improvement procedures, process organization procedures, accountability to the KTK Council, accountability to the Academic Council, monitoring of student achievement, monitoring of graduate career and monitoring of teacher activity. The KTK teachers and students and the social partners are involved in the effective management and improvement of the study programme. Student feedback, teachers' reports and involvement of social partners in the preparation of subject reviews and the defence of final theses provide information for the SPC during the review process. Summarized information of the monitoring is made public under the "KTK Procedures of Survey and Feedback Organization".

(2) Expert judgement/indicator analysis

There is a well-defined process for an internal quality assurance of the mechanical engineering field studies and the summarised information is made public.

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

(1) Factual situation

JSC "Baltec CNC technologies" participates in the activities of the Study Programme Committee (SPC). The comments and suggestions of the representatives of this company are an important contribution to the improvement of mechanical engineering filed studies. Representatives of JSC "Baltec CNC technologies" and JSC "Enerstena" participate in the work of the Study Programme Qualification Commission. Their feedback and remarks about the students' final theses contribute to the quality assurance of the study programme. Student feedback and teachers' reports also provide information used by the SPC for reviewing the study programme and subject contents and learning outcomes. As a result, learning facilities for the Production Process Laboratory were upgraded by JSC "Baltec CNC Technologies" and "JSC FESTO" opened the Laboratory of Hydraulic and Pneumatic Systems.

(2) Expert judgement/indicator analysis

The involvement of the stakeholders has been effective in the internal quality assurance of the mechanical engineering field studies and the planning and upgrading of the facilities.

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

(1) Factual situation

Information on admission requirements is published on the KTK website in the section "For Prospective Students". The aim of the study programme, possible specializations, international and career opportunities, and expert evaluation report are available. A link to AIKOS https://www.aikos.smm.lt – an open information, consultation and guidance system – is also provided. The feedback from employers and an interview with the Director of the KTK are provided in press, television and other media. Open days are also organised together with the JSC "Baltec CNC Technologies" in order to popularize the study programme. The comments made during the discussion of the focus group about the lack of textbooks while studying the subject "Mechatronics and Mechatronic Systems" led to the revision and initiation of the renewal of the library collections.

(2) Expert judgement/indicator analysis

Information on the mechanical engineering field studies is published on the KTK website, providing information for prospective students. Publication of a summary of the previous expert evaluation of the study programme on the website is good. However, the information on the annual review of study programme is not publicly available on the website.

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

The results of the questionnaires, Focus Groups and other surveys are used in the review of the study programme contents and learning outcomes. Following the recommendation of the study programme evaluation by experts in 2015, students were involved in the study

programme self-evaluation report preparation group, the activities of the Study Programme Committee (SPC), and the activities of the Academic Council. Students also take part in focus groups where they are able to express their opinions on the study programme teaching/learning processes and facilities. An example of the use of information on studies is the changes in lecture schedule, examination/consultation schedules as a result of student feedback and their publication on the website https://ktk.edupage.org/. In the interview with students, it was disclosed that the student representative on the SPC was selected by the administration rather than elected by the students.

(2) Expert judgement/indicator analysis

Students' representation on decision making bodies is good practice. However, it appears that the student representative on the SPC is selected by the administration rather than elected by the students.

Recommendations for this evaluation area:

1. *Summarized information of the monitoring of the internal quality assurance system under the "KTK Procedures of Survey and Feedback Organization" should be published on the KTK website.*
2. *Information on the annual review of study programme should be published on the KTK website.*
3. *Student representative on the SPC and other representative bodies should be elected by students.*

IV. RECOMMENDATIONS*

1. Review the matrix of learning outcomes to harmonise the Study Programme Learning Outcomes with the study subject Learning Outcomes.
2. While most of the final theses are focused on solving real problems of social partners, they should extend beyond standard application of common manufacturing processes to include innovative materials and processes.
3. Further incentives should be given to students to increase participation in international mobility programmes.
4. Publicity for the Mechanical Engineering field studies should be increased by improving the English version of the website to give comprehensive information on the study programme to attract more international students.
5. Teachers of the Mechanical Engineering field studies should be encouraged to collaborate with social partners to apply for national research grants to fund research projects on application of new technologies to improve industrial processes.
6. Teachers of the Mechanical Engineering field studies should be encouraged to try to publish in international scientific journals.
7. The Study Programme is currently focused mainly on the processing of metallic materials. Processing of non-metallic materials e.g. plastic should be introduced into the curriculum to reflect modern trends in the industry.
8. Teachers of the Mechanical Engineering field studies should be encouraged to improve their proficiency in English language and to participate more in international mobility programmes.
9. Summarized information of the monitoring of the internal quality assurance system under the "KTK Procedures of Survey and Feedback Organization" should be published on the KTK website.
10. Summarised information on the annual review of the Study Programme should be published on the website.
11. Student representative on the Study Programme Committee (SPC) and other representative bodies should be elected by students rather than appointed by the administration.

*If the study field is going to be given negative evaluation (non-accreditation) instead of RECOMMENDATIONS main **arguments for negative evaluation** (non-accreditation) must be provided together with a **list of "must do" actions** in order to assure that students admitted before study field's non-accreditation will gain knowledge and skills at least on minimum level.

V. SUMMARY

The following is a summary of the findings of the review team based on the Self-Evaluation Report and online interviews with University of Applied Engineering Sciences in Kaunas administration (senior management and faculty administration staff), staff responsible for the preparation of the SER, teaching staff and stakeholders (students, alumni, employers, social partners).

The review team gives a positive evaluation to the implementation of study field Mechanical Engineering and first cycle at the University of Applied Engineering Sciences in Kaunas (hereafter – KTK), with all areas of evaluation assessed as "good" or "very good".

The following are the key strengths of the Mechanical Engineering field studies as assessed by the review team:

- Field and cycle studies provide training in a specialised area of Mechanical Engineering and are unique in Lithuania. Its graduates are in high demand to meet the manpower needs of the rapidly expanding industrial sectors of automotive, aircraft and aerospace, mechanical engineering and construction.
- The Lecturers, Alumni and Social Partners are highly committed and very supportive of the Mechanical Engineering field studies, the KTK and its management. Social partners are very much engaged in helping to develop the Mechanical Engineering field studies and have equipped some laboratories and some of them even give guest lectures in some subjects.
- Teachers of the Mechanical Engineering field studies are highly engaged in improving their qualification, mostly in subject, pedagogical and scientific fields. The annual "Engineering and educational technologies" conference which is organised by KTK is used as an avenue for the teachers to share their pedagogical research with international and local colleagues.
- Quality assurance processes are very good as the responsibilities of the Study Programme Committee (SPC) and Academic Council for the study programme are clearly delineated.
- Students are generally satisfied with the Mechanical Engineering field studies. They think their teachers are good and helpful and respond to their feedback.

The review team would also like to highlight some areas for possible development of the study programme *Material Processing Engineering* (hereafter – study programme) and the Mechanical Engineering field studies, none of which are critical enough for lower grade of evaluation:

- The structure of the study plan is good in that competences are developed in a logical order and the learning outcomes of the study programme conforms to the EUR-ACE framework for accreditation of college studies. However, the learning outcomes matrix should be revised to harmonise the study programme learning outcomes with the study subject learning outcomes.

- While most of the final theses are focused on solving real problems of social partners, they should extend beyond standard application of common manufacturing processes to include innovative materials and processes.
- Teachers of the Mechanical Engineering field studies should be encouraged to collaborate with social partners to apply for national research grants to fund research projects on application of new technologies to improve industrial processes and with a view to publishing in international scientific journals.
- Some employers feel that the study programme is too focused on metal processing whereas non-metal processing (e.g. plastic) is becoming very important in the industry and could be introduced into the curriculum. We note that there is already a consideration to introduce a new specialisation of plastics processing in the future.
- Publicity for the Mechanical Engineering field studies should be increased by improving the English version of the website to give comprehensive information on the study programme to attract more international students.
- Teachers and students of the Mechanical Engineering field studies should be encouraged to improve their proficiency in English language and to participate more in international mobility programmes.

Expert panel signatures:

1. **Prof. dr. Oluremi Ayotunde Olatunbosun (team leader)** *academic,*
2. **Prof. dr. Jasmina Casals-Terré,** *academic,*
3. **Prof. dr. Bojan Dolšak,** *academic,*
4. **Dr. Vaidas Liesionis,** *representative of social partners'*
5. **Ms. Erika Tichanovič**, *students' representative.*