CENTER FOR QUALITY ASSESSMENT IN HIGHER EDUCATION

EVALUATION REPORT

STUDY FIELD

ELECTRICAL ENGINEERING

at Panevėžys College

Expert panel:

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2. **Prof. Dr. Toomas Rang Marko Čepin,** *academic,*
3. **Prof. Dr. Žilvinas Nakutis,** *academic,*
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1. **Dr. Andrius Šablinskas,** *representative of social partners'*
2. **Mr. Ruben Janssens,** *students' representative.*

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Report language – English

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Study Field Data*

Title of the study programme	*Electric and Automatic Equipment*
State code	6531EX037
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	2009-08-31

** 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 *10th December 2020.*

Prof. Dr. Laszlo Tamas Koczy (panel chairperson), *professor of Széchenyi István University, Department of Information Technology, professor of Budapest University of Technology and Economics, Department of Telecommunications and Media Informatics, Hungary;*

Prof. Dr. Toomas Rang, *Professor Emeritus of Thomas Johann Seebeck Department of Electronics; Tallinn University of Technology, Estonia;*

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Dr. Andrius Šablinskas, *Sales Director at Schneider Electric Lietuva, 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, the following additional documents have been provided by the HEI before the site-visit:

No.	Name of the document
1	Course descriptions of the study field EE

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

At Panevėžys College, studies in the field of electrical engineering take place at the faculty of Technological Sciences. The implementation and development of the programmes for the study of electrical engineering and electronics engineering is coordinated by the committee for the programme field/s of Electronics (E09) and Electrical Engineering.

On 1 January 2020, there were 76 students (out of the 352 students of the Faculty of Technological Sciences) involved in electrical engineering studies with the title "Electric and automatic equipment". This programme has been implemented both in full-time and part-time forms in the College since 2003.

The content of the programme and the learning outcomes of the studies have been periodically reviewed and resumed considering the changing needs of the electricity sector. During the last external evaluation, the programme was accredited for the maximum period (7 years), and in 2019, it was awarded by the „Investors' Spotlight" quality label as one of the most engineering-oriented study programmes in Lithuania, which meets the needs of the market.

The faculty maintains very close and constructive relations with the Lithuanian Electricity Association and the companies in the energy management and industrial automation sector of the Panevėžys region. This is a truly engineering type programme that prepares for successful involvement in the company practice, and the social partners give a rather positive feedback.

II. GENERAL ASSESSMENT

Electrical Engineering study field at Panevėžys College is given **positive** evaluation.

Study field and cycle assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation of an area in points*
1.	Study aims, outcomes and content	4
2.	Links between science (art) and study activities	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:	**26**

*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

(2) Expert judgement/indicator analysis

The aim of the Electric and Automatic Equipment Study Programme is to train electrical engineering professionals being able to creatively design, install, operate and modernise electric and automatic equipment, automatic systems, and to organise professional activities in the national and international electrical industry scenario and the global market. The goal of the EAE study programme is to ensure a balanced layout of the general college, study field and optional subjects established by the college throughout the entire study period. Nevertheless, when in the future, the number of admitted students would be increased; the number of elective subjects and opportunities for extracurricular professional student activities could be further increased. This ensures the transferability and continuity of the knowledge and competencies.

There is an obviously close collaboration with the stakeholders, especially, with the companies of the surrounding part of Lithuania, and the national professional organisations. This ensures a continuous adaptation of the programme to the actual needs of the labour market, especially, as the students have opportunities to do projects/thesis work directly at the companies. This ensures a very direct connection to the needs of the labour market.

The direct feedback from the society provides a very clearly defined set of goals when developing and updating the course and module contents, and the whole programme. Nevertheless, it may be considered that a HEI should also consider the potential future development of these needs and prepare for this future. One possible way is the lookout to the EE technology of the most highly developed companies, e.g. by means of enhancing the use of international professional sources.

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*

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

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

(2) Expert judgement/indicator analysis

In accordance with the above aims, the learning outcomes of these studies have been continuously reformulated based on periodic consultations with the representatives of the main industrial and professional stakeholders, especially, the Lithuanian Electricity Association, the Panevėžys Regional Industrialists Association of the Lithuanian Engineering Industry Association, the Panevėžys Chamber of Commerce, Industry and Crafts and the representatives of the potential employers and the students' practical training bases. In addition, in 2016, with the participation of the representatives of the Ministry of Energy of the Republic of Lithuania, a discussion initiated by the College, with the title *„On the issues of the training of professionals in the energy sector"* was held, strengthening the feedback on the adequateness of the study outcomes. As a result, a series of agreements on joint actions between companies and colleges in the energy sector were signed, in order to ensure that the competences of the future professionals are in conformity with the needs of the labour market in Lithuania. In 2018, a repeated discussion with the electronic systems manufacturing company „Rifas" took place, further refining the competences and working skills of the programme graduates. Since 2017, a continuous electronic survey by the Lithuanian Electricity Association conducted by the President of the Association has been going on, focussing on the importance of skills and competences of the same graduates.

The expert panel has looked especially at the course contents of the EE specific subjects and modules (typically, pairs of subjects) in order to evaluate the fulfilment of the expected learning outcomes. The most important ones are listed and briefly evaluated as follows.

Electrical Engineering and Electrical Engineering Materials Module. This module offers the ability to analyse the schemes of magnetic and electrical circuits, detect cell failures, select and calculate the required parameters, design electrical principle schemes and evaluate physical phenomena in electrical engineering. Students obtain the ability to calculate the required quantities, draw graphs and schemes, and conclude on the workability and safe use of the electric equipment. In addition, students are taught how to evaluate the chemical and physical properties of the substances used in electrical engineering, as well as the physical phenomena occurring in dielectrics, conductors and semiconductors. The ability to select materials according to environmental and operating conditions is also developed.

Further subjects focussing on specific professional knowledge include Electrical Engineering, Engineering Drawing, Computer Aided Design, and Industrial Electronics courses.

There is a subject on Applied Research, connected to the collaboration projects of the College with industrial companies.

Another key module is the Automation and Measuring Technique Module. The module is designed to provide students with the knowledge on the design and switching characteristics

of measuring instruments, automation devices and control equipment. Students are taught to apply their theoretical knowledge in practical and laboratory work, to enable them to apply the knowledge in the technological processes of control and regulation systems, and measurement methodologies; to assess the accuracy of measurement, and to understand the schemes and standards used.

Further connected subjects include the courses Electrical Machinery, Electric Drives, Mechanics, Automatic Control, Networks of Control Systems, Electric Equipment, Installation and Operation, Mechatronic Systems Control.

Most up to date areas are covered by Renewable Energy Sources, Internet of Things Technology, Smart Thing Technologies, and Design and Manufacture of E- Devices.

An important subject refers to environmental and safety issues of the EE profession: Environment and Human Safety.

In addition to the necessary Mathematics, Physics and Informatics subjects, Economics, Business Management, Quality Management and Law are also taught. It is important that a special subject on Energy Economy is included.

The course descriptions give evidence that the recommended literatures are up to date, and thus, the consistent development of competences of students is ensured by continuous improvement of the course contents and the adaptation to the changing requirements of the labour market.

Summarising the above, the programme focuses on the students' experience, skills, needs, perspectives and the achievements of the learning outcomes.

The credit oriented study follows the concept where the credit is primarily understood as an instrument for recording, accumulating and transferring learning outcomes, however the significance of the credit as a unit of study time remains, which is required for the student to absorb new information and relate it to real practical situations.

As already stated above, it is important to keep up with the development of the field and prepare for future needs and expectations. This may happen by being involved in international mobility and access to the most important professional literature. The HEI should further increase its activities in this direction.

The panel advises that the College, being a HEI, should always be aware of the expectation of society for bringing and helping to adapt new technologies in the country, not only serving today's needs of regional industries, which is very well done in the current programme.

As required by international and national regulations, the volume of the EAE study programme is 180 credits. This is subdivided into General college study subjects 15 credits (at least 15 credits required), modules and subjects of the electrical engineering study field, including practice and preparation of the final project 159 credits (at least 135 credits), Practice takes 33 credits (at least 30

credits), and the Graduation project is 9 credits (at least 9 credits). Practical training is 34.2 per cent (at least 33 per cent), while contact work (including distance learning) volume is 44.8 per cent (at least 20 per cent required). The duration of full-time studies is 3 years and, that of the part-time studies is 4 years. The structure of the study programme fully complies with the requirements of the legislation.

The assessment methods used are oral and written interviews, tests, individual and group assignments, projects, research studies, laboratory and practical work, preparation and presentation of their reports, exams, and others, and teachers have the freedom to propose individual assessment methods, which however, have to be approved by the study committee before application. This system of credits and teaching framework, further, the system of assessment is fully in compliance with all legal requirements.

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

(2) Expert judgement/indicator analysis

Students can personalize their studies by selecting some part of the study subjects as optional subjects. Two subjects may be chosen by students from the list of the optional professional subjects. Three further subjects may be chosen from the alternatives offered in the study plan: Management Basics or Law Basics; Quality Management or Project Management; Internet of Things Technology or Smart Device Technologies. The subjects thus selected account for 10% of the total credits of all the subjects. The impression of the experts was that additional elective subjects and further professional extracurricular activities could be welcome, however, this will be realistic when the number of admissions essentially increases in the future. A serious challenge is the small sizes of student cohorts, probably the most serious difficulty of the programme. Judged by the impressions coming from the students' side, the panel found that under the present circumstances, opportunities for students to personalise the structure of field study programmes are fully available.

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

(1) Factual situation

(2) Expert judgement/indicator analysis

The subject of the final project has to be selected by the student in tutorial with the research advisor at the latest by the beginning of the last semester of studies. While preparing the final project – by developing models of electrical and automation systems, designing automatic technological processes, selecting the necessary equipment and devices – the student has to demonstrate the knowledge and practical skills attained during the whole study term.

It was found, however, that the topics of the theses are chosen from a rather narrow field, mostly connected with networks, probably a result of the collaborations with regional companies. The scope and topics of the theses in electronic engineering and automation is much wider compared to electrical engineering.

During the site visit interviews, participants explained that final works are being selected based on certain criteria. Part time students usually choose concrete final works related to their actual problems and challenges at work. Thus, in most cases, they choose more or less standard topics.

The students with better study results choose advanced theses related to power quality, mechatronics, etc.

Looking at the programme from a wider horizon, it could be suggested that electrical engineering theses should cover a wider variety of topics than the present scope. As some examples, besides network design, part of them could focus on operation and maintenance topics – especially from the energy and power quality sector. Final works could thus reflect that the student understands, not only the principles of electricity, but also the principles of communication, industrial protocols, and they have the capability to configure such systems. in the final works. It is understandable, on the other hand, that the students are all employed by EE companies, and the companies formulate a very clearly expressed need of the society, which corresponds to the actual expectations of the labour market, and thus the College cannot offer those areas, which are not demanded by the stakeholders. The expert panel considers that this situation would change when a much larger number of students, employed or potentially employed by companies geographically more diverse. The potential of widening the scope of EE fields covered by the theses is visible.

The graduation project is defended at the public meeting of the qualification commission consisting of specialists in the field of studies, practitioners and representatives of social stakeholders (especially, the employers, as mentioned above); and the chairman of the commission is a representative of another higher education institution, and there may also be members from other higher education institutions.

Recommendations for this evaluation area:

- Consider further increasing the possibilities of the students to choose among elective subjects (with a focus on professional areas), especially when the number of admissions may be increased.
- Consider refining the present easily accessible system for students to pursue individual "tailored" laboratory based development projects under supervision of teachers, as extracurricular activities.

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

(2) Expert judgement/indicator analysis

Applied research and experimental development of science (hereinafter referred to as R&D) at Panevėžys College is conducted in accordance with the Law on Science and Studies of the RL (2009). To promote it, there is a strategy and strategic action plan of Panevėžys College for the period 2014-2020. In accordance with the Annual Regulation on college research, experimental development (and evaluation of artistic activities, 2019), the outcomes of R&D conducted by the College are grouped into the following subgroups: scientific papers, custom project activities, other commissioned project activities (monitoring, analysis, research study), provision of additional competencies, qualification improvement, seminars, tutorials and other educational activities. During the period under analysis, most of the College revenues received from R&D activities in the field of EE relates to custom project activities and the provision of additional competencies, qualification development and seminars. In 2018, the College revenue from R&D activities in the Field of Electrical Engineering studies amounted to EUR 77498.4, while in 2019 – EUR 39654.2.

Some of the examples are "Feasibility study of the representation of the company in the electronic space" for the „Infociklas“ ltd., „Modernization of the street lighting in a small town Vidukle“,„Modernization and development of the car service „to Chassis”.

At the same time, several scientific publications have been written, but the number is not too high compared to the number of teachers (five papers mentioned in the SER). This is the point where unambiguously, an increase of the involvement of the teaching staff is necessary. The course contents follow the evolution of the course materials in the field, thus there is evidence that the teaching staff is following the recent development of the area. The number of publications is not high enough; participation in national and international scientific conferences should be further increased. The presence of quite remarkable applied research projects, which also bring considerable income to the college, is however a very positive tendency that should be kept up for the future.

There is evidence of collaboration in the EE field with the Panevėžys Faculty of KTU (shared laboratories for studies, vocational training and applied research), located geographically in the same city, where more intensive research is going on. Thus, cooperation in scientific research could be further intensified with KTU.

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

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

(2) Expert judgement/indicator analysis

Students in the field of electrical engineering are involved in the activities of the College Student Scientific Society (CSSS), they prepare final projects of an exploratory nature, participate in the annual international conference *"Trends in science and studies in the context of globalization"* organized by Panevėžys College, present periodically their initial research papers at the annual conference *"Roots of Science"* organized by the Student Scientific Society, which are published in the Proceedings of this Conference. The number of involved EE students is annually not more than 15, but this represents approx. 20%.

There is little evidence of students' research works going beyond the border of the College, and the contents seem to be rather more development type than original research. The College admits that they encourage students with weaker research works and observe their improvement over the time.

The social partners support these activities, but obviously focussing on applied development projects, where little research in the narrower sense may take place. In this respect, collaboration with KTU and other universities, especially, the teaching staff members pursuing PhD studies may intensify these activities. Three PhDs were employed during the past years.

No evidence of the EE students participating in any scientific event outside of PC, not even the forums organised by KTU were found.

This way, the link between the content of studies and the latest developments in science seems to be rather indirect. It can be however, observed that the students may keep up with the latest developments in the EE technology, which is ensured by the cooperation with local companies and the teachers, and students being involved in development work motivated and supported by the same.

Recommendations for this evaluation area:

- Increase the long term and basic research activities of the teaching staff. A more visible long term research activity should better balance the existing short term and applied research. This could be achieved by studying the most up to date international scientific literature more intensively, which could be achieved by improving the accessibility of important data bases in the library. Considering the financial aspects, this could be done most efficiently by collaborating with other HEIs.

- Intensify research collaboration further with the KTU and other Lithuanian universities. An even closer collaboration in the field of EE science with the Panevėžys Faculty of KTU and other universities would be enhancing the level of long term research results and through this, the programme could reflect the future trends, beyond the actual needs of the labour market and the directly embedding society.

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

(2) Expert judgement/indicator analysis

The College executes the admission of students through the system of the Lithuanian Association of Higher Education Institutions for general admission, and partly, by direct admission (only to paid places of studies). The admission of students is done by ranking the best secondary education students, while the relevant regulations specify the composition of the competition score. This competitive score of the entrants to this programme is formed from the assessments of four subjects: Mathematics exam, Physics exam or annual grade, an optionally chosen examination mark of any other subject which does not coincide with the first and second exam or annual grade, Lithuanian language and literature exam). The College has set a minimum competitive score; without reaching it, entrants cannot apply for any study programme. This minimum competition score was 1.6 in 2017, 2.0 in 2018 and 4.3 in 2019, which clearly indicates a steep improvement of the admitted students' scores. The same minimum score is applied to both state-funded and paid study places. The procedure for admission to studies is established in the *"Rules for admission of students to Panevezys College"* and is published on the College's website.

This increase is evaluated by the experts as an undoubtedly positive phenomenon.

In order to have access to the motivated and interested secondary school students, the College annually participates in higher education study fairs, develops and disseminates information on its study programmes, disseminates information in general education schools, and publicizes programmes in the media. The College organizes consultations and lessons of Mathematics and Physics for last year secondary school pupils in order to prepare them for graduation exams.

These measures should be kept up in all cases in the future too, as they can be considered as the key elements in the future increase of the admissions.

This whole procedure is transparent, fair and is in full accordance with national regulations.

Unfortunately, for several years now, engineering studies, including the EAE study programme, are getting fewer and fewer students in Lithuania, this also applies to PC. The number of high school graduates choosing Physics and Informatics state exams is as low as around 7%, and this is a necessary subject when targeting engineering studies. Therefore, the declining figure of high school graduates confirms the threatening fact that the number of specialists trained will not be able to ensure the sustainable operation of the engineering industries in the future, which remark applies to EE, especially. (This is an unfortunate tendency that is visible in several other European countries as well.)

In 2019, there were no students admitted into EAE program. Instead, the Electromechanics study program was suggested for those, who wanted to study here. The College admits that this program is competing with the EAE study program, and so, it intends to rotate admission every second year. Earlier, Panevėžys had the big high tec company AB "Ekranas" (with >4000 high skilled workers). After the bankruptcy of AB "Ekranas", there was a huge supply of electric and automation engineers and the attractiveness of the field declined due to this high competition.

In order to attract more students to engineering studies, the College collaborates in the study programme with Panevėžys city municipality and local engineering industries. Panevėžys city municipality established a couple of technology centres.

For changing this rather negative (national, or even international) tendency, PC should definitely go on with the present activities that target persuading more high school graduates to choose EE (and other engineering) studies. The panel considers these efforts as very adequate and potentially successful on the long term as well.

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

(2) Expert judgement/indicator analysis

The outcomes of partial studies, previous and self-learning are evaluated and recognised on the basis of two quality management documents publicised by the College. The general principles for the evaluation and recognition of partial studies, acquired qualifications, non-formal and self-learning competencies are set up in these documents, and have the following main features: accessibility (the students may apply for recognition of prior learning or acquired), transparency and objectivity (the evaluation is carried out on the basis of approved procedures and the documents submitted by the applicants); assimilation (measured by the student's knowledge and abilities described in the study), flexibility (assessment of knowledge and competences of students coming from different backgrounds, including previous studies in higher education, formal or non-formal, including self-learning).

During the period under evaluation, 17 requests for recognition of formal competences were received, of which 14 were granted. The panel could not find any trace of students with foreign qualifications being recognised, except those obtained during mobility (see below).

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

(1) Factual situation

(2) Expert judgement/indicator analysis

Students are offered the opportunity to participate in international mobility programmes. The College has concluded Erasmus+ bilateral partnership exchange agreements with 21 foreign higher education institutions (in Latvia, Turkey, Malta, France, Greece, Hungary, Portugal, and Macedonia), where students from the EAE programme can study. Nevertheless, in 2017 and 2018, no students of this programme participated in the Erasmus+ Exchange Programme in foreign higher education institutions while in 2019, four students took part (in Rezekne (Latvia) Academy of Technology, and in Riga (Latvia) Technical University). This represents only 5% of all students in the programme, which is rather low, and they all went to the immediate neighbourhood only. It is regrettable that the various opportunities offered have not been used.

The main reasons for not wanting to go abroad are the fear of the cultural shock and unknown environment. The problem of most students is, that they are employed and that employers do not support long absences. Also the students fear to lose some important subjects. There is a lack of awareness that in foreign institutions they may get similar, or sometimes, even more up to date knowledge. It was noticed, however, that students are uncertain about the financial situation when going on an exchange, as they are not all supported by parents (Erasmus provides only partial funding.)

The College provides advanced English in order to overcome the language issue. During the site interview, 1st course students were not aware of the Erasmus+ programme, and financial conditions for studies abroad, like the Erasmus+ and additional grants. It was noted that students take more advantage of the opportunity to go abroad for a practice rather than to studies.

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

(2) Expert judgement/indicator analysis

Upon signing the study agreement, each student receives a student memo issued by the College, which provides all the information relevant to students (such as addresses of the faculties, contacts, campus map, scheduling principles, services provided to students, etc.). The academic year for first year students begins with an introduction to the circumstances of

the studies, and they are presented with the system of academic and financial support and academic exchange opportunities. Information on studies is publicly available https://panko.lt/category/studijos/.

Psychological and other, non-study related counselling is also provided by experts. There was given evidence from students about the availability of academic, psychological, and financial support. The College staff is very friendly – and they are highly available and support the students. Student groups are small, so they get enough attention.

While all formal requirements are excellently fulfilled, it should be repeated that more opportunities for extracurricular activities should be offered to students.

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

(1) Factual situation

(2) Expert judgement/indicator analysis

The onsite visit showed that there is enough study information and student counselling available, which fact was supported by the statements of the students present, and by the detailed information provided by the staff.

Recommendations for this evaluation area:

- A more intensive participation in international mobility of students should be present. The panel advises that a new possibility of partial semester trips could be taken into consideration and students could be encouraged to travel in small groups together. (This would be a novel approach, which may be an example of good practice for other HEIs as well, and maybe, it could counterbalance the existing difficulties of persuading students to go on mobility.)
- Work out ways to receive foreign students (from the foreign partner institutions). Projects could be offered and later, possibly, even subjects supervised in English. (That way you could motivate bidirectional student mobility.)
- Continue activities to have more high school graduates being interested in studying Electrical Engineering, and negotiate with the local industries to provide more means for motivation of choosing the EE studies. Continue promotion of engineering studies in the Panevėžys region. Keep on working with secondary schools (STEAM classes, various competition, fairs, support for Mathematics and Physics studies and exam preparation, involvement of social partners, common (student and pupil) extracurricular activities, etc.).

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

(2) Expert judgement/indicator analysis

The duration of the semester is 20 weeks, of which 1-4 weeks are allocated to the examination session. The duration and timing of the classroom work, distance lectures, practice, examination sessions and student holidays are indicated in the study schedule drawn up by the faculty in accordance with the study calendar approved by the Academic Council and confirmed by the Deputy Director of the College for studies. The main teaching/learning methods are lectures; laboratory classes, tutorials, work in small groups, practice in an industrial company or other institution, individual or team projects, teaching in virtual learning environment, cognitive tours, case studies, writing papers, etc. enable students to achieve the learning outcomes of their studies.

The College uses the virtual learning environment Moodle, which contains learning materials, practical, independent work, test tasks, tests, semester paper (project) tasks and methodological instructions, which is especially important now, in the pandemic situation.

The College also cooperates with KTU to align the outcomes of the programme with the requirements of their Masters' programme, so PC students can immediately start the KTU Master.

This is in full accordance with regulations and expectations. It should be remarked that the expectations of immediate employers and those of the universities, where graduates may potentially continue their studies at graduate level, may differ. In case of increasing student numbers, optional subjects pointing in both alternative directions may be introduced in the future. Alas, considering the present small number of students, it is unrealistic under the current conditions.

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

(1) Factual situation

(2) Expert judgement/indicator analysis

Students with a limited working capacity are provided with equal opportunity to study at the College. The aim is to take the special circumstances into account, to pay attention individually to them and to understand the individual needs of students with disabilities, and to enable them to participate directly in the study process, and/or to contribute in various ways to the development of favourable learning, study and living conditions for them inside

and outside the College. There is a consultant at the Centre for Studies, Career and Occupation who works with students having special needs. The study process is flexible and can be adapted to the needs of disabled persons by applying various forms of assessment, suitable to the person with disability.

The College has one stationary lift and two mobile ladders for students with mobility impairments, and there are several computer desks and chairs adapted to them.

For visually impaired students, they offer programs that allow the students to read in Braille, and there are two image magnifiers.

Information on support for students with disabilities is publicly accessible here: https://panko.lt/category/parama studentams/.

The panel judges that the accessibility for students with special needs is fully satisfactory, even, very good.

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

(2) Expert judgement/indicator analysis

The progress of students is systematically monitored in the College and the outcomes of the monitoring are applied to ensure successful learning during the study process. The outcomes of the semester are discussed at the Dean's office meetings two times a year. After completion of the subject (or the module) a mandatory survey on study satisfaction in general, about satisfaction with the subject studied and about problems encountered is conducted by the students in every semester.

Students in the first year participate in a special survey on the adaptation into higher education after the end of the autumn semester. Providing information, counselling and other personalised services are provided according to the needs of students. Each module/subject includes tutorial hours, which may be allocated as individual or as group tutorials.

Obviously, this system works properly, which is supported by the student opinions as well, as the reports of the staff members (including the administration).

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

(2) Expert judgement/indicator analysis

The feedback to students is provided in the following forms:

1) Orally (e.g. after the grading of a written work) when the most common mistakes are revealed, and it is explained which areas require harder students work. The feedback provided in this way allows students to compare their mistakes with others, see good practices, and achieve better results. For the teacher, such a method saves time, allows getting a general picture of the quality of the course taught, to find out what needs to be improved and to discover its strengths.

2) The basic errors made by the vast majority of students are explained along with the correct answers in writing (sent to the e-mail accounts of the students).

3) Individually, both orally and in writing. Students receive the feedback individually immediately after the assessment (written or oral) during individual tutorials, as this allows the student to immediately clarify the mistakes they have made, by consulting with the responsible teacher.

The expert panel judges this is good practice and should be continued.

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

(1) Factual situation

(2) Expert judgement/indicator analysis

The College participated as a partner in the national project "Development and implementation of career monitoring models for higher education students and career monitoring models, improvement of the qualifications of vocational guidance profession working with students, development of tools for them".

The staff of the Centre for Studies, Career and Occupation and professionally trained specialist teachers are currently working with students and advising them. There is a Career Management Information System (CMIS), which allows students to develop and manage their personal careers and use the virtual career library. The system allows monitoring the students' careers.

The PC EAE programme graduates are very successful in entering the labour market immediately after graduation – based on the monitoring after half a year, and also after one year of the completion of studies. This statement is supported by the diagram in the SER, showing 100% employment of the graduates of the last two years.

The College is not collecting longer period statistics about employment and salary changes of graduates. Longer time perspective (3-5 years) career tracking, variations of remuneration, further development of graduates should provide more accurate information on the employment trends, and thus also could give more clear indications, both to College and future students.

Alumni and social partners admit that graduates have good theoretical skills and some lack of practical skills. Overall, they value graduates who have interdisciplinary skills (IT and electrical), who are capable to adapt and learn quickly.

This puts the question, why do the projects proposed by the potential employers not focus more on the skills that the same employers expect from graduates. The panel's opinion is that the practical engineering type focus of the course contents is sufficient, and theoretical knowledge is not exaggerated.

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

(1) Factual situation

(2) Expert judgement/indicator analysis

The main attitudes on ethical subject-matter (academic) behaviour are regulated by *the Code of Academic Ethics of Panevėžys College* (2018). The procedures for the verification of the concurrence of study papers, the recording of plagiarism and the imposition of sanctions on unscrupulous students are established by the *Description of the Procedure for the Prevention of Plagiarism of Panevėžys College* (2018). In order to ensure fair studies of students, teachers control the integrity of the performance of interim tasks/assignments. According to this, during the examination of the session, if the fact of cribbing is established, the teacher immediately terminates the examination of the offending student, which is equivalent to academic debt.

The College ensures equal opportunities for all persons and a non-discrimination policy. The policy of equal opportunities and the principles for its implementation and the measures for the implementation of the principles of monitoring this policy are defined in the *Description of the measures for implementing and monitoring the principles of the implementation and enforcement of the Equal Opportunities Policy* (2018).

The existence of such procedural descriptions ensures good practice at the College.

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

(2) Expert judgement/indicator analysis

The College ensures that students are able to challenge (appeal) the assessment received and receive responses with explanation to the topic of the appeal. Students who do not agree with the assessment of the study of the module or subject, or who think they have experienced a violation of the procedure for the assessment of the module or subject, or the procedures for the assessment of the final project, have the right to appeal. The *Regulations of Appeals of Panevėžys College* regulates the procedure of submission and examination of appeals (2017).

This approach is good practice, according to the panel's view.

Recommendations for this evaluation area:

- The strategy of supporting weak students should be intensified and publicised.

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*

(1) Factual situation

(2) Expert judgement/indicator analysis

The student-teacher ratio is 5 to 1 (with a typo in the SER).

The programme subjects are taught by 15 teachers, of whom 13 (81.3%) work in the College for at least half of the full-time position and for at least 3 years. This way, a relatively strong and stable team of teachers is available, that allows achieving the expected learning outcomes of the studies, harmonise them to the possible maximum and avoid fragmentation in the study process.

Ensuring career substitutability for teachers and attracting teacher-practitioners, new teachers are usually recruited out of a competition for a limited period, during which they are supervised by the Chairman of the SPC and the Dean of the Faculty, when they are preparing for a public competition for the respective duties. Every five years, there is an assessment of the performance of the teachers in accordance with the minimum qualification requirements for the position. The appropriate qualification of the teacher facilitates the achievement of the objective of the programme and the expected learning outcomes of the studies.

The consistence of the teachers is: a very small number of Associate Professors, and Lecturers. While the competence in the field taught is out of question, the lack of Full Professors and the small number of Assoc. Profs are unfortunate. This is due to the majority possessing master's degree rather than PhD, which may be again the result of low intensity research and publication activities in the case of most teachers, see below. Further members of the staff should be encouraged to pursue PhD studies and to seek for promotion.

There is little evidence of the teaching staff participating in long term or basic research, therefore publications in reputed periodicals, and major international conferences are rare. The College admits that it focuses on applied sciences (they mentioned 2 projects, during which the laboratories significantly were improved). Researchers are being motivated

financially for applied research projects from industry and this type of results usually are reached much quicker.

The Administration recently approved R&D indicators: changed accounting policy – the workload of teachers was changed – according to that, 30% of time should be dedicated to research, with the research topics related to the study field. The staffs are being encouraged to cooperate at national and international level. There is more potential for research – during the evaluation period, three lecturers were hired as assoc. professors. A former student got the doctoral degree at KTU and returned to the College as a staff member.

There is a need of continuous self-education and keeping up with the most recent results of the EE science field, which would be easier if e.g. the most important electronic data base, the IEEE Explore would be accessible. This may be a disadvantage even in an engineering focused college (i.e., a university of applied sciences), as practical engineering knowledge always emerges from the basic and long-term research results.

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

(2) Expert judgement/indicator analysis

The College offers Erasmus+ (and some other) mobility opportunities to teachers. Upon application for mobility, the Erasmus + Mobility Selection Committee will evaluate and take a decision whether a trip is granted to the applicant. During the period under analysis, none of the requests for a mobility visit from the EE study teacher was rejected, and 13 teachers (i.e. 81.3 %) had left to deliver lectures at higher education institutions in foreign countries (Latvia, Hungary, Turkey, Greece, etc.). The international academic mobility of teachers increased in 2019/2020 to 68.8 per cent of all teachers in the field of study. In some cases, further mobility in the frame of collaborations was also carried out.

During the period under analysis, 8 foreign university lecturers (of which 3 lecturers in 2019/2020, 1 lecturer in 2018/2019, and 1 lecturer in 2017/2018) had arrived to deliver guest lectures to students in the field of EE.

The number of foreign visitors and staff visits abroad is appropriate, although an increase can always be recommended. Intensified staff mobility could be a factor to influence the students to participate in mobility programmes with more enthusiasm.

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

(1) Factual situation

(2) Expert judgement/indicator analysis

The conditions for the improvement of the competences of teachers in the applied, didactic and professional areas are ensured by allocating financial funds, seems to be a priority in the College. The main ways of improving qualifications are identified in the documentation of the College, namely, participation in international mobility projects, internships in practical activities, seminars, courses and other qualification development events. Systematic and consistent teachers' professional training is part of the College's personnel management policy. During the period under analysis, teachers participated in various trainings to acquire competencies in the work with new technologies, both hardware and software. During this period, particular attention was also paid to the development of academic English. There were five seminars organized to improve the competences of teachers in distance learning.

However, there is not much evidence available on an essential scientific improvement in the basic/long term research scenario, and the accessibility of recent publications is probably the root of this problem, as mentioned earlier (Here, the lack of access to IEEE Explore, and IEEE Transactions series may be mentioned.).

Recommendations for this evaluation area:

- An increase of the involvement in long term and basic research, and publication in highly reputed national and international periodicals and conference proceedings should be targeted, while the present successful short term and applied research activities should be carried on.
- Mobility of the teachers could be further increased, even though the present intensity is more or less sufficient. New financial sources should be identified in order to enable attending reputed scientific and professional events. (This is a problem partly independent from the College itself, as funding usually comes from the government.)
- Further visitors from abroad could be invited to deliver lectures and share good practices. (This is again a pertly financial problem).

3.6. LEARNING FACILITIES AND RESOURSES

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

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

(1) Factual situation

(2) Expert judgement/indicator analysis

The material and methodological bases of the Faculty of Technology Sciences are essentially enough to execute EE study field programmes. The facilities for the implementation of the EAE study programme are located in four buildings of the College. The total area of all the

premises is 9789.76 sq. m. All auditoriums and classrooms meet fire, hygiene and health safety requirements. All College buildings are accessible for disabled people. Annual maintenance of the buildings is planned and carried out.

There are 4 stream auditoriums for the teaching of general and optional subjects, each with up to 60 students. In all auditoriums and classrooms video equipment is available (both computer and video projectors), also other means necessary for the study process. For the presentation of final theses, term papers and projects, an amphitheatre auditorium of 45 seats is used, which is equipped with an interactive whiteboard and audio-visual equipment.

The training classrooms were recently equipped with AutoCAD software, the computerised spatial modelling program SolidWorks EDU, and the electro-electronic circuit modelling and simulation program Multisim are used for studies. There is a new modern computer class with 25 stations, which has been equipped with the above mentioned applications. During the year 2019/2020, 196 stationary computers, 27 laptops, 8 interactive whiteboards, 3D and multifunction printers, audio and video recording studio equipment, other hardware, and updated server-based equipment were acquired within the frame of some projects, all these being used at least to some extent, in the EAE programme.

There are laboratories used for the EAE programme, typically having 10-15 seats, namely the Physics and Software Innovation Laboratory, the laboratory of electrical measurements, the electrical installation laboratory, and the automation laboratory. Mechatronics lab practices are carried out in the laboratory of the Panevėžys Mechatronics Centre.

Both paid and free (open source) software is used in the College. The paid software is partly licensed for fixed time periods and is partly unlimited. The equipment in the labs is up to date, it was partly sponsored by companies collaborating with PC. (Some equipment to be mentioned is KUKA, Festo, Omron, Siemens products.)

The maintenance, interoperability and updating of the College's information technology infrastructure is taken care of by the Information Technology Centre. Details of the IT system are given in the SER, and these are adequate and up to date systems. All computers in the College network have the ability to be connected to the Internet with 1.0 Gbps network bandwidth. The Zoom software tool is used for remote training/learning. All College educational buildings and the College dormitory have wireless international Eduroam internet connection.

Professional practice with a total volume of 27 credits is carried out by students in enterprises involved in the design of various electrical automatic systems, or the manufacturing process of various products, which require specialists in the operation of electric and automatic equipment. Currently, 43 companies are found in the register of cooperation agreements, whose fields of activity are directly related to the work of an electrical engineer and which accept students for professional practice.

The Library Information Resource Fund is compiled according to the fields of studies and research in the College, as well as the needs of the academic community, and the development of study programmes. On 1st January 2020, the entire library fund consisted of 74,922 physical units of 49,057 titles for various documents. The library subscribes to periodicals of 30 titles in Lithuanian and foreign languages. E-books from *VGTU publishing house* (145 titles) and *KTU publishing house* (51 titles) have also been subscribed. Fifty VGTU and ten KTU e-books are available to students in the EE field studies. Information about the books in the library and newly received ones is accessible in the library's electronic directory, which is freely available, as well as in the virtual library of the College. The library provides additional services such as job reservations, Wi-Fi, copying, printing, scanning, and counselling. The College Central Library with 74 workplaces, including 20 computerised ones, also serves students and teachers of the EE field study programmes. There are two workplaces for the disabled, as well as two special desks for drawing here.

The accessibility of international up to date literature is however, only partial. Especially, the large paying digital data base IEEE Explore is not available, and not even the most important IEEE Transactions can be found. The textbooks are mainly of national origin.

Open access sources can be reached via the Lithuanian National Library. While the available literature is a sufficient base for the bachelor level studies, especial, for motivating outstanding students and long term research interest, the purchase or subscription of more international scientific literature is recommended. Staff members and students would definitely profit from a wider outlook to basic research results.

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

(1) Factual situation

(2) Expert judgement/indicator analysis

The SPC monitors the appropriateness and adequacy of the material and information resources of the EE study field programmes and makes proposals to the Dean for their renewal and replenishment.

The committee submits proposals to the Dean for the selection of the academic staff implementing the programme, improvement of their qualifications, and on the draft study schedule for academic groups in the field of study programmes.

The Committee analyses students' feedback on the content of subjects and modules taught, the teaching methods used; the assessment of their learning outcomes, the organisation procedures of independent work and, taking into account the results of the analysis, improves the implementation of study field programmes.

Students have expressed their impression that some of the equipment is rather old and that they would like to encounter some newer technologies. However, they also mentioned that

the infrastructure is being continuously improved and that they have seen a definite upgrade in the last years.

Recommendations for this evaluation area:

- The continuous development of the lab equipment as it has been done in the past period is further recommended, but the present lab conditions are good and comparable with other European HEIs similar laboratories.
- In the case of an expected increase of the number of students, a further increase of workstations for individual students interested in extracurricular activities could be recommended.
- Obtain access to the IEEE Explore digital data base, and other similar sources on up to date technologies and research results, by allying with other HEIs for cost sharing. It is recommended to form some consortium with other HEIs, that way the overburdening financial aspects of accessing directly international up to date literature and data bases being overcome. (It is a good practice, however, that the nationally published up to date literature is available in definitely sufficient amount.)

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

(2) Expert judgement/indicator analysis

The College Quality Management System was certified in 2013, in accordance with the requirements of international standard LST EN ISO 9001:2008, and in 2016, it was renewed and certified in accordance with ISO 9001:2015 and the quality assurance provisions and guidelines of the European Higher Education Area (ESG 2015). The QMS consists of the *Quality Manual*, the *Manual of Internal Quality Assurance Systems for Studies,* 20 descriptions of procedures (5 procedures directly related to the management of study processes) which contain the requirements for study processes, responsibility for the performed actions and the links with other internal and external documents. Other study-related processes are managed through appropriate procedures, rules, regulations or descriptions adopted by the College. There is a further *Manual of the Internal Quality Assurance System* (2020), which is part of the QMS.

The internal quality assurance system of studies is approved of and its implementation is inspected by the Academic Council. The Quality management representative monitors the

implementation of the QMS, and presents a report on the implementation of the internal study quality assurance system annually to the Academic Council.

The main quality assurance bodies for the EE study programme are the Faculty and the EAE SPC. The Faculty organizes the preparation of the study programme to be carried out, monitoring, renewal and internal evaluation of on-going programmes. The programmes of electrical engineering and electronics engineering are coordinated by the Committee for the field of Studies in Electrical Engineering and Electronics Engineering. The EE SPC monitors, analyses and supervises the quality of the process of implementing the content of the programme, its compliance with the College's mission, strategic objectives and identifies problems in the implementation of EE study field programmes, and, if necessary, proposes solutions to the Dean. The SPC conducts annual self-analysis of study field programmes, prepares reports, takes minutes at SPC meetings, presents and discusses the outcomes of self-analysis with the academic staff implementing study programmes.

The College applies risk-based evaluation and planning. Having evaluated the likelihood of a risk occurrence and the potential impact on processes and objectives, risks are estimated and managed by identifying the probability, impact and level of the risk, planning risk control measures and selecting responsible persons for their implementation. Several risk management measures have been implemented in the last two years. (Such as revised and adjusted questionnaires, survey plans, and a new survey system launched on the basis of the open source program LimeSurvey to obtain students' opinions on the quality of the programmes; further, agreements have been concluded with foreign higher education institutions, information on the conditions of academic exchange has been updated, English language courses for teachers have been organised, students have been introduced to study abroad opportunities, etc.)

This rather complete and efficient system allows a very well-functioning quality management system that covers all aspects of the study procedure, is publicly accessible and that governs the continuous updating of the course material, the modules and subjects. There is a multiple level scheme that allows all potential problems being effectively handled on the level where it is the most efficient.

Students have a clear view of the functioning of this system via its transparency, and they can have full use of it, both in collective sense (groups studying together) and individually (students with difficulties in one or another subject, and those carrying out individual work, as part of the curriculum, or in an extracurricular framework).

The panel of experts considers this QA approach an example for good practice.

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

(1) Factual situation

(2) Expert judgement/indicator analysis

In order to ensure continuous feedback from the social partners, annual surveys are carried out in accordance with an approved quality research/survey plan. These surveys refer to the relevance of the study programme (the need for study programmes and compliance with labour market requirements, employment of graduates and career monitoring); the quality of studies and their ways of being organised (the adaptation of students, quality of subject teaching, the quality of study programmes and organisation of studies); the organisation of the final assessment; the practical professional skills of students, etc.).

Participation of EE students in the process of organising and improving studies is ensured through regular student surveys, and also by students participating in the work of SPC, the work in the self-analysis group, student self-government, college governing bodies and activities of the students' scientific society. Results of the annual survey are presented in the first lecture.

Students report a good student-teacher relationship, which allows quick feedback to teachers. There is also a system of "class elders", who are students who have the resources to go to teachers to raise issues. Lastly, the student representatives are rather active and organise activities, including a conference that brings teachers and students closer together.

Participation of social partners in the management of the programme is ensured by cooperation agreements, employers' work in the SPC; by organising student internships, advising in the preparation of final theses, participating in the assessment of the study process learning outcomes and surveys on student practices, compliance of the outcomes of the study programme with the needs of the labour market and finally, the competences of graduates. Energy specialists working in the qualification commissions provide useful advice on strengthening students' knowledge and skills in certain areas, adjusting the content of some modules and subjects, or including entirely new subjects in the study programme. The periodic employer forums and Roundtable discussions have a significant impact on the development of EE programmes.

This rather complete and efficient system allows a very well-functioning quality management system that covers all aspects of the study procedure, is publicly accessible and that governs the continuous updating of the course material, the modules and subjects; and that guarantees a multiple level feedback from the side of all stakeholders, including electrical engineering companies and professional associations, where a series of regular consultations, the updating of the course material, some student practices and the thesis work are based on close connection with the stakeholders. Concerning the student population, the panel observed that special stress is laid on the student performance evaluation (both in general and for individuals).

This College is a good example of the collaboration of a HEI with the companies of the geographical region and national professional associations.

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

(1) Factual situation

(2) Expert judgement/indicator analysis

The general outcomes of the feedback are discussed at the meetings of the Directorate, Deans and Study Programme Committees. Heads of the study field programmes use the outcomes of the feedback for the self-analysis of the programme. Further details were mentioned above.

The experts consider this approach sufficiently good.

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

(2) Expert judgement/indicator analysis

The regular semester surveys of students, conducted after every subject and module is completed, are evaluated by the relevant committees and the college administration, and the conclusions are taken into consideration in the renewal of the subject contents, and teaching methodologies. There are nominations (best teacher of the year and other awards), where positive feedback from students is being shared and staffs are being recognized for good practices.

This is good practice and there is sufficient opportunity for the students to express their opinions on the study process. Meeting with alumni confirmed a very close and good connection between staff members and students, which enables direct channelling of the student feedback.

Recommendations for this evaluation area:

- No special recommendations here.

IV. EXAMPLES OF EXCELLENCE

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

- The EAE programme is focusing on an explicitly practically and labour market oriented programme, in close contact with companies and professional organisations, and has excellent results in this respect.
- Stakeholder feedback (social partners, companies and professional organisations, and students) is very well utilised. Continuous collaboration and exchange of information with professional organisations helps keep up-to-date the course contents.
- The quality management system is very well worked out and contains a rather complete system of QM documents that govern all the procedures, which are available for all staff members and students. This system is efficiently used in the study procedure.

V. RECOMMENDATIONS

1. Consider further increasing the possibilities of the students to choose among elective subjects (with a focus on professional areas), especially when the number of admissions may be increased.
2. Consider refining the present easily accessible system for students to pursue individual "tailored" laboratory based development projects under supervision of teachers, as extracurricular activities.
3. Increase the long term and basic research activities of the teaching staff. A more visible long term research activity should better balance the existing short term and applied research. This could be achieved by studying the most up to date international scientific literature more intensively, which could be achieved by improving the accessibility of important data bases in the library. Considering the financial aspects, this could be done most efficiently by collaborating with other HEIs.
4. Intensify research collaboration further with the KTU and other Lithuanian universities. An even closer collaboration in the field of EE science with the Panevėžys Faculty of KTU and other universities would be enhancing the level of long term research results and through this, the programme could reflect the future trends, beyond the actual needs of the labour market and the directly embedding society.
5. A more intensive participation in international mobility of students should be present. The panel advises that a new possibility of partial semester trips could be taken into consideration and students could be encouraged to travel in small groups together. (This would be a novel approach, which may be an example of good practice for other HEIs as well, and maybe, it could counterbalance the existing difficulties of persuading students to go on mobility.)
6. Work out ways to receive foreign students (from the foreign partner institutions). Projects could be offered and later, possibly, even subjects supervised in English. (That way you could motivate bidirectional student mobility.)
7. Continue activities to have more high school graduates being interested in studying Electrical Engineering, and negotiate with the local industries to provide more means for motivation of choosing the EE studies. Continue promotion of engineering studies in the Panevėžys region. Keep on working with secondary schools (STEAM classes, various competition, fairs, support for Mathematics and Physics studies and exam preparation, involvement of social partners, common (student and pupil) extracurricular activities, etc.).
8. The strategy of supporting weak students should be intensified and publicised.
9. An increase of the involvement in long term and basic research, and publication in highly reputed national and international periodicals and conference proceedings should be targeted, while the present successful short term and applied research activities should be carried on.

10. Mobility of the teachers could be further increased, even though the present intensity is more or less sufficient. New financial sources should be identified in order to enable attending reputed scientific and professional events. (This is a problem partly independent from the College itself, as funding usually comes from the government.)
11. Further visitors from abroad could be invited to deliver lectures and share good practices. (This is again a pertly financial problem).
12. The continuous development of the lab equipment as it has been done in the past period is further recommended, but the present lab conditions are good and comparable with other European HEIs similar laboratories.
13. In the case of an expected increase of the number of students, a further increase of workstations for individual students interested in extracurricular activities could be recommended.
14. Obtain access to the IEEE Explore digital data base, and other similar sources on up to date technologies and research results, by allying with other HEIs for cost sharing. It is recommended to form some consortium with other HEIs, that way the overburdening financial aspects of accessing directly international up to date literature and data bases being overcome. (It is a good practice, however, that the nationally published up to date literature is available in definitely sufficient amount.)

VI. SUMMARY

1. The study aims, outcomes and content are developed on a good level. The administration is proactive in monitoring society and labour market needs, planning of the program and interacting with social partners. This includes professional societies, local industries and high schools in the region. The College, being a HEI, should not underestimate the expectation of society for bringing and helping to adapt new technologies in the country, not only serving today's needs of regional industries.

2. More visible basic research activity is advisable. Focus on not only applied research and development, but also on long-term research and increase further collaboration with national and international HEI's. The existing collaboration with the Panevėžys Faculty of KTU in the EE field (shared laboratories for studies, vocational training and applied research) should be kept and could be used for further intensifying basic scientific research.

3. Student admission and support is carried out on a good level, considering the situation in the field of engineering sciences in Lithuania. It is encouraged to continue the good practice of working with secondary schools and promote engineering studies in the Panevėžys region. In order to increase student mobility, the possibility of partial semester Erasmus+ trips should be taken into consideration, especially, by promoting students travelling in small groups together. Continue the practice of annual proceedings for students.

4. The study process and graduate employment area is well elaborated; there is positive feedback from social partners and alumni. Especially, under the current pandemics situation, it is advised to consider further development of remote learning environments – both theoretical and practical works, as well as simulation type experimenting.

5. International relations may be widened. The teaching staff should show its increase of involvement in long term and basic research by publication in highly reputed national and international periodicals and conference proceedings. More visitors from abroad could be invited to deliver lectures and share good practices.

6. The learning facilities and resources are well developed. It is advisable to get access to IEEE sources in cooperation with other HEI.

7. The study quality management system is very well worked out. The system of quality assurance documents is exemplary, and its regulations and measures are indeed carried out in the practice. There is a regular and transparent follow up on the self-evaluation report and related activities with all stakeholders.

Expert panel:

1. **Prof. Dr. Laszlo Tamas Koczy (panel chairperson)** *academic,*
2. **Prof. Dr. Toomas Rang,** *academic,*
3. **Prof. Dr. Žilvinas Nakutis,** *academic,*
4. **Dr. Matthew Armstrong,** *academic,*
5. **Dr. Andrius Šablinskas,** *representative of social partners'*
6. **Mr. Ruben Janssens,** *students' representative.*