



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

ŠIAULIŲ VALSTYBINĖS KOLEGIJOS
STUDIJŲ PROGRAMOS
ELEKTROS ENERGETIKA (*valstybinis kodas - 653H63003*)
VERTINIMO IŠVADOS

EVALUATION REPORT
of ELECTRICAL ENERGETICS (state code - 653H63003)
STUDY PROGRAMME
at ŠIAULIAI STATE COLLEGE

Experts' team:

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Išvados parengtos anglų kalba
Report language – English

Vilnius
2015

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	Elektros energetika
Valstybinis kodas	653H63003
Studijų sritis	Technologijos mokslai
Studijų kryptis	Elektronikos ir elektros inžinerija
Studijų programos rūšis	Koleginės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė (3 metai), išstėtinė (4 metai)
Studijų programos apimtis kreditais	180 ECTS kreditų
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Elektros energijos profesinis bakalauras
Studijų programos įregistravimo data	2002-08-30

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	Electrical Energetics
State code	653H63003
Study area	Technological Sciences
Study field	Electronics and Electrical Engineering
Type of the study programme	Higher Education College Type
Study cycle	First Cycle Studies
Study mode (length in years)	Full-Time (3 years), Part-Time (4 years)
Volume of the study programme in credits	180 ECTS credits
Degree and (or) professional qualifications awarded	Professional Bachelor in Electrical Power
Date of registration of the study programme	30 th August, 2002

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I. INTRODUCTION

1.1. Background of the evaluation process

The evaluation of on-going study programmes is based on the **Methodology for evaluation of Higher Education study programmes**, approved by Order No 1-01-162 of 20 December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC).

The evaluation is intended to help higher education institutions to constantly improve their study programmes and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: 1) *self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI)*; 2) *visit of the review team at the higher education institution*; 3) *production of the evaluation report by the review team and its publication*; 4) *follow-up activities*.

On the basis of external evaluation report of the study programme SKVC takes a decision to accredit study programme either for 6 years or for 3 years. If the programme evaluation is negative such a programme is not accredited.

The programme is **accredited for 6 years** if all evaluation areas are evaluated as “very good” (4 points) or “good” (3 points).

The programme is **accredited for 3 years** if none of the areas was evaluated as “unsatisfactory” (1 point) and at least one evaluation area was evaluated as “satisfactory” (2 points).

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

1.2. General

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

No.	Name of the document
	(No additional documents were received during the on-site visit)

1.3. Background of the HEI/Faculty/Study field/ Additional information

This evaluation report could begin by stating that Lithuanian economic structure issues of generation, transmission and distribution of electrical energy as well as its rational consumption are of great significance nationally.

Šiauliai State College (hereinafter referred to as SSC) activity, management, organization of studies and science, the rights of students and employees, their duties and responsibilities, assurance of scientific applied research and study quality, litigations, use of property and funds are regulated by the College Statute (approved by the Government of the Republic of Lithuania, Resolution No 421, 14 April 2010).

Professional bachelor degree studies in Electrical Energetics have been carried out at Šiauliai State College since 2002. The Electrical Energetics is the first cycle professional bachelor study programme. Graduates of the Study Program receive the Professional Bachelor in Electrical Energy degree. The duration of studies to the Professional Bachelor degree is 3 years for full time studies and 4 years for part time studies.

Previous evaluation of this study programme took part on December 3, 2008 and the assessment team approved 6 years accreditation. It must be pointed out that most of the recommendations were successfully implemented.

External evaluation of Šiauliai State College (SSC) Study Programme (state code 653H63003) has been conducted by an international expert group through analysis of the self-evaluation report and meetings with the administrative staff of the Faculty of Business and Technology and the Electrical Engineering Department, the group of preparation of the self-evaluation report, teaching staff of the Study Programme, students of the Study Programme and graduates, and their employers. The expert group has analysed the Study Programme aims and learning outcomes, curriculum of the Study Programme, quality assurance (management) of the Study Programme, study process, staff and other factors.

1.4. The Review Team

The review team was completed according *Description of experts' recruitment*, approved by order No. 1-01-151 of Acting Director of the Centre for Quality Assessment in Higher Education. The Review Visit to HEI was conducted by the team on October 15, 2015.

- 1. Prof. dr. habil. Krzysztof Kozlowski (team leader)**, *professor at Poznan University of Technology, Poland;*
- 2. Doc. dr. Sergey Shaposhnikov**, *associated professor at St. Petersburg State Electrotechnical University, Russia;*
- 3. Emeritus Prof. dr. Erkki Lakervi**, *professor emeritus at Helsinki University of Technology, Finland;*
- 4. Doc. dr. Gediminas Valiulis**, *vice-dean at Šiauliai University, Lithuania;*
- 5. Mr. Ignas Gaižiūnas**, *students' representative from Vilnius University, Lithuania.*

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The Study Programmes' 4 aims and 13 learning outcomes are well defined, and comply with the level of studies, and the College Mission presented in the self-evaluation report. They are formulated taking into account the national Energy Independence Strategy of the Republic of Lithuania. The aims and learning outcomes are grounded on the requirements of the labour market. Representatives of the employers took part in the development of the learning outcomes (questionnaire surveys were carried out, round table discussions were organised). An engineer from a local company is a member of the Study Programme Committee which takes care of the Programme development.

The Study Program aims and learning outcomes are available on the Šiauliai State College website: <http://www.svako.lt>, <https://svako.lt/lt/verslo-ir-technologiju-fakultetas/elektros-inzinerijos-katedra>, and on the website of LR Ministry of Education and Science <http://www.aikos.smm.lt>. Thus, this information is accessible to all stakeholders of the Programme as well as to the society, as whole.

The compliance of the Programme learning outcomes to EUR-ACE standard is provided in the self-evaluation report. The Study Programme learning outcomes have a wide profile, perhaps slightly directed to internal electricity systems in factories and other buildings. They are clearly associated with each module and each module has a clear set of learning outcomes.

The Study Programme outcomes are comparable with similar national and European Study Programs and correspond to the Study Programme aims. Complexity level of the learning outcomes corresponds to qualification requirements described in national and EU documents. The outcomes are achievable during the study period (3 years for full time studies and 4 years for part time studies). There is a good coverage of the Study Programme learning outcomes across the modules and each module covers a good range of Study Programme learning outcomes. The Study Programme aims and learning outcomes are consistent with the type and level of studies and the level of qualifications offered.

The aims and learning outcomes of the Programme are also consistent with the requirements of the college type studies i.e. focused on the application of scientific knowledge tested in practice, project implementation and typical engineering activities.

The name of the Study Programme *Electrical Energetics*, its learning outcomes, content and qualifications offered are compatible with each other.

The Study Programme can be optionally combined with a minor programme in Management. For students choosing this option it requires an additional year with a total of 210

credits. A double qualification degree (in Electrical Energetics and in Management) is given to those who pass this option.

2.2. Curriculum design

The Study Programme curriculum design meets the requirements prescribed by the national Ministry of Science and Education as well as the regulations approved by the College Academic Council. The curriculum design also meets the legal requirements for professional bachelor Study Programmes. The programme meets the VI-th qualification level indicated in the description of qualification requirements of professional education in Lithuania. The Study Programme is consistent with the SVK academic regulations.

The Study Programme workload is 180 ECTS credits over 3 years for full time students or 4 years of part time students. The Curriculum of the study programme consists of 4 general college subjects (15 ECTS,) 22 study field subjects (135 ECTS), 4 subjects intended for the deepening in the field (21 ECTS), and 3 elective subjects (9 ECTS). Also, the sequence of subjects in the study plan is well designed.

The Study Programme has no specialisations and it looks reasonable. As it was clear from the meeting with representatives of industrial companies the companies are interested in such wide basic education of the Programme graduates, and they are ready to provide the necessary specialisation at workplaces in their companies.

The study courses are in accordance with the Study Programme aims and the specified level of qualification. Practical orientation of the Programme is reflected by 35% of contact study hours intended for practical training of students.

The content of the Programme courses provides the future engineers with knowledge and skills demanded on both the regional and national levels, e.g. for the successful implementation of the National Energy Independence Strategy. Some courses of the Programme are based on the latest achievements of science and technology and create the basis for continuous professional development of graduates. The courses are not only targeted on achieving practical knowledge and skills needed by today's industry but also on widening students' horizons in new sources of energy and new technologies oriented on the sustainable development of the society (e.g. courses in Energy Production Economy, Renewable Energy Resources, etc).

A lot of attention is given in the frames of the Programme to self-study work of students (about 51% of the total workload compared to 15% of theoretical studies in classes) that helps

students to gain the ability to search new information, work independently and in teams, and develop professionally.

The balance of modules across the semesters and the development of the Study Programme from the first to the final year from the point of view of achieving the planned Learning Outcomes looks reasonable. The study courses and/or modules are spread evenly, their themes are not repetitive. There is a logical sequence of courses, e.g. a course in Physics (semesters 1 and 2) is needed for studying the course in Electric Machines and Transformers (semester 2), Electrical Measurements (semester 3), etc.

Traditional teaching methods and technologies like lectures, laboratory, and practical classes are complemented in the Programme with seminars, group projects, discussions, interactive lectures, which helps to achieve the Programme Outcomes more efficiently and by all students.

A lot of attention is given in the frames of the Programme to self-study work of students (about 51% of the total workload compared to 15% of theoretical studies in classes) that helps students to gain the ability to search new information, work independently and in teams, and develop professionally.

As a recommendation latest achievements of science and technology in the field of studies should be more actively introduced in the content of courses and laboratory works (e.g. Aspects of Smart Grids as suggested by the local distribution system operator representative, wider use of AutoCAD, etc.). Also as a feedback from the meetings, the experts could recommend moving the course in Professional Language from the first year to later semesters.

2.3. Teaching staff

The teaching staff involved in teaching of the Study Programme meets the legal requirements, Ministerial and College Regulations and General Requirements description for a professional bachelor programme. Teachers have a university degree, master degree (or higher) or an analogue in field of the taught course, three years of practical experience for teachers of professional orientation courses. At present, the number of the teaching staff as well as the level of its qualification is adequate to ensure learning outcomes. Teachers of at least 3 years industry experience teach 60% of the scope of the study field subjects. 8 teachers have Master Degree in the field that corresponds to the study field of the Programme and 8 teachers have an equivalent university degree. Among the Program teaching staff there is 1 professor, 4 docents, 1 lecturer with a degree in science and 1 PhD student. The majority of the teaching staff has 5 or more years of teaching experience. Industry experts with Master degree or equivalent in Electrical Engineering are appointed to be reviewers of students' graduation projects. Every 5 years'

assessment of teachers' qualifications is conducted. Nevertheless, at the same time, some teachers of the Study Programme have a rather low experience of practical work in the field.

Workload of the teaching staff is planned according to the College regulations. A full-time teacher's workload is about 1600 hours including 900 contact teaching hours. Teachers' planned workload also presumes activities in methodology of teaching.

The number of students per teacher (full time equivalent) for the last 5 years is 17, each teacher supervises not more than 4 graduation projects.

The core of the Programme teaching staff is constant, more than 90% of teachers work permanently full time. There is also common practice of inviting guest teachers from industry (2 teachers in the year of assessment). Data presented in the self-evaluation report show that figures for assistants and lecturer's turnover are quite high (up to 60%) which was caused by inviting professionals from industry for part time teaching as explained by the Programme administration.

Evidence is provided regarding the training and development opportunities given to the teaching staff. These include encouragement to participate in qualification development courses and internships in companies, special projects aimed at development of teachers' competences and foreign language skills, scientific conferences and seminars, and opportunities for international visits and academic exchange. The College can fully or partially finance teachers' participation in courses and seminars. The academic-staff, as reported by the students, encourages creativity amongst the students through projects, hobby work, involvement in research, and final thesis.

The self-evaluation reports that teachers of the Study Programme have taken part in some research projects, several such projects were financed by the industry. Results of research carried out were presented at national and international conferences, and published in scientific periodicals, in some cases with students as co-authors, however the number of published papers is decreasing each year according to the data presented in the self-evaluation report.

The knowledge level of foreign language (English) amongst the academic staff is varied and may hinder their use of English texts when preparing material for students.

2.4. Facilities and learning resources

Evidence during the on-site visit is provided that the facilities and equipment used for teaching students on this Study Programme is appropriate to the level of this particular Programme as well as its aims and learning outcomes. The number of rooms equipped with the necessary technical facilities is sufficient for the current number of students. The working

conditions in the laboratories and classrooms are also of appropriate level as well as meeting hygiene standards.

Laboratories, classrooms, computer facilities and teaching equipment in general, meets the Programme needs, and are annually supplemented with new hardware and software. Evidence of such upgrade was presented during the visit (e.g. teaching equipment at Electric Power Supply Lab., Electrical Installations Lab., Automation Lab, etc.)

Material studies seem to be much limited to cables and conductors. 140 kV AC is available in the high voltage lab., DC as well – the teacher did not see any major need to surge generator (simulates transients). A large variety of (but mainly old) power system equipment - even a substation cell - were shown during the site visit but there were no system models in this field, i.e. models of whole electric power distribution systems which give students better understanding of roles of its elements and their interaction. Software for rural electricity distribution network calculations is also available. Part-time students of the Programme expressed the opinion that the spectrum of the laboratory technical facilities and material resources (e.g. cables) should be larger in terms of quantity and wider (probably, based on their own practical work experience), which is an important observation for the programme managers. Full-time students are basically satisfied with the material resources offered by the College.

Teaching materials in a good variety of forms (textbooks, books, periodicals, data bases) are adequate to the Programme aims and learning outcomes, they are sufficient and accessible. Students have access to a good provisioned library as well as online access to databases of scientific publications through the library website. The College Library offers access to international full-text data bases of periodicals (EBSCO, Emerald, eJournals Collection, etc) as well as links to the lists of electronic books (KTU and VGTU elektroninių leidinių sąrašas). The library as whole provides a nice working place for students. In general, the study infrastructure is convenient for students, and the existing plans of the campus development are aimed onto its further improvement particularly when the old campus was transformed in to a College and Information Centre. In overall existing facility gives a very good impression.

A random sampling of recommended literature sources indicated that the majority of the recommended ones that are in the courses are up to date, though in some cases the recommended key books were published more than 10 years ago (e.g. in the course “Stations and Substations Electrical Equipment” the key reading is Šatas, J. *Įmonių elektros įrenginiai ir tinklai* (Corporate electrical equipment and networks) of 2003, Miškinis, V., Razma A. *Aukštos įtampos įrenginiai* (High-voltage equipment) of 2003).

Some teaching materials for the Programme are placed in the electronic form at the newly (2010) developed web site (www.studijos.svako.lt). Teachers can upload, store and use

their teaching materials in the College intranet. Students of the Program can also use a distance learning facility including video conferences, webinars, etc.). As an example demonstrated during the site visit, Moodle support is available for this study programme.

2.5. Study process and students' performance assessment

Admission to the Electrical Energetics Study Programme is conducted during the general admission following standard procedures in Lithuania and according to the Rules approved by the director of the College. The only admission requirement is secondary education completed by applicants. Applicants are selected for admission according to their individual score made of their three secondary education exams. In 2010 - 2013 the competitive score of admitted students varied from 8,57 to 8,4. During the last five years' student admission to this SP decreased from 22 in 2010 to 16 in 2013 – that is explained in the self-evaluation report by low popularity of technological field studies in the country. However, the specific action plan for attracting students to study under this Study Programme was developed which includes setting up the Club of Electronics and Robotics, Professional Day in Power Engineering, and other activities carried out by the College in collaboration with Šiauliai gymnasiums and the city Young Technicians Centre.

Student dropout rate is relatively high (25% to 32% for full time) and is quite stable for the full time students during the last years. For part-time students the situation with dropouts improved in the last two years but still the figures are quite big (25% in 2014). Measures taken by the Programme management (surveys on quality assessment, teacher consultations, more study materials placed on the intranet, etc.) do not influence the situation significantly.

The representatives from industry stated at the meeting that the theoretical background of students is enough wide and corresponds to the professional bachelor level by their interpretation.

Students of the Study Programme are encouraged to participate in scientific, artistic, and applied research activities carried out at the College. The activities list includes the Student Scientific Association, the Dance Club, sport sections, etc. During the evaluated period 10 students presented papers at local conferences.

Students are presented in the College bodies dealing with issues related to the study process organization, cultural life and recreation, support and promotion of cooperation with other educational institutions.

Best students are recognized for their academic performance and participation in other activities with grants, material awards, certificated. Indirect ways of encouragement and

recognition include possibilities to have individual study timetable, combine studies and social activities, etc.

Students of the Programme have access to mobility through the Erasmus Program. The College is a member of the University Charter and has 61 international partners in 19 countries. Students interested in studies at partner universities may consult the Department of Academic Mobility and Projects. Students are selected on a competitive basis. Still, the number of students participating in the academic mobility is quite low (2 students per academic year) and the figure remains stable over the last years. There is only one case of students coming for studies from other countries (2 students from Turkey).

The assessment system of student performance is clear, adequate and publicly available (explained at the first lesson of each course). Students who disagree with the assessment results are given the right to apply to the Dean of the Faculty who appoints a special assessment board by issuing the order. Teachers provide students with the feedback on their personal academic achievements in a written form.

The graduates' employment is monitored by the Department and the College Career Centre. Figures show that the percentage of successfully employed graduates has been growing during the last years and is over 80% now (employment according to the acquired specialty). As the most essential thing it was mentioned by the Study Programme graduates that a degree from this college guarantees a job. Some students of the Programme continue their studies at universities (through bridge courses).

The College ensures an adequate level of academic and social support to students (introductory lectures, freely optional courses for the first year students, group tutoring, individual consulting by heads of departments and the College units, meetings with employers, etc.). All students who applied for loans to cover tuition fees and living expenses were granted the loans. All students can get accommodation at the College dormitory. Some students get one time grants to encourage their active participation in social and group activities (e.g. for taking part in conferences). Nevertheless, the number of students granted incentive grants has decreased as the average grades of the Study Programme students is too low for such grant.

The use of the foreign languages (English and Russian) as standard international languages for engineers of the local area needs to be encouraged to a greater extent. It was considered very important at the meetings with representatives of graduates and employers.

2.6. Programme management

The process of the Study Programme administration and quality assurance is regulated by special documents issued at the College. The management system comprises all levels of the

Programme implementation and all processes are regulated and controlled according to the Quality Management System requirements (a yearly cyclic process is implemented). The ISO 9001 based Quality Management System is certified by international certification body. During meetings with teachers and administrators of the Study Programme it became evident that they are aware of it, share the College Mission and Values, and use the Quality Management System in their everyday activities.

Responsibilities of decision making and monitoring the implementation of the Study Program are clearly allocated. Supervision and quality evaluation of the Program are carried out by a Study Programme Committee (at the moment comprised of 8 members, 2 of them are students and 2 are representatives of employers). Each semester student surveys are carried out and the results are analyzed and discussed by the Study Programme Committee. It looks very positive that a representative of social partners and a representative of students are active members of the Study Program Committee. In particular, they were both involved in the self-evaluation process and in preparing the self-evaluation report. There is a positive factor that social partners employ the students, offer practice and hire the graduates. On overall, the impression regarding the relationship between social partner and University is very positive as they cooperate together for the beneficial of the study programme and companies.

The Council of the Faculty also considers the Programmes of the Faculty and their updates and submits for approval by the Academic Council of the College. As examples of further improvements that should be implemented (based on collecting the feedback from students and employers) the following can be listed: soldering practice, free elective course in Robotics, improved communication between students and teachers and announcing results of student surveys.

III. RECOMMENDATIONS

1. Latest achievements of science and technology in the field of studies should be more actively introduced in the content of all courses of specialization and laboratory works (e.g. Aspects of Smart Grids as suggested by the local distribution system operator representative, wider use of AutoCAD, etc.)
2. Special measures plan for reduction of student dropout should be elaborated.
3. Possibilities to improve English language skills of students and teachers should be created.

4. Activities on the use of alumni and employers (e.g. upgrading the list of courses and their content, laboratory equipment following the last achievements in the study field) should be continued as they proved their effectiveness for the Programme development during the evaluated period.

5. Despite the relatively high level of laboratory equipment (compared to some other Lithuanian HEI's), the equipment could be further improved by acquiring more up-to-date instruments and devices, e.g. by obtaining EU and industrial grants.

IV. SUMMARY

The Study Programmes' aims and learning outcomes are well defined, and comply with the level of studies, and the College Mission. They are formulated taking into account the national Energy Independence Strategy of the Republic of Lithuania. The aims and learning outcomes are based on the requirements of the labour market, as social partners from the industry took part in the development of these learning outcomes.

The Study Programme outcomes are comparable with similar national and European Programmes and correspond to the Programme aims. The aims and learning outcomes of the Programme are also consistent with the requirements of the college type studies i.e. focused on the application of scientific knowledge tested in practice, project implementation and typical engineering activities. The name of the Study Program *Electrical Energetics*, its learning outcomes, content and qualifications offered are compatible with each other.

The Study Programme curriculum design meets all legal requirements and it meets the VI-th qualification level indicated in the description of qualification requirements of professional education in Lithuania.

The study Courses are in accordance with the Study Programme aims and manage to achieve the learning outcomes. Practical orientation of the Programme is reflected by 35% of all study hours intended for practical training of students. The content of the Programme courses provides the future engineers with knowledge and skills demanded on both the regional and national levels, e.g. for the successful implementation of the National Energy Independence Strategy. Some courses of the Programme are based on the latest achievements of science and technology and create the basis for continuous professional development of graduates. Still, latest achievements of science and technology in the field of studies should be presented in the content of all subjects of specialization and laboratory works. A positive addition is that this Study Programme can be optionally combined with minor studies in Management.

The teachers involved in this Study Programme meet all legal requirements, Ministerial and College Regulations and General Requirements description. At present, the number of the teaching staff as well as the level of its qualification is adequate to ensure the learning outcomes.

The majority of the teaching staff has 5 or more years of teaching experience. Industry experts that are appointed to be reviewers of students' graduation projects have a university degree, a master degree or an equivalent qualification in Electrical Engineering. Every 5 years' assessment of teachers' qualifications is conducted. Workload of the teaching staff is planned according to the College regulations.

The core of the Programme teaching staff is constant; more than 90% of teachers work permanently full-time. There is also practice of inviting guest teachers from industry

Teachers have opportunities for professional training and development. Some teachers of the Programme took part in several research projects financed by the industry. Assistants and lecturer's turnover is quite high (up to 60%) which was caused by inviting professionals from industry for part time teaching as explained by the Programme administration.

Facilities and equipment used for teaching students on this Study Programme are appropriate to the level of this particular Program as well as its aims and learning outcomes. The number of rooms equipped with the necessary technical facilities is sufficient for the current number of students.

Laboratory and classrooms computer facilities and teaching equipment, in general, meet the Programme needs, and are annually supplemented with new hardware and software. Nevertheless, some of the courses lack modern laboratory equipment (e.g. Measurements laboratory).

Teaching materials are in a good variety of forms (textbooks, books, periodicals, data bases) and they are sufficient and accessible. Students have access to a good provisioned library as well as online access to databases of scientific publications through the library website.

Admission to the Electrical Energetics Study Programme is conducted during the general admission following standard procedures in Lithuania and according to the rules approved by the director of the College.

The assessment system of student performance is clear and adequate. Teachers provide students with the feedback on their personal academic achievements in a written form.

Students of the Study Programme are encouraged to participate in scientific, artistic, and applied research activities carried out at the College. The activities list includes the Student Scientific Association, the Dance Club, sport sections, etc. During the evaluated period 10 students presented papers at local conferences. Students of the Programme have access to mobility through the Erasmus Program.

Students are presented in the College bodies dealing with issues related to the study process organization, cultural life and recreation, support and promotion of cooperation with other educational institutions. Best students are recognized for their academic performance and participation in other activities with grants, material awards, certificated. Indirect ways of encouragement and recognition include possibilities to have individual study timetable, combine studies and social activities, etc.

The international panel would recommend looking into the aspects of high student dropout rates, especially during the first year of studies, also low average grade of students and a rather low level of international activities of students.

The management system comprises all levels of the Programme implementation and all processes are regulated and controlled according to the Quality Management System requirements (a yearly cyclic process is implemented). The ISO 9001 based Quality Management System is certified by international certification body.

Responsibilities of decision making and monitoring the implementation of the Study Programme are clearly allocated. Supervision and quality evaluation of the Programme are carried out by a Study Programme Committee (at the moment comprised of 8 members, 2 of them are students and 2 are representatives of employers). Each semester students' surveys are carried out and the results are analysed and discussed by the Committee.

The Council of the Faculty also considers the Programmes of the Faculty and their updates and submits for approval by the Academic Council of the College. As a recommendation, the team of experts would suggest finding an effective strategy to reduce the student high dropout rates.

It should be noted that most recommendations from the previous evaluation were successfully implemented. Thus this evaluation team believes that the programme managers are on the right track and will successfully continue to develop and maintain this study programme in the future.

V. GENERAL ASSESSMENT

The study programme Electrical Energetics (state code – 653H63003) at Šiauliai State College is given **positive** evaluation.

Study programme assessment in points by evaluation areas.

No.	Evaluation Area	Evaluation of an area in points*
1.	Programme aims and learning outcomes	3
2.	Curriculum design	3
3.	Teaching staff	3
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	18

*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: Team leader:	Prof. dr. habil. Krzysztof Kozlowski
Grupės nariai: Team members:	Doc. dr. Sergey Shaposhnikov
	Emeritus Prof. dr. Erkki Lakervi
	Doc. dr. Gediminas Valiulis
	Mr. Ignas Gaižiūnas

**ŠIAULIŲ VALSTYBINĖS KOLEGIJOS PIRMOSIOS PAKOPOS STUDIJŲ
PROGRAMOS *ELEKTROS ENERGETIKOS* (VALSTYBINIS KODAS – 653H63003)
2015-12-02 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-317 IŠRAŠAS**

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Šiaulių valstbinės kolegijos studijų programa Elektros energetika (valstybinis kodas – 653H63003) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	3
2.	Programos sandara	3
3.	Personalas	3
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	3
	Iš viso:	18

* 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)

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IV. SANTRAUKA

Elektros energetikos studijų programos tikslai ir numatomi studijų rezultatai yra apibrėžti ir atitinka studijų pakopą bei Kolegijos misiją. Jie suformuluoti atsižvelgiant į Lietuvos Respublikos Nacionalinę energetinės nepriklausomybės strategiją. Programos tikslai ir numatomi studijų rezultatai pagrįsti darbo rinkos poreikiais, nes rengiant šiuos rezultatus dalyvavo socialiniai partneriai iš pramonės sektoriaus.

Šios studijų programos rezultatai yra panašūs į kitų šalies ir Europos šios rūšies programų rezultatus ir atitinka programos tikslus. Be to, šios programos tikslai ir numatomi studijų rezultatai atitinka koleginių studijų reikalavimus, t. y., yra orientuoti į patikrintų mokslo žinių taikymą praktikoje, projektų įgyvendinimą ir tipiską inžinerinę veiklą. Studijų programos pavadinimas (*Elektros energetika*), numatomi studijų rezultatai, programos turinys ir suteikiama kvalifikacija dera tarpusavyje.

Studijų programos sandara atitinka teisės aktų reikalavimus ir Lietuvos profesinių kvalifikacijų sandaros aprašo VI kvalifikacijos lygį.

Studijų dalykai atitinka studijų programos tikslus ir leidžia pasiekti numatomus studijų rezultatus. Programos orientavimą į praktiką rodo tai, kad 35 proc. visų studijų valandų yra skirta studentų praktiniam mokymui. Programos dalykų turinys užtikrina, kad būsimieji inžinieriai įgys žinių ir gebėjimų, reikalingų regionui bei visai šaliai, pvz., tam, kad būtų sėkmingai įgyvendinta Nacionalinė energetinės nepriklausomybės strategija. Kai kurie šios programos dalykai yra pagrįsti naujaisiais mokslo ir technologijų pasiekimais ir yra nuolatinio absolventų profesinio tobulėjimo pagrindas. Tačiau naujaisi šios studijų krypties mokslo ir technologijų pasiekimai turėtų būti įtraukti į visų specializacijos dalykų ir laboratorinių darbų turinį. Dar vienas pozityvus dalykas – ši studijų programa gali būti pasirinktinai derinama su gretutinėmis vadybos studijomis.

Šios programos dėstytojai atitinka visus teisės aktų reikalavimus, ministerijos ir kolegijos reglamentus ir (studijų programų) bendrųjų reikalavimų aprašą. Šiuo metu dėstytojų skaičius ir jų kvalifikacijos lygis yra tinkamas numatomiems studijų rezultatams užtikrinti.

Daugelis dėstytojų turi penkerių metų arba didesnę mokymo patirtį. Pramonės specialistai, paskirti tikrinti studentų baigiamuosius darbus, turi universitetinį laipsnį, magistro laipsnį arba lygiavertę kvalifikaciją elektros inžinerijos srityje. Kas penkeri metai atliekamas dėstytojų kvalifikacijos vertinimas. Dėstytojų darbo krūvis planuojamas vadovaujantis Kolegijos reglamentais.

Pagrindinė programos dėstytojų dalis yra nuolatiniai darbuotojai; daugiau kaip 90 proc. dėstytojų dirba visą darbo laiką. Taip pat kviečiami dėstyti pramonės srities atstovai.

Dėstytojams suteikiamos profesinio mokymo ir tobulinimosi galimybės. Kai kurie šios programos dėstytojai dalyvavo keliuose pramonės sektoriaus finansuojamuose projektuose. Asistentų ir dėstytojų kaita gana didelė (iki 60 proc.), nes, kaip paaiškino programos vadovai, dėstyti ne visą darbo laiką kviečiami pramonės specialistai.

Šios studijų programos studentams mokytis skirti *materialieji ištekliai* (patalpos ir įranga) atitinka šios programos lygį, tikslus ir numatomus studijų rezultatus. Kabinetų, kuriuose yra būtina techninė įranga, dabartiniam studentų skaičiui pakanka.

Laboratorių ir kabinetų kompiuterinė bei mokymo įranga iš esmės atitinka programos poreikius; ji kasmet papildoma nauja aparatine bei programine įranga. Tačiau trūksta šiuolaikinės laboratorinės įrangos, reikalingos kai kuriems dalykams dėstyti (pvz., *Matavimų laboratorijoje*).

Mokomoji medžiaga yra labai įvairi (vadovėliai, knygos, periodiniai leidiniai, duomenų bazės) ir prieinama, jos kiekis pakankamas. Studentai turi galimybę naudotis gerai aprūpinta

biblioteka ir bibliotekos svetainėje esančiomis elektroninėmis mokslinių leidinių duomenų bazėmis.

Priėmimas į *Elektros energetikos* studijų programą vykdomas visuotinio priėmimo metu, laikantis Lietuvoje taikomų standartinių procedūrų ir Kolegijos direktoriaus patvirtintų taisyklių.

Studentų mokslo rezultatų vertinimo sistema yra skaidri ir tinkama. Dėstytojai raštu teikia studentams grįžtamąjį ryšį apie jų asmeninius akademinius pasiekimus.

Studijų programos studentai skatinami s dalyvauti Kolegijos mokslo, meno ir taikomųjų mokslinių tyrimų veikloje. Veiklų sąrašė yra studentų mokslinė asociacija, šokių klubas, sporto sekcijos ir t. t. Vertinimo laikotarpiu 10 studentų skaitė pranešimus vietos konferencijose. Programos studentams suteikiamos judumo galimybės pagal *Erasmus* programą.

Studentai dalyvauja Kolegijos organuose, sprendžiančiuose studijų proceso organizavimo, kultūrinio gyvenimo ir rekreacijos, paramos ir bendradarbiavimo su kitomis mokslo įstaigomis skatinimo klausimus. Geriausiems studentams už mokslo rezultatus ir dalyvavimą kitoje veikloje suteikiamos stipendijos, piniginės premijos, sertifikatai. Netiesioginiai skatinimo bei pripažinimo būdai yra galimybė mokytis pagal individualų studijų tvarkaraštį, derinti studijas ir visuomeninę veiklą ir t. t.

Tarptautinė grupė rekomenduotų atsižvelgti į aukštą studentų nubyreėjimo lygį, ypač pirmųjų metų, žemą studentų pažymių vidurkį ir gana žemą studentų tarptautinės veiklos lygį.

Vadybos sistema apima visus programos įgyvendinimo lygius, o visi procesai yra reguliuojami ir kontroliuojami pagal kokybės vadybos sistemos reikalavimus (įgyvendinama kasmetinė *ciklinė* procedūra). ISO 9001 standartu pagrįsta kokybės vadybos sistema yra patvirtinta Tarptautinės sertifikavimo institucijos.

Aiškiai paskirstyta atsakomybė už sprendimų priėmimą ir studijų programos įgyvendinimo stebėseną. Programos priežiūrą ir kokybės vertinimą atlieka Studijų programos komitetas (aptariamuoju momentu jį sudarė 8 nariai, iš kurių – 2 studentai ir 2 darbdavių atstovai). Kiekvieną semestrą atliekamos studentų apklausos, jų rezultatus nagrinėja ir aptaria Komitetas.

Fakulteto taryba taip pat svarsto fakulteto programas ir jų atnaujinimus ir pateikia jas Kolegijos akademinei tarybai patvirtinti. Ekspertų grupė rekomenduotų sukurti veiksmingą studentų nubyreėjimo lygio mažinimo strategiją.

Reikėtų pažymėti, kad daugelis ankstesnio vertinimo rekomendacijų sėkmingai įgyvendintos. Taigi ši vertinimo grupė tiki, kad programos vadovai yra teisingame kelyje ir toliau sėkmingai tobulins bei išsaugos šią studijų programą.

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III. REKOMENDACIJOS

1. Į visų specializacijos dalykų ir laboratorinių darbų turinį reikėtų įtraukti naujausius šios studijų krypties (elektronikos ir elektros inžinerija) mokslo ir technologijų pasiekimus (pvz., pažangiųjų tinklų aspektus, kaip pasiūlė vietos paskirstymo sistemos operatorių atstovas, platesnį AutoCAD naudojimą ir t. t.)
2. Reikėtų patobulinti specialiųjų priemonių planą, skirtą studentų nubyrejimui sumažinti.
3. Reikėtų sukurti galimybę studentams ir dėstytojams tobulinti anglų kalbos žinias.
4. Reikėtų ir toliau pasinaudoti alumnų bei darbdavių pagalba (pvz., atnaujinant dalykų sąrašą ir jų turinį, laboratorinę įrangą, atsižvelgiant į naujausius studijų srities pasiekimus), nes patvirtino jos veiksmingumas tobulinant programą vertinimo laikotarpiu.
5. Nepaisant to, kad laboratorinė įranga, palyginti su kai kuriomis Lietuvos aukštosiomis mokyklomis, yra aukšto lygio, būtų galima toliau ją tobulinti įsigyjant daugiau modernesnių instrumentų ir prietaisų, pvz., ES ir pramonės subsidijų pagalba.

Paslaugos teikėjas patvirtina, jog yra susipažinęs su Lietuvos Respublikos baudžiamojo kodekso 235 straipsnio, numatančio atsakomybę už melagingą ar žinomai neteisingai atliktą vertimą, reikalavimais.

Vertėjos rekvizitai (vardas, pavardė, parašas)