



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Kauno technikos kolegijos
STUDIJŲ PROGRAMOS
Elektros energetika (653H62010)
VERTINIMO IŠVADOS

EVALUATION REPORT OF
Electric Energy (653H62010)
STUDY PROGRAMME
at Kaunas University of
Applied Engineering Sciences

Grupės vadovas: Prof. dr. Krzysztof Kozlowski

Team leader:

Grupės nariai: Prof. dr. Lyudmila Zinchenko

Team members:

Dr. Olev Martens

Dr. Rolandas Urbonas

Paulius Simanavičius

Išvados parengtos anglų kalba
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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

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| Studijų programos pavadinimas | Elektros energetika |
| Valstybinis kodas | 653H62010 |
| Studijų sritis | Technologijos mokslų studijų sritis |
| Studijų kryptis | Elektronikos ir elektros inžinerija |
| Studijų programos rūšis | Koleginės studijos |
| Studijų pakopa | Pirmoji |
| Studijų forma (trukmė metais) | Nuolatinė (3 metai), Iššęstinė (4 metai) |
| Studijų programos apimtis kreditais | 180 |
| Suteikiamas laipsnis ir (ar) profesinė kvalifikacija | Elektros inžinerijos profesinis bakalauras |
| Studijų programos įregistravimo data | 30-08-2002 Įsk. Nr. 1514 |

INFORMATION ON EVALUATED STUDY PROGRAMME

| | |
|---|---|
| Title of the study programme | Electric Energy |
| State code | 653H62010 |
| Study area | Technological sciences |
| Study field | Electronics and electrical engineering |
| Kind of the study programme | College Studies |
| Study cycle | First |
| Study mode (length in years) | Full-time (3 years), part-time (4 years) |
| Volume of the study programme in credits | 180 |
| Degree and (or) professional qualifications awarded | Professional Bachelor in Electric Engineering |
| Date of registration of the study programme | 30-08-2002 Order No 1514 |

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I. INTRODUCTION

The current evaluation report of the Electric Energy (state code 653H62010) study programme at Kaunas University of Applied Engineering Sciences (also being previously known as Kaunas Technical College, further referred as the Applied University) is based on the Self-Evaluation Report (further referred as SER, provided by the Applied University), public materials and on the on-site visit by the Evaluation Team on. This evaluation included

- a) Meetings and discussions with the administration of the Applied University, the SER-preparation team, teaching staff, students, alumni and the social partners (mostly companies), related to the evaluated study programme
- b) Visiting to the labs, library, classrooms, and free-time zones for students and other facilities.

Kaunas University of Applied Engineering Sciences (as described on their web-page <http://www.ktk.lt/cgi-bin/svetaine.pl?nr=407&kalba=3>) is well-known in the market of education of Lithuania as educational institution with the traditions of engineering specialist training and great experience in training specialists – practitioners. Its beginning goes back to 1920, when the first Kaunas Higher Technical School was founded. It was the first educational institution, training engineering specialists in the independent Lithuania. Today Kaunas University of Applied Engineering Sciences is creatively working, open to innovations, harmonious team and training engineering specialists, who are able to work in changing environment. Kaunas University of Applied Engineering Sciences is an accredited, public institution of higher education, preparing qualified specialists in the area of technological sciences with a well-balanced combination of theoretical knowledge and practical skills.

Current accreditation took part on March 26, 2014 and it performed by the international panel of experts: Prof. dr. Krzysztof Kozłowski (team leader), Prof. dr. Lyudmila Zinchenko, Dr. Olev Martens, Dr. Rolandas Urbonas, Paulius Simanavičius. The entire team took all decisions concerning the final evaluation report.

Abbreviations:

SER Self- assessment report

BA Bachelor

MA Master

II. PROGRAMME ANALYSIS

1. Programme aims and learning outcomes

The qualifications gained by the graduates are certified by a Professional Bachelor's degree. The Applied University is awarding the Professional Bachelor diploma in Electric Engineering within four specializations (SER, p.8):

- 1) Electrical Equipment Mounting
- 2) Enterprise Engineering Systems
- 3) Electrical Networks and Systems
- 4) Autonomous Power Supply Systems

The Applied University is considering the labour market requirements, seeks to satisfy the specialist demand in electric energy of Kaunas region and the economy of the Republic of Lithuania and to ensure the high qualification level, simultaneously acting as a competitive participant in the market of education. Also relationship to several Lithuanian and European regulations and practices are considered (e.g. accordance to national and European Qualification Frameworks) (SER, p.5).

The programme aims and learning outcomes are compatible to the cycle and the sixth qualification level of studies. The development of the SP “Electric Energy” is based on the order of the Minister of Education and Science of the Republic of Lithuania “On Approval of the Descriptor of Study Cycles” (No. V-2212) of November 21, 2011 and corresponds to the level 6 of the Lithuanian qualification list (LRV Decision No.535 of May 4, 2010) (SER, p.7).

The four specializations are offered (SER, p.8), according to employer surveys and market needs: Electrical Equipment Mounting, Enterprise Engineering Systems, Electrical Networks and Systems” and updated programme branch “Autonomous Power Supply Systems”. It is expected by the Applied University, that the proposed SP specialization will be marketable and provide students with more choices than previous version of the SP.

As the evaluation team learned from the students, staff, alumni and the companies, the programme aims and learning outcomes seem to be reasonable for all parties, involved in the study programme. Also, the labour market requirements are well considered. So the evaluation team agrees with the claims of the Applied University, stated in SER.

The programme aims and learning outcomes are well defined, clear and publicly accessible (as in the university website and “AIKOS” Information system). Still, some improvements could be done to make the programme aims and learning outcomes better available publicly (on the web of the Applied University) for the benefit of the programme. The programme includes 15 study outcomes in 5 groups (SER, p.11-12). The quantity and description of the study outcomes is reasonable. The programme aims and learning outcomes are based on the academic and professional requirements, public needs and the needs of the labour market. Still some more emphasises could be on development of social skills (personal communication, understanding in markets, marketing and other business matters, presentation skills, etc.).

The programme aims and learning outcomes are consistent with the type and level of studies and the level of qualifications offered. As the evaluation team learned during the evaluation, the graduates are well prepared to the labour market, especially (but not only) by

their practical skills, also the graduates can continue their studies (after 1-year additional “bridge-studies”) on the master level - to have more deep knowledge of the field.

The name of the programme, its learning outcomes, content, and the qualifications offered are compatible with each other. The evaluation team agrees with the statement of the Applied University (SER, p. 7), that the study programme “Electric Energy“ corresponds to the mission of the University, has logical aims, structure, curriculum and adequate study methods, which stimulate intellectual, communicational, learning to learn abilities and ensure the achievement of the learning outcomes necessary for the labour market.

As overall impression of the programme aims and learning outcomes – it is really positive. The evaluators have clear impression, that the programme aims and learning outcomes are well accepted by the students, staff and stakeholders.

Regarding the possible recommendations - for this part, could be, as previously mentioned - on development of social skills (personal communication, understanding in markets, marketing and other business matters, presentation skills etc.). Also, in spite of the relatively large amount of the practical works during studies and possibilities to visit the companies, the students seem to have even more such opportunities.

2. Curriculum design

The curriculum design meets legal requirements. The structure of the study programme is based on the requirements for college studies. The scope of the programme, its subjects, contact and individual work hours, as well as the scopes and proportions of pass-fail forms fully correspond to the requirements of legal acts and other legislation documents of the Republic of Lithuania (SER, p.8), which regulate studies: “Description of General Requirements for Degree-Awarding First Cycle and Integrated Study Programmes” (approved by the Order No. V-501 of the Minister of Education and Science of the Republic of Lithuania of 9 April, 2010), the Law on Science and Study of the Republic of Lithuania (approved by the Order No. XI-242 of 30 April, 2009), the Regulations on Compatibility of the University Study Programmes to the European Credit Transfer System (ECTS) approved by the University Academic Council Decision No. V1-75 of 26 January 2011).

As mentioned already, the study programme includes 4 specializations. As described in the SER (p.9), the full-time and part time implementation of study programme comprises 36 subjects and 5 practical works, including 10 study subjects, determined by the University and optional subjects. Also, the order of priority in the study plan is very well designed in order to provide for the next steps (subjects) required knowledge and skills from the previous ones.

Study subjects and/or modules are spread evenly their themes are not repetitive. The logical links and sequence of study subjects is based on the development of the study programme “Electric Energy” on the thematic model, as explained in the SER (p.9). By using of logical links and the principle of continuity, considering several aspects in the same time (the aims, didactic regulations, contents, scope in hours, stating their nature, contents of laboratory, course paper and practice works, attendance requirements, the criteria of student achievement assessment, knowledge and competence assessment procedure, criteria of learning result assessment, requirements for studies and references etc.). Related to the sequence and organization of studies

and possible options, it is interesting to mention (SER, p.10), that the second year students acquire knowledge and practical skills in the basic subjects of the study field, such as electronics, energy basics, electric machines and transformers, power stations and substations. The third year students continue compulsory subject studies and deepen knowledge in the chosen specialization. These subjects alongside with fundamentals of engineering and social science subjects comprise the basics of “Electric Energy” study programme.

The content of the subjects and/or modules is consistent with the type and level of the studies. The subjects learning outcomes are also very well designed and they are successfully achievable in the process of studying. As mentioned in the previous part, the graduates are well prepared to the labour market, and the graduates can also continue their studies (after 1-year additional “bridge-studies”) on the master level - to have more deep knowledge of the field.

The content and methods of the subjects/modules are appropriate for the achievement of the intended learning outcome. The programme scope is more than sufficient to ensure learning outcomes. During the meetings the students, alumni, and representatives from different industry companies have confirmed this information.

The courses are well covered with several textbooks, typically in Lithuanian language, what makes the studies easier for the students. Also, in technical subjects, in parallel, the English language international books are available. Often the learning materials are made available for the students by the teaching staff through the Moodle e-learning system or on the web.

The content of the programme reflect the latest achievements in science, art and technologies. Still, as marked in the previous part of the report, some more emphasises could be on development of social skills (personal communication, team-working and presentation skills, understanding in markets, marketing and other business matters etc.).

3. Staff

The total number of teachers of the programme is about 30. The study programme is provided by the staff meeting legal requirements. Teaching staff is formed in accordance to the General Regulation of Technology (Engineering) Sciences, the Law on Studies and Science of the Republic of Lithuania, the Organizing Regulations of the University for exercising assessed and competitive positions and the Statute of the University, approved by the Decree of the Government of the Republic of Lithuania (SER, p. 15).

The qualifications and the number of the teaching staff are adequate to ensure learning outcomes. As in 2012 (SER, p.16) - the total number of teachers of the programme was 31, among them aged over 65 years 4 and in the range of 51-60 14 teachers. Typically all teachers have long experience, both pedagogically and in the speciality. The teachers actively participate in developing learning packages for external publishing: in 2008 3 publications were issued, in 2009 – 9, in 2010 – 3, in 2011 – 15 and in 2012 – 3. The total during the assessed period makes 33 publications. The average amount of publications for one teacher is 1,1 (SER, p. 16). Also it is a requirement for the college teaching staff to have experience in the industry, which is also fulfilled.

Teaching staff turnover is able to ensure an adequate provision of the programme. As a positive thing – enthusiastic young teachers in the beginning of their academic career were presented to the evaluation team. In recent years three teachers retired and four new staff members joined the teaching team. The administration of Kaunas University of Applied

Engineering Sciences provides possibilities for teaching staff to attend conferences, workshops, exhibitions as well as study at Kaunas University of Technology. So the overall situation is quite reasonable.

The higher education institution creates conditions for the professional development of the teaching staff necessary for the provision of the programme. Also, as positive, the university administration provides favourable conditions for qualification improvement for the staff members: favourable conditions are provided for PhD and Master's studies; the participation in scientific events is encouraged (SER, p. 18) - at present two teachers of Energy and Electronics department G. Daukšys and D. Ališauskas are studying doctoral studies. The scientific activity of teachers is topical and important for the programme and it is relevant to the subjects taught.

The programme teaching staff is involved in applied research directly related to the study programme being reviewed. About the involvement to the research (SER: p16-17) - during the evaluated period 4 publications with the University assignment were written by teachers working in the study programme "Electric Energy" and were published in publication database of Institute for Scientific Information „ISI Web of Science“ that has a citation index. The teachers of the study programme published scientific articles with the University assignment in conference proceedings: In 2011- 2012 scientific papers were presented by the following scientists and teachers: associated professors Bagdanavičius N., Jotautienė M., Štys E.; lecturers Daukšys G., Drabatiuk A., Muleravičienė R., Muleravičius R., Bagdzevičienė S., Martišienė D., Šaulys P. The teachers of the SP "Electric Energy" carry out contracted studies. For example, in 2011 one contracted study „Design of control system for electromobile battery charging station“ was made (executors: assoc. professor Š. Kilius, assoc. professor N. Bagdanavičius).

As a recommendation, more activities for the staff could be suggested – to be more involved in international co-operations, exchanges with other academic and professional institutions, as well as with the industry. Although this is not a requirement for colleges, still having more publications both on teaching and for research (in particular applied) could be beneficial for the staff professional development. Also, as mentioned in the SER (p.18) - development of the foreign language skills could be really beneficial.

4. Facilities and learning resources

The premises for studies are adequate both in their size and quality. The Applied University facilities ensure 100% implementation of the programme by the rooms (SER, p.19). Totally 31 rooms are in use. 3 of them are outside of the Applied University house:

1. Technologies of Renewable Energy Sources - laboratory at Kaunas University of Technology;
2. Thermal Engineering and Thermal Measurements laboratory at Aleksandras Stulginskis University;
3. Electrical Energy Measurements laboratory at Aleksandras Stulginskis University.

The general subjects of college studies, mathematics and physical science, social science module lectures are conducted in general streams together with the students who choose other Faculty programmes. The practical training classes of the core and compulsory subject modules are carried out at the specialized Electrical Engineering, Electric Machines and High Voltage Engineering, Low Voltage Devices, Electrical Equipment Diagnostics and Electric Protection, Studijų kokybės vertinimo centras

Electric Network Equipment and other laboratories, Electric Network classroom, where computer-aided workplaces and testing models (stands) are equipped. To perform individual tasks students make use of the library and reading-room. The reading-room is equipped with 43 places for individual work, 13 of them are computer aided. The library fund is formed considering the study programmes, implemented at the University.

The teaching and learning equipment (laboratory and computer equipment, consumables) are adequate both in size and quality. A Number of students do not exceed the number of work places. The number of students in the group usually does not exceed 30. Laboratory and practical tasks are organized in subgroups. Also, it was seen, that the lab facilities are modernized constantly. However, further development of labs with the latest (digital and smart) technologies could be highly appreciated by students, the staff and the stakeholders. Students have ability to use not only Kaunas University of Applied Engineering Sciences library, but also public libraries in Kaunas. Since some of the teachers are teaching also in Kaunas University of Technology, those who have published books there, suggest using them by students of both universities.

In 2011 during the development of the project “Improvement of Engineering Field Study Program at Kaunas Technical College” (VP1-2.2 -ŠMM-07-K-01-115) the licenses for following design programming equipment were purchased (SER, p. 20): Autodesk Education Suite for Architecture and Engineering, 2011, Autodesk Education Suite for Civil and Structural Engineering 2011, Autodesk Education Master Suite 2011, MathWorks MATLAB, Microchip Technology MPLAB C Compiler Package for PIC18/PIC24/PIC32 MCU and dsPIC DSC, Labcenter Electronics Proteus VSM Platinum Edition, BMCN NextView4 Professional, Solid Works Edu Edition Network 2010-2011. As for recommendation at this part, further development of labs with the latest (digital and smart) technologies could be considered, as described.

The higher education institution has adequate arrangements for students’ practice. Teaching materials (textbooks, books, periodical publications, databases) are adequate and accessible. Wireless network environment is installed at Kaunas University of Applied Engineering Sciences. It allows only the University’s students and teachers to connect to the University databases and get the information they are interested in inside and outside the University. Also e-learning environment *Moodle* is widely used in the teaching process, allowing also distribution the teaching materials to students. Also the students are generally satisfied with the facilities of dormitories and free times zones.

Also, to mention, the stakeholders were suggesting, that having more modern “digital” - equipment based learning and modification of corresponding subjects (in lab subjects, but maybe not only) could be beneficial.

5. Study process and student assessment

The full - time studies in the study programme “Electric Energy” last three years (SER, p.24). The academic year is broken in the autumn and spring semesters. According to the study programme the full-time study plan is framed by the Study and Science department and approved by the University Director’s order. The study plan determines the duration of the semester and the distribution of contact work, practical training, examination session and holidays in it. The timetable of classes is based on the study plan.

The admission requirements are well-founded; The admission of the students (SER, p.22) is conducted on the basis of Law and Studies of the Republic of Lithuania, the Order of the Minister of Education and Science of the Republic of Lithuania “On Determination of Learning

Result Minimal Indexes for Persons Claiming the State Financed Position in the First Study Cycle and Integrated Studies” and the Order of the Minister of Education and Science of the Republic of Lithuania “On the Description of Best- performing Secondary Fostering Graduates Ranking Order”. In conformity with these acts, the admission to the study programme “Electric Energy” is carried out in two ways: during the joint admission to the Lithuanian higher educational institutions and the second admission to the vacant fee-paying study places.

Much work is done to collect the motivated and good students (SER, p.24). One of the target groups to which the promotion group focuses its activity is secondary school, gymnasium, vocational school, and higher education institution graduates. The main activities include information dissemination through mass media and e-channels, directly informing the interested groups at exhibitions, during the visits to secondary and vocational schools, organizing seminars and conferences for persons responsible for professional counselling, organizing study fairs, open door days, and cognitive excursions to companies. During the events schoolchildren, their parents and counsellors are informed about the study program objectives, its structure, competences acquired, employment and career opportunities, admission conditions, general requirements for studies, the events for secondary school pupils, opportunities to participate in additional fostering and free time activities.

The organisation of the study process ensures an adequate provision of the programme and the achievement of the learning outcomes. Also a very nice close co-operation between the teachers and the students should be mentioned at this point.

Students are encouraged participating in research, artistic and applied research activities. Still, more such activities could be recommended. As a very positive comment, additionally to classical learning, also study target tours are organized to companies (Lithuanian Power Plant, Kruonis Pumped Storage Hydroelectric Power Plant and Kaunas Hydroelectric Power Plant, to motivate the teaching process) (SER, p. 26).

Still, some of the students expressed the wish to have more industrial visits, while several others indicated that they have visited all power plants in Lithuania. In general 2-3 visits are organised by teaching staff per year.

Students have opportunities to participate in student mobility programmes; active practice exchange of students with Schmalkalden University of Applied Sciences (Germany) takes place. As the staff explained during the evaluation day, some exchange opportunities with Portugal and Latvia are also available for the students. The higher education institution ensures an adequate level of academic and social support; Kaunas University of Applied Engineering Sciences provides social scholarships to the students according legal acts. For outstanding students memorial scholarships are provided both by University and social partners (e.g. AB “Lietuvos geležinkeliai“). However, in the discussion students indicated that they would wish wider distribution of scholarships if possible (currently rather high average mark is needed).

The assessment system of students’ performance is clear, adequate and publicly available. About assessment (SER, p24) - in full-time studies the examination session lasts 2 weeks. In full-time and part-time studies the examinations are distributed evenly during the whole session time, including tutorials. One examination is taken per day. The heads of academic groups coordinate the examination time and date with teachers, fill in the appropriate form and submit it to the Faculty deanery (except part-time studies). The form, revised and approved by the deanery representative, is submitted to the Department of Studies. The head of the study organization makes the examination schedule and places it on the advertising board. The additional time for pass/fail assessment is not planned and the assessment is conducted on the last contact work day of the semester.

Professional activities of the majority of graduates meet the programme providers' expectations. As additional positive comments and findings, the high motivation of the students helps to have an efficient study process, as well as highly co-operative attitude between teaching staff and students. Also having relatively much practical (laboratory) work during the study process keeps the students' motivation high. Still, beneficial for students could be getting of more experiences from the professional field of electrical engineering (maybe having even more study excursions, more places for interesting practices locally and abroad). Nevertheless, the expert team was impressed with the study process of this particular programme.

6. Programme management

The implementation of the “Electric Energy” programme study is by the study programme committee. The functions of the study programme committee are defined in the University Description on the study programs management order (SER, p.30).

Responsibilities for decisions and monitoring of the implementation of the programme are clearly allocated. To ensure the quality of the SP implementation and prepare for the external review the internal study programme assessment is performed (SER, p. 31). The internal assessment is involving students, teachers, employers and graduates into the processes of the SP assessment and improvement.

Information and data on the implementation of the programme are regularly collected and analysed; periodic students' surveys on the quality of the study programme administration, study process organization, teaching quality of study subject (module), and conditions of studies. As the evaluation team found out - students fill-in questionnaires on the study subject after the completion of the course, the questionnaires are anonymous and in print form, the turnover of the questionnaires reaches 90 % and more. Also surveys of companies and graduates are carried out.

The outcomes of internal and external evaluations of the programme are used for the improvement of the programme; but also to improve the teaching process and to give the necessary feedback of the teachers and about the teachers and the subjects. The evaluation and improvement processes involve not only the administration, staff and the students, but also stakeholders. This is considered as a very positive thing by the review group.

After completing their studies the students can go to work directly or can take bridge studies at Kaunas University of Technology in order to apply later on master programme. There is a possibility organized by the College that students can get licence up to 1000V as electricians once finishing their studies.

The internal quality assurance measures are effective and efficient. Also, it could be mentioned, that the quality management system of the Applied University has been developed as also corresponding to ISO 9001 (SER, p.30). From 15th January 2008 till 28th November 2013 Kaunas University of Applied Sciences was holding ISO 9001:2008 standard certificated issued by Bureau Veritas. The certification assisted in well-prepared and structured study process management.

As an overall impression, it is really positive, involvement of the all parties (students, teachers, administration, stakeholders) into the development and maintenance of the study process could be marked. Also the teachers keep in close contacts with the graduates. Also it is worth mentioning that the SER for the assessed period was well prepared.

It is also worth mentioning that Kaunas University of Applied Engineering Sciences and Kaunas University of Technology cooperate closely in many ways. Professors from Kaunas University of Technology take part in BA committees. They deliver equipment and exchange teaching experience between professors from two schools. Their relationship is open and

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friendly. Both Institutions understand that are important for the region (actually Kaunas University of Applied Engineering Sciences is the oldest technical institution in Lithuania with almost 100 years tradition in teaching engineering) and their relationship can be considered as a kind of model in the country. Coexistence and symbiosis and common work for the region in an ideal situation very beneficial at large for the Country.

III. RECOMMENDATIONS

1. To improve (as much as possible and reasonable) the equipment of labs up to the latest technologies.
2. To encourage and help the self-development of the staff members (pedagogically, in the applied research, in getting of more experiences from the industries and academy, locally and internationally).
3. To apply the students enthusiasm in getting of more experiences from the professional field of electrical engineering (maybe having more study excursions, more places for interesting practices locally and abroad) and also international (from abroad) experiences.
4. To consider the improvement of the foreign language skills of the staff.

IV. SUMMARY

The Applied University is awarding the Professional Bachelor diploma in Electric Engineering within four specializations: Electrical Equipment Mounting, Enterprise Engineering Systems, Electrical Networks and Systems, Autonomous Power Supply Systems. Overall impression of the study program is positive. The graduates are well prepared for the labour market, but also for continuing their studies on next levels.

The programme aims and learning outcomes are well defined, clear and publicly accessible (as in the university website and “AIKOS” Information system). Still, some improvements could be done to make the programme aims and learning outcomes better available publicly (on the web of the Applied University) for the benefit of the programme. The programme aims and learning outcomes are based on the academic and professional requirements, public needs and needs and the needs of the labour market. The evaluators have clear impression, that the programme aims and learning outcomes are well accepted by the students, staff and stakeholders.

The curriculum design meets legal requirements, for the college studies. The scope of the programme, its subjects, contact and individual work hours, as well as the scopes and proportions of pass-fail forms fully correspond to the requirements of legal acts and other legislation documents. Although the core of the curriculum design for this programme is considered as very good, still, maybe some more emphasises could be put on the development of social skills (personal communication, understanding in markets, marketing and other business matters, presentation skills etc) of the students.

The number of qualifications and turnover of the teaching staff are adequate to ensure learning outcomes. Still some recommendations could be implemented, e.g. more involvement in international co-operations, exchanges with other academic and professional institutions, as well as with the industry. The experts found that there is a very positive and close co-operation between teaching staff and the students. Overall the teachers have three years of practical training which is very useful in the study process. Some minor suggestions for further improvements can be found in the previous (recommendations) part of the current report. These are mostly related to the development of the staff, professionally (pedagogically and in the

applied research), but also in the internationalization (and involving the students into this process).

The facilities and learning resources (classrooms, labs, libraries etc.) for studies are adequate both in their size, quality and equipment. Also the number of textbooks is reasonable. Many teaching materials are available on the web or the virtual environment (Moodle). Still, modernization of the labs to the up-to-date “digital”, “smart” and similar technologies could be beneficial.

Study process and student assessment, starting with the admission (and requirements) and ending with the final graduate project work are very well organized. Much attention is given to the labs and practice locally and abroad - for example students’ practice exchange with Schmalkalden University of Applied Sciences (Germany) takes place.

The implementation of the study programme management is also very well organized and managed, both – technically (existing quality system) and by involving the students into this system. Among other things to mark positively – the involvement of the all parties (students, teachers, administration, stakeholders) into the development and maintenance of the study process and study programme management. Their feedback is really significant and visible in improving the study programme.

V. GENERAL ASSESSMENT

The study programme *Electric Energy* (state code – 653H62010) at Kaunas University of Applied Engineering Sciences is given **positive** evaluation.

Study programme assessment in points by evaluation areas.

| No. | Evaluation Area | Evaluation Area in Points* |
|-----|---|----------------------------|
| 1. | Programme aims and learning outcomes | 3 |
| 2. | Curriculum design | 4 |
| 3. | Staff | 3 |
| 4. | Material resources | 3 |
| 5. | Study process and assessment (student admission, study process student support, achievement assessment) | 4 |
| 6. | Programme management (programme administration, internal quality assurance) | 4 |
| | Total: | 21 |

*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 exceptionally good.

Grupės vadovas: Prof. dr. Krzysztof Kozłowski

Team leader:

Grupės nariai: Prof. dr. Lyudmila Zinchenko

Team members:

Dr. Olev Martens

Dr. Rolandas Urbonas

Paulius Simanavičius

Santraukos vertimas iš anglų kalbos

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Kauno technikos kolegijos studijų programa *Elektros energetika* (valstybinis kodas – 653H62010) vertinama **teigiamai**.

| Eil. Nr. | Vertinimo sritis | Srities įvertinimas, balais* |
|----------|--|------------------------------|
| 1. | Programos tikslai ir numatomi studijų rezultatai | 3 |
| 2. | Programos sandara | 4 |
| 3. | Personalas | 3 |
| 4. | Materialieji ištekliai | 3 |
| 5. | Studijų eiga ir jos vertinimas | 4 |
| 6. | Programos vadyba | 4 |
| | Iš viso: | 21 |

* 1 - Nepatenkinamai (yra esminių trūkumų, kuriuos būtina pašalinti)

2 - Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)

3 - Gerai (sistemiškai plėtojama sritis, turi savitų bruožų)

4 - Labai gerai (sritis yra išskirtinė)

<...>

IV. SANTRAUKA

Kolegija suteikia Elektros inžinerijos profesinį bakalauro laipsnį su keturiomis specializacijomis: elektros įrenginių montavimo, įmonių elektros inžinerinių sistemų, elektros tinklų ir sistemų, autonominės energijos tiekimo sistemų. Bendras studijų programos įspūdis yra teigiamas. Absolventai puikiai paruošiami darbo rinkai, taip pat studijų tęsimui aukštesnėje pakopoje.

Studijų programos tikslai ir numatomi studijų rezultatai yra gerai apibūdinti, aiškūs ir viešai prieinami (kolegijos interneto puslapyje ir AIKOS informacinėje sistemoje). Vis dėlto reikėtų patobulinti viešą programos tikslų ir numatomų studijų rezultatų prieinamumą (kolegijos interneto puslapyje) pačios programos naudai. Programos tikslai ir numatomi studijų rezultatai yra pagrįsti akademiniiais ir profesiniais reikalavimais, visuomenės ir darbo rinkos poreikiais. Ekspertai susidarė aiškų įspūdį, kad programos tikslai ir numatomi studijų rezultatai yra priimtini studentams, darbuotojams ir socialiniams dalininkams.

Programos sandara atitinka teisinius koleginių studijų reikalavimus. Programos apimtis, dėstomi dalykai, kontaktinės ir savarankiško darbo valandos, taip pat išlaikymo bei neišlaikymo santykis ir skaičius visiškai atitinka teisės aktuose ir kituose teisės dokumentuose numatytus reikalavimus. Nors programos sandaros pagrindas yra laikomas labai geru, tačiau studentų socialiniai įgūdžiai turėtų būti labiau tobulinami (asmeninis bendravimas, rinkos supratimas, rinkos ir kitų verslų klausimai, prisistatymo įgūdžiai ir t. t.).

Kvalifikacijų skaičius ir dėstytojų kaita yra pakankami numatomiems studijų rezultatams pasiekti. Reikėtų įgyvendinti kai kurias rekomendacijas, pavyzdžiui, aktyviau dalyvauti tarptautinėje veikloje, mainuose su kitomis akademinėmis ir profesinėmis institucijomis, taip pat pramone. Ekspertai nustatė, kad dėstytojų ir studentų bendradarbiavimas yra labai teigiamas ir glaudus. Apskritai, dėstytojai turi trejų metų praktinę patirtį dirbant pramonėje, kas labai naudinga studijų procesui. Keletą nedidelių pasiūlymų dėl tolesnio patobulinimo galima rasti ankstesnėje šių išvadų dalyje (rekomendacijose). Tai daugiausia susiję su darbuotojų profesiniu tobulėjimu (pedagogiškai ir taikomojoje mokslinėje veikloje) ir tarptautine veikla (įtraukiant ir studentus į šį procesą).

Patalpos ir materialieji ištekliai (auditorijos, laboratorijos, bibliotekos ir t. t.) tinka studijoms savo dydžiu, kokybe ir įranga. Vadovėlių kiekis yra pakankamas. Didelė dalis mokymo priemonių yra prieinama interneto puslapyje arba virtualioje erdvėje (*Moodle*). Vis dėlto būtų naudinga modernizuoti laboratorijas – aprūpinti jas šiuolaikinėmis, skaitmeninėmis, išmaniosiomis ir panašiomis technologijomis.

Studijų eiga ir studentų vertinimas, pradedant nuo priėmimo (ir reikalavimų) ir baigiant baigiamuoju absolvento darbu, yra labai gerai organizuoti. Daug dėmesio skiriama laboratorijoms ir vietinei bei tarptautinei praktikai, pavyzdžiui, vykdomi studentų mainai Šmalkaldeno taikomųjų mokslų universitete Vokietijoje.

Studijų programos vadyba organizuojama gerai, ji valdoma techniškai (esama kokybės sistema) ir įtraukiant studentus. Kiti teigiami dalykai: visų grupių įtraukimas (studentų, dėstytojų, administracijos, socialinių dalininkų) į studijų proceso plėtojimą ir palaikymą ir į studijų programos vadybą. Grįžtamasis ryšys yra reikšmingas ir matomas, tobulinant studijų programą.

III. REKOMENDACIJOS

1. Atnaujinti (kiek įmanoma ir reikia) laboratorijos įrangą naujausiomis technologijomis.
2. Skatinti ir padėti tobulinti darbuotojų saviugdą (pedagogiškai, taikomuosiuose moksliniuose tyrimuose, įgyjant daugiau patirties pramonėje ir akademinėje srityje vietiniu ir tarptautiniu mastu).
3. Pritaikyti studentų susidomėjimą, įgyjant daugiau patirties elektros inžinerijos profesinėje srityje (galbūt surengiant daugiau tyrimų vizitų, surandant daugiau įdomių vietinių ir tarptautinių vietų praktikai) ir tarptautinėse (užsienio) praktikose.
4. Apsvarstyti darbuotojų užsienio kalbų įgūdžių tobulinimą.

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