



CENTER FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

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**EVALUATION REPORT**

**STUDY FIELD**

**ELECTRICAL ENGINEERING**

at Kaunas College

**Expert panel:**

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Report language – English

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## Study Field Data\*

Title of the study programme	<b><i>Automation and Robotics</i></b>
State code	<i>6531EX055</i>
Type of studies	College studies
Cycle of studies	First
Mode of study and duration (in years)	Full-time, 3, Part-time, 4
Credit volume	180
Qualification degree and (or) professional qualification	Professional Bachelor of Engineering Sciences
Language of instruction	Lithuanian
Minimum education required	Secondary
Registration date of the study programme	2000-09-21

*\* 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) *site visit of the expert panel to the higher education institution*; 3) *production of the external evaluation report by the expert panel and its publication*; 4) *follow-up activities*.

On the basis of the 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 and cycle are **accredited for 7 years** if all evaluation areas are evaluated as “exceptional” (5 points), “very good” (4 points) or “good” (3 points).

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

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

## 1.2. EXPERT PANEL

The expert panel was completed according to the 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 site-visit to the HEI was conducted on-line by the panel on 23<sup>rd</sup> November 2020.

**Prof. Dr. Toomas Rang (panel chairperson)** *professor of Tallinn University of Technology, Institute of Informatics, Estonia;*

**Prof. Dr. Marko Čepin,** *professor at University of Ljubljana, Faculty of Electrical Engineering, Slovenia;*

**Dr. Isabelle Avenas-Payan,** *member of the French Quality Assurance Commission for Engineering Study Programmes (CTI),France;*

**Dr. Dainius Balbonas,** *lecturer of Šiauliai University, Head Engineering Study Programs Committee, Lithuania;*

**Dr. Rolandas Urbonas,** *Lithuanian Energy institute, Deputy Director, Lithuania;*

**Mr. Ruben Janssens,** *student of Ghent University, study programme in Computer Science Engineering, Belgium*

### **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, no additional documents have been provided by the HEI before, during and/or after the site-visit.

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

Kaunas University of Applied Sciences or Kaunas College (hereinafter – KC) as a higher education institution was established in 2000, and in 2005, KC was accredited as a non-university higher education institution. KC is a multidisciplinary education institution. The roots of this non-university higher education is older and seeks to the middle of the XX century when various technical schools were established in Kaunas. According to the Edurank organisation, in 2020, KC is ranked 21 in Lithuania (among 39 HEI) and 8149 in the World among 16954 HEI.

Now KC is one of the biggest non-university higher education school in Lithuania. It consists of 4 faculties (Business, Arts and Education, Technology, Medicine) and overall 51 study programs (hereinafter – SP) in ten study fields (3 study programs are delivered in English) and more than 5400 students. The biggest study fields: Health Science (12 SP); Business and Public Administration (12 SP, one of them is closed), other average study fields: Arts (6 SP); Computing (4 SP); Engineering Science (4 SP, one of them is new), Technological Science (6 SP). The smallest study fields: Social Science (2 SP); Humanities (2 SP); Education Sciences (2 SP, one of them is closed); Agricultural Science (1 SP).

In the Engineering Science field KC runs four study programs: Industrial Design Engineering (New), Smart Systems, Geodesy, Automation and Robotics. All of them are run in the Faculty of Technology. The Automation and Robotics SP in the study field of Electrical Engineering (hereinafter – SF) has been running in the Faculty of Technology by Industrial Engineering and Robotics Department since 2009. The previous name of the study program was Automatic Control. The program was evaluated in 2012 and accredited for a 6 year period (19 points out of 24). The name of SP was changed in 2019 and SP was updated. This SP has only a full time study form.

In 2019, 64 students studied in the SF. The students from the SF represent ~ 1.2% from all KC students and ~8.2% from all students of first cycle studies in Electrical engineering field in Lithuania. The number of students in this SF is slowly declining (~20% per 3 years, 2017 - 81, 2018 - 72, 2019 - 64), but the same situation exists in 2/3 of study programs in the Electrical engineering field in Lithuania. Four study programs out of 14 of the first cycle study program in the Electrical engineering field were terminated in the last 5 years.

In 2020, KC admitted approx. 1600 students and 24 of them to the Electrical Engineering study field. It seems that the admission of students in the Electrical Engineering study field has stabilized in recent years.

## II. GENERAL ASSESSMENT

*Electrical Engineering* study field and **first cycle** at Kaunas College is given **positive** evaluation.

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

<b>No.</b>	<b>Evaluation Area</b>	<b>Evaluation of an area in points*</b>
1.	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	3
5.	Teaching staff	3
6.	Learning facilities and resources	3
7.	Study quality management and publicity	3
	<b>Total:</b>	<b>22</b>

\*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)*

#### ***Factual Situation***

The robotization and digitization of industry in Lithuania is a very important topic. This is one of the main ways for Lithuanian industry to increase effectiveness and compete in the world market. The development of digitalization and robotization in industry has created a need for engineers and professionals in this field. Also local companies must compete with foreign investors who come to Lithuania and make a big influence on the labour market and make the profession of engineer more attractive. According to statistics, Lithuania needs more than 600 employees in the electrical engineering sector every year. According to SKVC 2019 data, only 200 electrical engineering students graduated from colleges and universities.

The aim of evaluated SF is to train specialists, who have obtained higher collegial education and are competitive in the labour market; professional electrical engineering specialists who are able to design, implement and service Automated and robotic systems.

#### **Expert judgement/indicator analysis**

The evaluation team agrees that the aim of the SF meets the needs of the market and the state. The presented outcomes have logical connection with the aim of SP. The team also wishes to indicate that the aim of the SP does not necessarily covers the needs for digitization and engineering analysis. Industrial robotics involving digitization is far more relevant than automation or robotics alone. The automation or robotization of workplaces does not mean digitization of manufacturing process. The robotization is just a part of automatization, so we can call robotization as flexible automatization. The evaluation team thinks that the aim of the SP could be more correspondent to analysis, implementation and maintenance of digitized systems.

*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*

#### ***Factual Situation***

The mission of KC is to carry out high-quality higher education studies focused on practical activities, the needs of students and society, and develop applied science and art activities. The strategic goals of the performance of KC are to carry out high-quality, competitive higher education studies of several cycles; reinforce the interaction between applied science and art activities, studies and business; mobilize and educate a professional community; form a modern infrastructure; increase the efficiency of the KCS management.

Also, KC has approved the Policy of study and applied science and art activities, however is somehow missing clear outcomes concerning ability to carry out research.

### ***Expert judgement/indicator analysis***

The SP aim and outcomes are aligned with the KC mission. The students who graduate this SP achieve a higher education level and have practical skills. Graduates get fundamentals of self-directed learning.

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

#### ***Factual Situation***

Legal requirements are written in the following documents:

- LR1: Descriptor of study cycles (Order of Minister of Education and Science of the Republic of Lithuania on approval of the descriptor of study cycles, 16 November, 2016 No. V-1012)
- LR2: Descriptor of the study field of engineering (Order No. V-964 of the Minister of Education and Science of the Republic of Lithuania of 10 September 2015)
- LR3: Order on Approval of Description of General Requirements for the Provision of Studies, 30 December 2016, No. V-1168, Vilnius
- LR4: Methodology for External Evaluation of Study Fields, Order published in the Register of Legal Acts 31/12/2019, ID 2019-21819, approved by the Director of Centre for Quality Assessment in Higher Education, 31 December 2019, Order No. V-149
- LR5: Order on the approval of the procedure for the external evaluation and accreditation of studies, evaluation areas and indicators, No. V-835, 17 July 2019, Vilnius

The extent of the legal requirements is very large and due to limited space the legal requirements are not repeated here.

All 13 learning outcomes of SP are divided into 5 groups: Knowledge and its application; Ability to carry out research; Special skills; Social skills; Personal skills.



The duration of the full-time studies of the SP is 3 years. The SP volume in credits is 180, 30 credits per semester. The courses of the main study fields consist of 120 credits, including 30 credits of internships and 12 credits for the preparation of a final thesis. The volume of contact studies in the SP is 45 percent, and the volume of students' self-study is 55 per cent. Practical sessions (activity) without internships are 27% of study program volume and this means that 60% of contact hours is dedicated to practical activities. 29 percent of the volume of the courses of the field are taught by scientists.

### ***Expert judgement/indicator analysis***

The Descriptor of the Study Field of Electronics and Electrical Engineering announces 6 groups of SP outcomes: knowledge and abilities; engineering analysis; knowledge and skills necessary to perform design; abilities to conduct applied research; practical knowledge and skills for solving engineering tasks; personal and social abilities. KC uses only 5 groups of outcomes (already mentioned above). In the SER, the outcome group Ability to carry out research covers two outcomes groups: engineering analysis and abilities to conduct applied research (see Descriptor of the Study Field of Electronics and Electrical Engineering). As a result, the outcome group Ability to carry out research does not have enough outcomes to cover outcomes from groups of engineering analysis and abilities to conduct applied research.

Outcomes of the SP are not allocated according to the Descriptor of the Study Field of Electronics and Electrical Engineering. Also SP outcomes are not allocated according to international standards such as TUNING-AHELO and EUR-ACE. The evaluation team is in opinion that the number and grouping of the outcomes of the study field are not a critical issue; only require a certain review in the future.

During the site visit administration redirected questions about outcomes groups to SER group and SER group explained that they choose such grouping of outcomes because of SKVC advice.

Evaluation team noted that the SP and its study plan meet all legal requirements. Some parameters (courses taught by scientists) even exceed requirements.

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

#### ***Factual situation***

The study aim is covered by 13 learning outcomes which are divided into 5 groups.

In the self-evaluation report, the teaching and learning methods are presented very briefly in the SER. However, even a short description indicates that the teaching staff of KC is familiar with and uses a sufficiently wide variety of learning methods. During the site visit, it became

clear to the evaluation team that KC teachers get assistance from the administration in improving their pedagogical qualifications.

### ***Expert judgement/indicator analysis***

All outcomes are formulated in a logical way. Each learning outcome has a relation with study courses as is evident in the study plan.

The expert team observed that some study courses are not quite directly related to outcomes, for example: Introductory Practice which is related to the outcome No. 3 (Able to apply principle knowledge of functioning to programmable control systems when creating program codes for logical controllers). It is not clear how the students can create codes for PLC in second semester during the introductory practise if they start learning program PLC only in 3 semester? The course Engineering Physics is related to the outcome No. 4 (Able to independently select the appropriate elements of ARS, coordinate them with each other and prepare automation and robotic schemes) and No 6. (Able to plan and organize the installation of the ARS and their elements, making decisions on the adjustment of activities, taking into account the results of the activity analysis and specialists' recommendations). The question is, how physics helps to select specific elements for robotic systems and install them?

Going deeper to the Annex 1 of the SER, the expert team found more mistakes in relation between subjects and outcomes. This issue is not critical yet relationship between subjects and outcomes could be considered for improvement.

The outcome of engineering analysis and applied research are not sufficiently described in the self-analysis. The evaluation team wishes to indicate that the area "abilities to conduct applied research" is not completely covered by SP outcomes. The outcomes 4 and 5 are more related to the engineering analysis than to abilities to conduct applied research.

Annex 1 "Matrix of relations between study courses and learning outcomes" is presented in a rather complicated way. It would have been easier to analyse if it had been presented in a different form of a matrix (for example, Study courses in lines and outcomes in columns, positive interconnection being marked with a tick, etc.).

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

### ***Factual situation***

The study plan of SP consists of four parts. The first part is the General Courses of Collegial Studies; it includes 5 subjects, each subject has 3 credits. The second and the biggest part is Courses of Study Field. This part includes 22 study courses and 120 credits. Study courses have a different number of credits (mainly from 3 to 6 credits per study course). The third

part is Elective Courses – 8 study courses and 36 credits. They also have a very different number of credits (mainly from 3 to 5 credits per study course). The fourth part is a free electives – 3 study courses, each course is 3 credits.

### ***Expert judgement/indicator analysis***

The order of study courses has a logical sequence. The study courses are distributed consistently in semesters, and they are well distributed, in a logical sequence. Students study no more than 7 subjects each semester. Some milder issues for further consideration include as follows:

- Knowledge about Robot mechanics and power electronics are very important for the students of the study field. Yet it was not made clear enough for the review panel in which study course students obtain knowledge about Robot mechanics and power electronics. A 4 credits course Mechanics cannot properly cover all knowledge required in fundamental mechanics and additional knowledge of robotic mechanical systems.

- It also not absolutely clear how the students select study courses from Elective courses. For example, students have 9 credits of Elective course in 3 semester and can choose courses – 3D Modelling and Basics of Design and (4 credits) and Controls of Renewable Energy Systems (5 credits). So they can choose 2 courses out of 2 courses. The same situation is in other semesters. If a choice from elective courses is still possible (somehow), it means that students cannot receive knowledge from digital electronics (if not selected), which is also important in this SP and also students can miss course Control of Industrial Robot. The course of Control of Industrial Robot is only one course 100 percent related to Robotics. Without said above, the experts agree that the study program prepares students in automation SP with extra skills in electronics and programming.

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

#### ***Factual situation***

Students have two opportunities to personalize their studies. One clear opportunity is to choose Free Elective Courses. Students can choose 9 credits of free elective courses in 3, 4 and 5 semesters (3 credits in each semester). The Faculty and the College offer more than a hundred different study courses. Another opportunity is to choose courses from the group “Courses of Deeper Studies of the Same Study Field / Courses of the Studies of Another Field”. This group consists of 36 credits. Together with the Freely Elective Courses, it is grouped in the segment “Elective Courses” in the study plan, which contains 45 credits or 25% of the program. Other possibilities for personalization exist when students choose their final thesis and practice place.

### ***Expert judgement/indicator analysis***

Students of KC have good theoretical opportunities to personalize their study plan. Students can choose courses from other study fields (free elective courses). They can also target towards some specific areas of the study field by choosing courses from the list of elective courses. In the study plan, the elective group of courses consists of 36 credits. KC offers 8 courses for a total of 36 credits to students. In such a situation, students do not have much choice of courses. Only 9 credits of free elective courses can actually be chosen by students. That situation was also discussed with KC students and they approved that opportunities to individualize their studies are very low. During the meeting with the administration, it was explained that this question must be addressed to the self-evaluation group but the SER group couldn't answer this question.

The mislabelling of those 36 credits as "elective courses" is confusing as it creates the impression that there are more elective courses than there actually are. The expert panel also thinks it would be beneficial to introduce more opportunities for students to personalise their study plan than the 9 credits the study plan currently has.

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

#### ***Factual situation***

A procedure of evaluation of the final student work and its defence is clear. Also it's clear that the topic of bachelor thesis is first discussed in the department and then it is approved by the department. Full details of the final thesis preparation and defence procedure are provided in a document that can be found on the webpage <https://www.kaunokolegija.lt/studentams/studiju-dokumentai/>.

Almost all titles of defended works, especially during the last two last years, are related to some process automation in industry and not especially to robotics or industrial manipulators. Still no student final bachelor work was ordered from industry and the private sector.

During the last three years 50 bachelor thesis were defended by students who graduated from the SF. 20% of them were evaluated to grade 5 or 6, 44% of them were evaluated to grade 7 or 8 and 36% of them were evaluated to grade 9 or 10. In the last two years, the number of works evaluated to low marks (5 or 6) is increasing and the works evaluated to high marks (9 or 10) is decreasing.

### ***Expert judgement/indicator analysis***

The requirements for professional bachelor thesis can be found at [https://www.kaunokolegija.lt/kk/wp-content/uploads/2020/10/BD-tvarkos\\_aprasas.pdf](https://www.kaunokolegija.lt/kk/wp-content/uploads/2020/10/BD-tvarkos_aprasas.pdf).

The study program changed its name and some of its courses in 2019. Therefore it is difficult to extract robotics works from all professional bachelor thesis in the past year.

There is a little of bachelor theses directly ordered from business companies.

The teaching staff science activity has rather a low impact on choosing the topics of bachelor theses.

The content of the final bachelor thesis is signalling a little orientation to applied research. The outcome related to abilities to conduct applied research achieved partly.

***Recommendations for this evaluation area: See recommendation number 1, 2 and 3***

### **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***

#### ***Factual situation.***

KC has approved 2 directions of applied research: 1) research on renewable energy sources; 2) research on the design, development and application of smart and robotic systems. KC has also approved Policy of study and applied science and art activities and has a research plan for the 2020-2023-year period. The College has made some investments during the last 3 year period to get equipment and to make research. Some funds have been allocated for applied research for the next 3 years period.

21 teachers are working in the SF (18 of them working in the study field). 6 of them have a doctor degree. In total, the teaching staff wrote 9 articles (6 of them were published in journals, which are listed in the Clarivate Analytics Web of Science database) and took part in 14 conferences in the last 3 years.

#### ***Expert judgement/indicator analysis***

Almost all articles published and conferences held were related to one research direction (research on renewable energy sources). The other articles and conferences are related to

general electronics or electrical fields. The other research direction (research on the design, development and application of smart and robotic systems) was not covered by any scientific activity yet. However, the situation like this is natural, because the change of the name of the study program and the emergence of a new direction of research took place at the same time only in 2019. Two out of six doctors in sciences participated actively in paper publishing. Two active doctors occupy 0.9 post and the remaining four not so active doctors occupy 3.2 post. 4 members of the teaching staff participated in conferences (14 conferences). The other lecturers participated in local College activities or in conferences that have weaker relation with the Electrical Engineering SF. The overall scientific activity of the teachers of the SP is not up to a desired level despite several success stories when the College researchers, working in this SP, demonstrated a high scientific level and published their paper in high level scientific journals.

KC shares some applied activities with Kaunas Technology University, Lithuanian Energy Institute, Academy of Agriculture of Vytautas Magnus University and some private companies. This collaboration allows the teachers of the College to gain new knowledge and skills to conduct research, although the financial benefit is very low. The fact that KC has got a contract for value of 700 € didn't look so impressive.

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

#### ***Factual situation***

Only few teachers transfer to students new knowledge in science and technology gained in high level science activities. The other teachers help students to reach the newest knowledge in science and technology through participation in qualification upgrade courses, exchange programs or collaboration with social partners. As stated above, there are some applied activities with Kaunas Technology University, Lithuanian Energy Institute, Academy of Agriculture of Vytautas Magnus University and some private companies. But it is rather difficult to measure the level of these activities and to evaluate to what extent such activities contribute to studies.

#### ***Expert judgement/indicator analysis***

The published papers and conference reports are mostly related to renewable sources, or are too complicated to be directly used for enriching study courses. For example: The investigations on heat transfer and particulate concentration in plasmochemical reactors; Effect of carbon powder thermal activation on characteristics of supercapacitor electrodes; Dependence of ferroelectric properties of thin layers of lead titanate on annealing conditions.

The relationship between the content of studies and the latest developments in science could be taken into consideration for the follow-up plan, since only 4 staff members out of 18 (study

field teachers) participated in scientific activities. KC has some agreements with private companies and some classes are held by social partners from private companies. This helps to establish links between study courses and the technologies used by companies.

Experts state that not all subjects in the study program have good links with the latest developments in science and technology.

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

#### ***Factual situation***

Every year the faculty of technology organizes a student conference, named “Application of Innovations in Technology”, at the national level. Also, students are welcomed to other conferences organized in KC and in other HEI in Lithuania. Students of SP participate in other activities such as exhibitions and competitions.

#### ***Expert judgement/indicator analysis***

Participation in conferences, various exhibitions and competitions can increase students' understanding of development and improvement of engineering solutions and competences. Students can also gain an understanding of the need for applied research and the possibilities of applying research. 1/3 of the students present their bachelor thesis in student conferences. However, most bachelor theses are pure engineering or system design work with a lack of applied research. The main question remains – how can the staff with low participation in science activity (4 out of 18 teachers, see arguments under the previous indicator) involve effectively the students in the scientific activities? On the other hand, the review panel witnessed that the department does make a significant effort to involve students in additional engineering and research activities.

***Recommendations for this evaluation area: See recommendation number 4, 5 and 6***

### **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**

### ***Factual situation***

The general admission is carried out on a national level by the Association of Lithuanian Higher Education Institutions for General Admission (LAMA BPO), which is authorized by the Minister of Education, Science and Sports of the Republic of Lithuania, through its information system. The competitive subjects for SP are Mathematic (weight factor 0.4), physics (weight factor 0.2), Lithuanian language and literature (weight factor 0.2) and any other subject (weight factor 0.2). Additional points can be obtained if school graduates are winners of national or international Olympiads, completed military training or vocational training programmes etc. All requirements for admission and additional information (important dates of admission, prices, competitive score calculator, short description of SP) are available in KC webpage <https://www.kaunokolegija.lt/stojantiesiems/informacija-apie-priemima/>.

### ***Expert judgement/indicator analysis***

Admission procedure is clear and transparent. Everyone has equal opportunities to receive state funds and study the chosen SP if the applicant meets the requirements of the state. There are also equal opportunities to study for those who do not receive state funding but meet the minimum state requirements.

All information is clearly and appropriately provided on the College website.

The minimum admission score in 2020 was 4.53 (maximum 7.69) and in 2019 – 4.5 (maximum 6.47). If the school graduate from all state exams used for admission receives 24% (minimum to pass exam is 16%, maximum score 100%), he collects admission score 4.57 and will be invited to study in almost any engineering study program in any Lithuanian state college. In this SP, as in many engineering study programs in Lithuania, is no significant competition. These programs are chosen by students who mostly pass the state exams with average or lower scores.

The College has stabilized the number of newly admitted students and at the same time the number of students in the field of study. This means that efforts undertaken by the College's in this area were successful.

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

#### ***Factual situation***

KC has rules which describe how the recognition procedures of qualification are applied for foreign students and students from other Lithuanian HEI. Procedures are described in two documents:



- Procedure for the recognition of learning achievements in KC available on [https://www.kaunokolegija.lt/kk\\_wp\\_content/uploads/2020/10/Studiju\\_tvarka2020-08-31.pdf](https://www.kaunokolegija.lt/kk_wp_content/uploads/2020/10/Studiju_tvarka2020-08-31.pdf)
- Procedure for the assessment and recognition of knowledge and skills acquired in non-formal and informal learning and self-study as learning outcomes in KC available on [http://www.kaunokolegija.lt/kk\\_wp\\_content/uploads/2017/11/Neformaliojo-ir-savaiminio-mokymosi-bei-savi%C5%A1vietos-b%C5%ABdu-%C4%AFgyt%C5%B3-mokymosi-pasiekim%C5%B3-vertinimo-ir-kompetencij%C5%B3-pripa%C5%BEinimo-tvarka.pdf](http://www.kaunokolegija.lt/kk_wp_content/uploads/2017/11/Neformaliojo-ir-savaiminio-mokymosi-bei-savi%C5%A1vietos-b%C5%ABdu-%C4%AFgyt%C5%B3-mokymosi-pasiekim%C5%B3-vertinimo-ir-kompetencij%C5%B3-pripa%C5%BEinimo-tvarka.pdf)

### ***Expert judgement/indicator analysis***

For full-time foreign students, the College presents information in English on a webpage <https://www.kaunokolegija.lt/en/application>. This page provides all necessary information needed to study in KC for foreign nationals: steps, necessary documents (including Qualification Recognition issued by the Centre for Quality Assessment in Higher Education), important dates and deadlines. The main documents needed for foreign full time students are translated in English. These documents can be found on the webpage <https://www.kaunokolegija.lt/en/current-students/documents/>.

During the last 3 years, few students came to study Automation and Robotics study program from other Lithuanian HEI. The College ensures transparent and fair recognition of qualifications.

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

#### ***Factual situation***

KC is participating in ERASMUS+ and Nordplus programs. KC has 25 bilateral agreements with foreign HEI that are suitable for SP Automation and Robotics. All KC full-time and part-time students who have completed their first year studies and met the formal requirements of exchange programmes are eligible to apply for study/internship placements under Erasmus+/Nordplus or any other student exchange programme. Postgraduate internships can be performed within a year of graduation from KC.

Students are informed about these possibilities during various events in autumn and in spring semesters.

Foreign students who want to come to KC for ERASMUS studies and foreign institutions which want to send their students can find all the information on the web page <https://www.kaunokolegija.lt/en/application/> in section Exchange students.

During the last 3 years only 10 students went abroad: 3 students for studies and 7 students for internship. Only 2 students from abroad came to study some courses in SP Automation and Robotics.

### ***Expert judgement/indicator analysis***

The level of students mobility is quite low, especially for incoming students. The exploitation of Erasmus contacts is weak, because only 3 contacts out of 25 were used in a 3-year period (2 for outgoing visits and 1 for incoming visits).

During the visit, the following reasons for low student's mobility became clear: low students' confidence (both personal and academic confidence), lack of foreign language skills and employment of students during the study period. According to students' opinion, the efforts from the administrative staff to promote mobility are strong enough. The College is investigating options for blended and virtual mobility, which is positive as they could provide a useful alternative.

### ***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***

#### ***Factual situation***

KC gives a standard support package to new students. The first-year students receive all the necessary information to start their studies: important contacts, important dates, necessary procedures, cognitive activities in faculty and library, meetings with tutors. All information is provided in the webpage <https://www.kaunokolegija.lt/pirmakursio-atmintine/>.

Students can receive 3 types of scholarships: social, study and incentive. Students can also receive loans to cover expenses of study and costs of living. All information and references to legislation is provided in webpage <https://www.kaunokolegija.lt/studentams/finansine-informacija/>

Students receive other services: accommodation, social insurance psychological support. All information is provided in webpage <https://www.kaunokolegija.lt/studentams/paslaugos-studentams/>

Various communication channels (Moodle environment, the Google Hangout Meet tool or e-mail) are used for information exchange between administration, teachers and students.

### ***Expert judgement/indicator analysis***

Based on the SER, information from KC webpage, meetings with teachers and students, the experts detected that the support system for students is correct, and that KC students receive a wide spectre of support. It is difficult to judge the system effectiveness. According to surveys that covered all KC students, half of the students do not use any social support suggested by College. The evaluation team didn't receive any complaint from students about issues regarding the support.

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

#### ***Factual situation***

SP students get general information about SP Automation and Robotics from the head of the department during the first meeting in the first semester. First-year students can get extra consultation from the assigned curator. During the first lecture all students receive information about the study course, aim of the study course, assessment methods. All other necessary information, that touches study processes, are provided to students using various communication channels: Moodle environment, the Google Hangout Meet tool, e-mails, extra meetings with students or their representatives.

#### ***Expert judgement/indicator analysis***

Students receive all necessary information concerning their study courses, study assessments and achievements. The evaluation team didn't receive any complaints from students about issues connected to counselling.

***Recommendations for this evaluation area: See recommendation number 7***

## **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***

#### ***Factual situation***

The SP Automation and Robotics has been prepared in order to achieve the mission of KC, which is to carry out high-quality higher education studies focused on practical activities, the needs of the learner and society and develop applied science and art activities.

College teachers use a variety of teaching methods to help achieve the goals set in the study program. Students have the opportunity to acquire competencies through lectures conducted in other higher education institutions or private companies.

Students of the SF can actively participate in the improvement of the available laboratory equipment of the Faculty of Technology during the completion of final theses.

The companies-partners and the graduates assured that they are involved in the process of improving the quality of studies in order to provide better education for future graduates of the SF.

### ***Expert judgement/indicator analysis***

A rather small amount of outsourced works from private companies may not fully allow students to understand how the study results are related to real engineering activities in companies. Also, cooperation with companies for the supervision of theses can be improved. The College could organize more study trips for students to companies related to automation and robotics or to industry 4.0 factories.

According to the social partners that experts met during the site visit, the students should receive more training in programming skills.

Globally, the evaluation team can state that the needs of the students are taken into consideration. This is proven by the fact that the teaching and learning process is discussed with the industry and their feedback is evaluated and considered for future activities.

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

#### ***Factual situation***

The building of the Faculty is adapted for the physical disabled students. The College has some equipment used to compensate for visual and hearing impairments. Students have the option to use learning materials and databases online from their home.

The evaluation team did not find any written rules that should ensure appropriate study conditions for students with disabilities.

### ***Expert judgement/indicator analysis***

The College provides study for students with physical and hearing impairments. However, study opportunities for visually impaired students are somewhat limited. Almost all equipment needed for visual or hearing impairment exist only in the library.

The College does not have any internal documents regulating the conditions for students with disabilities. Nobody is designated for coordinating such a study process if it is necessary.

### ***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***

#### ***Factual situation***

Self-assessment of the monitoring of student progress is collected in a written report twice a year. The indicators of student progress, turnover, dropout interruption of studies and other parameters are analysed by the head of studies in the Faculty and discussed in the Dean's office, Department of Industrial Engineering and Robotics and in the Study Field Committee. During these meetings, the information gathered from other surveys or meetings with students is also analysed.

### ***Expert judgement/indicator analysis***

It seems that the self-assessment of the monitoring of the student study progress is well-defined at Kaunas College. At the meeting with the administration, the evaluation team was assured that the data collected on monitoring student progress is being used to develop a plan of measures that should provide better feedback to students and improve the teaching quality.

The weighting average of semester grades of Automation and Robotics students is ~ 7 in the autumn semester and 7.6 in the spring semester for the last three years. These numbers may raise suspicions that the study process monitoring system lacks effective sanctions. The average level of entrance marks for the college-collected contingent remains stable – 5.5, but the semester's grades are stuck somewhere between 7 and 7.5. The average student's progress has not improved over the past three years.

In any case, the process of monitoring and supporting students' achievement levels is an ongoing process. It takes time and it needs to test a variety of tools to achieve improving outcomes. The evaluation team is in opinion that the College is on the right track.

### ***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***

### ***Factual situation***

All along the semester teachers provide personal feedback through the Moodle system commenting students' uploaded works. Every semester, students write assessments of the study courses, which are collected and evaluated. They represent the standpoint for improving issues of studies including contents and teaching process.

### ***Expert judgement/indicator analysis***

The teachers provide feedback about their subjects (Moodle or consultation hours) to the students. It really helps the students to understand gaps in their knowledge and abilities.

If the administration notices either low assessments of the study subject or the fact that the student does not report on the given tasks, they invite a student to discuss the problem. If a bigger number of students have problems in the study course, the department invites representatives of the student group to discuss the issues.

The Faculty or the Department collects feedback from students after semester and keeps it for internal use. Only the administration and teachers get familiar with the results of the assessments. Only the general data from student assessments is available; students' opinion from the Electrical Engineering field is not singled out. General data from surveys (student surveys on the quality of the subject / module teaching) is available on webpage <https://www.kaunokolegija.lt/visuomenei/dokumentai/>. However, according to the students of the SF, they are not informed about actions taken by the administration after analysing the results of the surveys.

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

#### ***Factual situation***

Monitoring of graduates' employment and career tracking are carried out in the field of study. Feedback from the employed graduates is collected. Results and analysis of the surveys are available on KC web pages:

[https://www.kaunokolegija.lt/kk\\_wp\\_content/uploads/2020/12/Absolventu-apklausa-rezultatai-2020.pdf](https://www.kaunokolegija.lt/kk_wp_content/uploads/2020/12/Absolventu-apklausa-rezultatai-2020.pdf)

[https://www.kaunokolegija.lt/kk\\_wp\\_content/uploads/2020/09/Absolventai\\_2019\\_ataskaita.pdf](https://www.kaunokolegija.lt/kk_wp_content/uploads/2020/09/Absolventai_2019_ataskaita.pdf)

[https://www.kaunokolegija.lt/kk\\_wp\\_content/uploads/2020/09/Absolventu-apklausa-rezultatai-18-11-12.pdf](https://www.kaunokolegija.lt/kk_wp_content/uploads/2020/09/Absolventu-apklausa-rezultatai-18-11-12.pdf)

The Department of Industrial Engineering and Robotics makes its own surveys. It also collects and analyses data from Lithuanian Employment Services.

### ***Expert judgement/indicator analysis***

The survey reports organized by KC provide general data about graduates: integration in the labour market, and shortcomings or advantages during college studies. Administration can extract the data for the Faculty of Automation and Robotics SP and analyse it. These surveys are public; however, only a small number of graduates from Automation and Robotics SP participate in the surveys.

According to Lithuanian Employment Services, approx. 90 % of graduates of the SP are employed within a few months after graduation.

Data collected by the Department of Industrial Engineering and Robotics states: in 2019, only 3 (27 %) students out of 11 are working according to the qualification acquired; in 2018, only 12 (54 %) students out of 22 are working according to the qualification acquired; in 2017, 18 (90 %) students out of 20 are working according to the qualification acquired. Numbers show a rapid decrease of students who are working in the same field in which they obtain their qualification. Such a situation shows a problem in the study program quality or labour market anomalies and changes.

At the meeting with the social partners, some representatives of companies indicated that students have a lack of soft skills (languages, economics, management etc.). The lack of soft skills can be one of the possible reasons for this particular employment situation of SP graduates.

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

#### ***Factual situation***

Kaunas College has approved the Code of Academic Ethics, which establishes the principles and norms of ethical behaviour of the members of the College community. The College has an Ethics Committee that is responsible for the proper application of the Code by all members of the College community.

### ***Expert judgement/indicator analysis***

The policy of ensuring academic integrity, tolerance and non-discrimination is considered very good and it is regulated by the documents and procedures at the College.

According to the SER, there were no case of violation of the principles of academic honesty, tolerance, and non-discrimination during the last 3 years among teachers, students or administration. It is difficult to decide how the system really works because there has been no case during the evaluated period.

#### *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*

##### ***Factual situation***

The procedures for the submission and examination of appeals and complaints regarding the study process within the field studies are determined in the document The Procedure for Assessing Learning Achievements at KC.

A complaint can be filed regarding a possible violation of a student's rights and legitimate interests caused by actions of a teacher or of the final thesis defence commission. The complaint must be written and submitted to the administration within 3 days after the event or 24 hours after the defence of the final thesis. The appeal of the exam must be clarified within 15 days of the complaint being lodged. The decision to accept or reject an appeal for a breach of the final work defence procedures shall be taken by the Director of the College within two days.

The Board of Appeal takes decisions in accordance with the Code of Ethics and the Procedure for Assessing Learning Achievements at KC.

##### ***Expert judgement/indicator analysis***

The procedures for the submission and examination of appeals and complaints regarding the study process within the field studies are well defined at the College. It seems that legally they cover all needed aspects, which protects the students.

The students of the SF did not make any complaint or appeal. No appeal is considered regarding the evaluation of the final thesis.

***Recommendations for this evaluation area: See recommendation number 8 and 10***



### 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*

#### ***Factual situation***

21 teachers are involved in the Automation and Robotics SP. 3 teachers are teaching general collegial courses and 18 of them are teaching courses of the electrical study field. 6 teachers are with PhD, 14 teachers have a master degree and 1 has a bachelor degree. 50 % of the teachers have a degree in electronic and electrical engineering. Almost all teachers have practical work experience no less than 3 years. 28.5% of the teachers are 60 years or older. Only 4.7% of the teachers are younger than 35.

Some teachers participate in conferences related to their research field. Minority of the teachers published their works in high ranking journals.

On the base of the Law on Higher Education and Research of the Republic of Lithuania, a process of attestation of the teachers is organized every five years. Certification procedure first determines if the performance of the teachers for teaching positions is in line with the qualification requirements and then is followed by a competition to fill in teaching positions.

During the meeting, the administration indicated the desire for all academic staff to be able to communicate in English at B2 level in the future. However, they also mentioned that the formal requirements for teaching staff at KC do not yet specify a level of English language competence, only that they are expected to speak in English.

#### ***Expert judgement/indicator analysis***

Teaching staff involved in the SP meets the legal requirements. At the moment of the evaluation, the number of teaching staff was adequate to ensure the intended learning outcomes. Teachers are very experienced and well prepared professionally.

Few remarks can be made by the experts:

- Involvement in research could be larger, especially among those having doctor degree, in order to achieve better competences in science.
- Teachers have good professional preparation and practical experience but their participation in projects with industry is somewhat lower. This situation is not beneficial for the process of transferring practical knowledge to students.
- Knowledge of foreign languages, especially English, should be further improved. The presence of an interpreter during the experts' meeting with the teachers tended to prove that

the existing incentives for learning English are not as effective, or that the teachers have a lack of confidence to speak in foreign language.

### *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)*

#### ***Factual situation***

The teachers have good conditions to participate in mobility programs ERASMUS+ and NORDplus. KC has 25 bilateral cooperation agreements, 6 of them suitable for the staff from Automation and Robotics SP. Furthermore, the College has approved the rules for application and participation in the mobility programs. A call for participation in the mobility programs is announced at least four times a year. The selection criteria are clear and publicly available. The main criteria are: relevance of the visit to KC, the department and / or study field represented; the purposefulness of the visit for the professional activities of the staff member; priority is provided for those who go for their first visit and for whom KC is the main workplace.

During the last 3-4 years, the lecturers working in the SP have made 22 visits abroad for various activities and 7 foreign teachers and scientists came to teach the students of the College.

#### ***Expert judgement/indicator analysis***

The level of outgoing mobility is not quite high. The evaluation team did not receive any accurate data about mobility, so it was only possible to have average numbers. During the last 3-4 years the average of outgoing visits was one visit per teacher in a 3-year period. Only 30-40% of the teachers carried out visits abroad. Only part of them was teaching visits. Other visits were dedicated to exhibitions and project meetings. The figures presented in the SER do not show a stable situation.

The level of incoming visits is not stable either. Although, very good incoming visit indicators were achieved in the academic year 2018-2019, when 6 teachers/scientists from foreign HEIs have been visiting and giving lectures for students of the SF.

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

#### ***Factual situation***

The teaching staff of Automation and Robotics SP have opportunities to improve their competencies in many different ways: courses, seminars, conferences, internships and etc. KC has approved the document – a procedure for In-Service Training of KC Employees which allows the teaching staff to increase their qualifications inside and outside the College.

Courses, seminars, conferences etc. are financed by KC funds, among other sources.

Many various courses and seminars have been organized in the college for SP teachers during the last years. Most SP teachers participate in various activities outside the College, all of them are financed by KC.

### ***Expert judgement/indicator analysis***

During the visit, the administration assured that the teachers are encouraged to improve their qualifications and actively contribute to it, in cooperation with various institutions and the SER confirms these activities.

The teachers from KC are also satisfied with the conditions for qualification improvement. Teachers confirmed to the experts this statement during the meeting.

The students did not make any critical remarks to the experts about qualification of the staff.

***Recommendations for this evaluation area: See recommendations number 5, 6 and 7***

## **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***

### ***Factual situation***

KC has 7 laboratories used for the EE SF: physics, mechanics, electrical and electronic engineering, robotics, process control, intelligent control systems and renewable sources. The

laboratories are equipped with computers and software: MultiSim, SolidWorks, Fluidlab, Siemens Logo, CODESYS, Siemens Step 7, Lab Soft, software for PIC microprocessors, Profinet and CIROS Robotics.

During internships, students can use material base and laboratory equipment that are available in the companies.

The students can use the well-equipped library with reading rooms and several scientific databases. The library can be reached virtually using the Aleph system. The database of textbooks published by VGTU and KTU publishers are available for KC students.

### ***Expert judgement/indicator analysis***

The expert panel agrees that the premises at KC are in very good condition. Most of the laboratories are well equipped. Equipment is good and standard. Still, it does not stand out of the general context of electrical engineering studies in Lithuania.

The evaluation team believes that, in order to provide students with the right education in line with the title of the study program, new laboratories should be set up or the existing ones to be upgrade to give students more knowledge and skills in the field of industrial robotics. They also noticed that laboratories for the students to get practical knowledge about control drives and various electrical motors should be upgraded.

The library is well equipped and modern, but the amount of money allocated for the acquisition of literature for the Automation and Robotics SP is not impressive (less than 1500 Eur in a three-year period). The amount of money allocated for SP is rather too small to purchase high quality and up to date literature.

At the meetings with the social partners and students, the evaluation team did not receive any complaint and shortcomings concerning premises and laboratories. It seems that the students are satisfied with the quality of KC laboratories and equipment.

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

### ***Factual situation***

The level of most laboratories is good. KC have modern engineering physics laboratory. During the meeting with the administration and the lecturers, the evaluation team learned that the Faculty has good understanding how to renew laboratories. The plan for the renewal of the laboratories was not submitted for evaluation.

### ***Expert judgement/indicator analysis***

As the current situation with the premises and laboratories equipment shows, as well as the students and employers expressed their positive opinion about the condition of the laboratories, it can be concluded that planning is underway in this area.

However, the evaluation team was not provided with a full plan for equipment upgrades and possible sources of funding or estimated amounts of money to be invested for each year. This may be a sign that the planning is not organized in a most sufficient way.

***Recommendations for this evaluation area: See recommendation number 6***

## **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***

#### ***Factual situation***

KC has approved a Quality Manual and many other documents such as the Description of the Procedure for the Assessment and Improvement of the Quality of Ongoing Study Programmes, the Regulation on the Certification of a Study Course/Module, etc.

The SF is controlled in various ways. The Department, Study field committee is responsible for the changes and upgrades in the SP according to legislation; external expert conclusions; proposals of the students, academic staff and other stakeholders. The Department and Faculty is responsible for preparation of the documents regulating studies and for decision making at a higher level. Main decisions and information about the study quality (SP accreditation, study

program progress reports, various students surveys) are public and available on the web page [https:// www.kaunokolegija.lt/visuomenei/dokumentai/](https://www.kaunokolegija.lt/visuomenei/dokumentai/).

Teachers are evaluated by the administration. Teachers' study courses are evaluated by students every semester. Study field committee includes students and representatives of social partners. They meet at least 2 times per year. Issues of the management of studies in the field are discussed at the meetings of the KC Directorate, KC Academic Council, Dean's Office of the Faculty, and the Department.

### ***Expert judgement/indicator analysis***

Meetings with the administration, self-evaluation team and teachers indicated to the experts that all these groups are familiar and understand with the KC quality management system and participate in it. This shows that the quality management system is in place and working. However, during the conversation with the evaluation team a few students said that they didn't receive feedback after the student surveys and they do not know if the administration is taking action in response to surveys.

There is not a clear boundary in the study quality system between the responsibilities of the Department and the study field committee. The evaluation team understood that the study field committee is responsible for SP outcomes, SP parameters analysis, upgrades of SP by gathering information from lecturers, social partners, graduates etc., and that the Department is responsible mostly for the implementation and monitoring of the SP. There is no concrete explanation about what lies behind implementation and monitoring.

The evaluation team recommends that the model of the quality assurance system be described not only in the form of text, but also graphically to better visualise processes and understand how the model really works.

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

### ***Factual situation***

KC organizes meetings with stakeholders on a regular basis. For example, KC organized meetings with 7 different companies last year. SF graduates participated in surveys on employability. SF students are involved in the process of assessing the quality of the study programme and its improvement. They take part in surveys about the quality of study process organization and teaching of the courses. There also are regular meetings of the representatives of all classes in the SF with the faculty and department, to collect information

about any problems students are experiencing, about the needs of the students, and to discuss the results of surveys. The SFC then discusses those requests.

The surveys for employers, graduates and students are publicly available in the web page, section “grižtamojo ryšio užtikrinimas” <https://www.kaunokolegija.lt/visuomenei/dokumentai/>

### ***Expert judgement/indicator analysis***

During the meetings with the graduates and social partners from various companies, the evaluation team got a strong opinion that employers are involved in the curriculum development. Employers confirmed that their contribution in 2019 was changing of the name of the program and including robotics study courses in the SP. Social partners also assured that they were involved in the development of the study program to the best of their abilities.

It is worth mention, although, that only a few companies in the meeting employ graduates from SF. This may indicate that selected social partners are not all suitable for the SF.

Employers contribute financially to the study program symbolically, mostly with advice or software equipment on loan. This may indicate a financial weakness of the companies (stakeholders)/low sense of social responsibility or too little interest in the success of the SF.

The graduates and students confirmed to the experts their involvement in surveys. However, they could not confirm if the surveys caused any changes. Apart from the surveys, students do not appear to be very involved in the process of making changes to the study plan.

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

### ***Factual situation***

KC publishes information about the study program on its web page. For example, information about SP Automation and Robotics (study program plan, acquired qualifications and career opportunities, study courses and their programs) can be found easily on web page <https://www.kaunokolegija.lt/studiju-programos/automatika-ir-robotika/>. Other relevant information can be reached such as admission requirements, tuition fees, accommodation accreditation data and last evaluation report.

KC shares following documents on the web page <http://www.kaunokolegija.lt/visuomenei/dokumentai/>: SP Progress reports, Evaluation of the study subject and the quality of its teaching, Results of the student survey on the quality of

studies (from 2015 to 2020), Survey results of first-year students (from 2018 to 2020), Results of a survey of graduates on their preparation for professional activities and integration into the labour market (from 2015 to 2019).

The administration of the College informed the evaluation team that the feedback from students about study courses and teachers is collected after each course, but these surveys are not for public use.

### ***Expert judgement/indicator analysis***

The collection, use and publication of information on studies, their evaluation, improvement processes, as well as student, graduate and employer surveys are well managed and performed. This opinion is based on the fact that all necessary information is made publicly available.

*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.*

### ***Factual situation***

KC collects feedback from last-year students, asking them to look back on the quality of their SP, and from first year students, asking them about their motivations to choose KC, every year. Each study course and each teacher is also evaluated by the students after each semester. The surveys respect the principles of voluntary, anonymous, transparent and efficient respondents, as well as the purposefulness of the collection of opinions and the quality of the tools used. Results and analysis of surveys is available on KC web page <http://www.kaunokolegija.lt/visuomenei/dokumentai/>.

Feedback from students, through surveys and through meetings, is taken into account, and the SER mentions that various actions have been taken as a result of this feedback. For example, teaching staff were advised to improve their didactic competences, they received training on evaluating learning achievements, and more hours for additional consultations were introduced.

### ***Expert judgement/indicator analysis***

The opinions of the students about the quality of the studies are collected, evaluated and considered, but it seems that the students do not get clear feedback further.

However, the evaluation team has some comments on this point. The surveys organized by KC provide only the general opinion of the College students from all other departments.



Reversibility of questionnaires is 25-35 %. Thus it is not possible to single out what the students of the Faculty of Technology think. Only administration can extract data for faculty members and analyse them, but this data is not publicly available.

According to surveys, most students are satisfied with the quality of premises and the quality of studies. Some interesting facts emerged during the analysis: 31% of 2-3 year students think that there is a duplication of study content in different subjects, 45% think that the quality of wireless internet is poor, 40-70% do not use any support provided by the college, 40-70 % express that they do not have any opinion about that support.

Information about surveys carried out after each study course was not made available for the evaluation team.

A more valuable survey was received by SKVC concerning students from the field of electrical engineering in KC (this survey was conducted within the NSA platform). The evaluation team found out that, in general, most students have a positive assessment of the quality of studies in the College, the conditions and the support provided by College. Some negative issues were also pointed out: 63% of students think that they do not have any possibility to individualize their studies (as also was observed above in this evaluation report); 86 % of students state that they had to find the practice location by themselves. This confirms the weakness of the relationship with companies.

***Recommendations for this evaluation area: See recommendation number 10 and 11***

## **IV. EXAMPLES OF EXCELLENCE**

*Core definition: Excellence means exhibiting exceptional characteristics that are , implicitly, not achievable by all.*

None found.

## V. RECOMMENDATIONS

1. Verify the learning outcomes to correspond to the Descriptor of the Study Field of Electronics and Electrical Engineering.
2. Create alternatives for existing Elective courses. This will help to improve personalisation of studies.
3. Introduce new subjects (robot mechanic and power electronics) to the study program.
4. Expand research into smart robotic systems with existing staff.
5. Teachers and doctors of science need to be more involved in research.
6. Encourage the academic staff to cooperate with the representatives of the industry and to conduct collaborative research.
7. Encourage student and teacher mobility with existing ERASMUS or similar programs.
8. Improve cooperation with companies to better understand the requirements for employees, thus improving the employability of students by specialty.
9. Upgrade laboratories so that they allow students to acquire more skills in the programming and the implementation of industrial robotized cells and in the industrial digitization process.
10. Strengthen cooperation with students by increasing the response rate to surveys, making sure there is public access to the all of the survey results for SF, and by clearly communicating with the student population about which actions are being taken to improve the SF and involving them in this decision-making process.
11. Improve the management system by establishing clear boundaries of responsibility between the department and SFC.

## VI. SUMMARY

The study program of Automation and Robotics in the field of Electrical Engineering significantly contributes to meeting the needs of automation engineers in Lithuanian companies.

The expert panel found out that the learning outcomes were relevant and appropriate. However, the learning outcomes should be grouped in accordance to the Descriptor of the Study Field of Electronics and Electrical Engineering.

The study plan is good and suitable for achieving study program outcomes but a focus on knowledge about Robot mechanics and on power electronics is needed.

The study methods which are applied to achieve the study results in subjects within the study programme Automation and Robotics at KC seem reasonable, appropriate and compatible.

The opportunities for students to individualise their studies are very limited. The students can choose just free elective subjects.

The overall scientific activity of the SP teachers is rather low and fragmented, despite several success stories when the College researchers working in this program demonstrated a high scientific level and publish their papers in high level scientific journals.

The relationship between studies content and the latest developments in science is not strong, because only 4 staff members out of 18 (study field teachers) participate in scientific activities. KC has some agreements with private companies and some classes are taught by social partners from private companies. This helps establishing links between study courses and technologies used by the companies. Anyway, practical relations with companies in the context of joint research and activities are not strong enough, and it is not helping to establish a good link between study courses content and the latest technologies used in industry. Cooperation with companies with regards to bachelor theses can also be improved.

The Department of Industrial Engineering and Robotics makes a significant effort to involve students in additional engineering and research activities. It also encourages students to be active and to participate in conferences, exhibitions, and competitions.

The KC has clear and well-defined admission rules and procedure of recognition of foreign qualifications.

The level of student mobility is not high. The main reasons of low outgoing mobility: low student confidence, lack of foreign languages skills and employment of students during their studies.

KC makes efforts to find out students' opinions and attitudes about the quality of studies. Every semester a survey is conducted on the quality of study course. Every year, first and senior year students, graduates and employers are interviewed. However, during the conversation with the evaluation team a few students said that they didn't receive feedback after the student surveys and they do not know if the administration is taking action in response to surveys.

The teaching staff involved in SP teaching meets the legal requirements. The number of teaching staff is adequate to ensure the intended learning outcomes. Teachers also have good professional preparation and experience. After the discussion with staff and students, we understood that teachers were well motivated for education and adequately qualified for specialized courses. The strong partnership with Kaunas University of Technology brings opportunities for students to use modern devices, and for teachers to have common work or discussions with their colleagues of the university.

The teachers' involvement in research could be greater and even more among team members, especially among having PhD. Knowledge of foreign languages, especially English, should be further improved. The level of outgoing mobility among teachers is not too low but can be improved. The teachers of KC have good possibilities to increase their pedagogical and professional qualification.

The teaching staff has only limited contacts with industry. They are focused on the organisation of practice rather than consulting activities.

Premises of KC are in very good condition. Most laboratories are well equipped, equipment is good and standard.

Meetings with administration, self-evaluation team and teachers indicated that all these groups understand and are familiar with the KC quality management system and participate in it. This shows that the quality management system is efficient.

Employers are involved in curriculum development. The name of the SP in the evaluated SF was changed at the initiative of the social partners. The financial assistance of the social partners for the SF is rather symbolic, limited with advice or software equipment on loan. The collection of data, use and publication of information on studies, evaluation, improvement processes as well as student, graduate and employer surveys are well managed and performed. This opinion is based on the fact that all necessary information is publicly available.

**Expert panel:**

1. **Prof. Dr. Toomas Rang (panel chairperson)** *academic,*
2. **Prof. Dr. Marko Čepin,** *academic,*
3. **Dr. Isabelle Avenas-Payan,** *representative of social partners,*
4. **Dr. Dainius Balbonas,** *academic,*
5. **Dr. Rolandas Urbonas,** *representative of social partners'*
6. **Mr. Ruben Janssens,** *students' representative.*