SKVC

STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

ŠIAULIŲ UNIVERSITETO
STUDIJŲ PROGRAMOS
Elektronikos inžinerija **(612H61003)**
VERTINIMO IŠVADOS

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EVALUATION REPORT OF
Electronics engineering (612H61003)
STUDY PROGRAMME
at *Šiauliai University*

Grupės vadovas: Team leader:	Prof. dr. Krzysztof Kozlowski
Grupės nariai: Team members:	Prof. dr. Lyudmila Zinchenko
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Išvados parengtos anglų kalba
Report language - English

Vilnius
2014

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	**Elektronikos inžinerija**
Valstybinis kodas	612H61003
Studijų sritis	Technologijos mokslų studijų sritis
Studijų kryptis	Elektronikos ir elektros inžinerija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	Nuolatinė (4 metai), ištęstinė (5,5 metai)
Studijų programos apimtis kreditais	240 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Elektronikos ir elektros inžinerijos bakalauras
Studijų programos įregistravimo data	2010-05-03, Nr. V-635

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INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	**Electronics Engineering**
State code	612H61003
Study area	Technological sciences
Study field	Electronics and electrical engineering
Kind of the study programme	University Studies
Study cycle	First
Study mode (length in years)	Full-time (4 years), part-time (5,5 years)
Volume of the study programme in credits	240 ECTS
Degree and (or) professional qualifications awarded	Bachelor of Electronics and Electrical Engineering
Date of registration of the study programme	03-05-2010, No V-635

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The Centre for Quality Assessment in Higher Education

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I. INTRODUCTION

The current evaluation report of the Electronics engineering (state code 612H61003) study programme at Šiauliai University is based on the Self-Evaluation Report (further referred as SER, provided by the Šiauliai University, Department of the Electronics Programme Study self-evaluation team) and by the on-site visit by the Evaluation Team on. This visit included

a)   questioning and discussions with the administration of the University, the SER-preparation team, teaching staff, students, alumni and the social partners (mostly companies), related to the evaluated study programme;

b)   visiting the labs, library, classrooms, free-time zones for students and other facilities.

As explained in the SER (p.4-5) – at the Šiauliai University the studies of all three cycles and scientific research in different fields of science are carried out. The university consists of 7 faculties, 13 scientific centres, the institute of continuing studies, the University art gallery, the library, administration and management services and public institutions, like the University publishing house and the University gymnasium. Faculty of Technology at Šiauliai University is carrying out 6 study programmes for bachelor's degree (Environment and Professional Safety, Electronical Engineering, Electrical Engineering, Information Engineering, Mechanical Engineering, Civil Engineering) and 4 study programmes for master's degree. Concerning study programmes carried out at the Department of Electronics, on November 1st 2012 there were 98 students, among them 89 studied for bachelor's degree (54 fulltime students and 35 part-time students) and 9 studied for master's degree.

The Department of Electronics came into existence on September 1st 1967, when the Department of Radioengineering and Electrical Engineering was founded. Through several reorganizations since 2004 the Department of Electronics exists. The Department of Electronics is responsible for training electronic engineers for a bachelor's degree (both full-time and part-time study forms) and a master's degree (Signal Processing programme, full-time study form). The Department of Electronics began carrying out part-time studies in Electronics Engineering for a bachelor's degree in September 2006 (lectures and classes are held on Saturdays). Since September 2009 enrolment for Electronic Engineering bachelor studies has been stopped for part-time (evening) studies. In June 2013 the last students, who entered part-time (evening) mode studies, finished their studies.

Current accreditation took part on March 28, 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.

Previous accreditation was performed on November 7, 2011 and the program study was accredited for three years. 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

As stated in the SER (p.7) – the Programme demand – is dictated by the labour market and the fact that a lack of engineering professionals in Lithuania and the European Union as well as around the world is noticeable. The labour market needs more professionals with higher education since vocational training is not sufficient to control, maintain and develop the complex equipment and the systems. According to the labour market needs, the programme (SER, p.8) has three specializations: Computer Engineering, Telecommunications and Medical Electronics.

The members of the international panel can confirm, that the programme aims and learning outcomes are quite well defined, clear and publicly accessible. Still programme aims and learning outcomes of the study programme and the programme itself could be easier and wider accessible to the society, e.g. by the webpages of the University and Department. Also the representation of the learning outcomes in the particular subjects (courses) could be checked, for the consistency. For example, the study outcome D1 („*the ability to conduct searches of literature, and to use data bases and other sources of information*") seems not to be directly included in any of the subjects (Appendix 1 „Subjects Descriptions"), while in the corresponding Table 2.2 (SER, p.9-10) it has to be included into several subjects. As positive – the BA students are involved in the promotion of the study programme (and explaining of the programme aims and outcomes) in the schools (e.g. in Šiauliai and Klaipėda) as well as FP7 project "Research Nights", etc.

The programme aims and learning outcomes are based on the academic and professional requirements, public needs and the needs of the labour market; for example - as positive – the consultations and discussions with the regional industry are observed, also the feedback from the industry and graduates is really positive, as well as the possibilities to find jobs or to become entrepreneurs are good.

The programme aims and learning outcomes are consistent with the type and level of studies and the level of qualifications offered; the name of the programme, its learning outcomes, content and the qualifications offered are clear and more-or-less compatible with each other. Still, the correct degree (of Electronics and Electrical bachelor) should be used within all the databases. The correct credentials of the programme should be identical/consistent in all databases according to the AIKOS system. Also, the Study mode of the "evening studies" has to be omitted since it is not valid longer. Furthermore, the correct assessed period should be put from the last evaluation.

2. Curriculum design

The members of the international panel can confirm that the curriculum design meets legal requirements. As stated in the SER (p.7) *"The learning outcomes of study programme are related to European Union conception of higher education quality and complies with European Union documents and recommendations on higher education development and legal documents of the Republic of Lithuania."* The study subjects and/or modules are spread evenly, their themes are not repetitive; the sequence of the subjects seems to be reasonable.

Still, some minor things should be corrected. For example, the prerequisites of "Circuit Theory" should be checked as well as their sequence in time. Also, the titles of the prerequisites has to be checked and updated in accordance to official subjects titles (e.g. Informatics, Circuit Theory). Also, the sequence of the study subjects has to be updated (e.g. Electronics has to be after Physics and Circuit theory) and be more consistent. Also to mention, as a possible problem,

the students are expecting more electronic subjects from the very first year, as they got tired with general subjects (philosophy, economics). Maybe this could be related to the circumstance that the general studies in the beginning (e.g. math) seem to the students similar to what they have learned in the secondary school.

The content of the subjects and/or modules is consistent with the type and level of the studies. After finishing Electronic Engineering bachelor study programme graduates can continue their studies for a master's degree. The content and methods of the subjects/modules are appropriate for the achievement of the intended learning outcomes. Still, the consistency of the subjects/modules and expected outcomes should be checked as described previously on the example of the study outcome D1.

The scope of the programme is sufficient to ensure learning outcomes; it was also confirmed by all parties during on-site visit during the meeting with students, staff, alumni, and companies. The content of the programme reflects the latest achievements in science, art and technologies. As a positive comment, some courses have been considerably updated since the last evaluation in 2011. For example, the subjects as "Interfaces" and "Course project" were included into curriculum and subject "Microprocessors" was updated including teaching about new microcontrollers (ARM), according to the previously formulated Recommendation 3.6. As the evaluators could notice during the visit, the students like much just project-oriented teaching, where the theoretical knowledge and practical skills can be used and developed. Also it could be noticed that the project–based learning is not limited with the formal curricula, but can go further and wider from the formal subjects.

Also, as seen during the evaluation with meetings with various partners, a continuous discussion could be hold, with all partners (students, staff, companies) for the study programme-how much to keep the "evergreen and basic" subjects and topics in the programme, and how much time to devote to the latest achievements in the technology.

Regarding the study books for the subjects - the general picture is good. A lot of Lithuanian language based new books (which were published around 2010 or even newer) are used for the subjects (as can be also seen from the Appendix 1 of the SER) and also good English language books are used in parallel, in some cases. The use of more English language international books, for example, for basic electronics courses, to be more familiar with the terminology and latest achievements in this field, could be discussed for the future.

3. Staff

The study programme is provided by the staff meeting legal requirements, in a number of 26 teachers. Among them there are 4 professors, 13 associated professors, 7 lectures, 2 assistants. Among lectures 3 are Ph.D. students.

The qualifications of the teaching staff are adequate to ensure learning outcomes; also the students are satisfied with the competence of the teachers; some teachers are capable of doing classes in English. The number of the teaching staff, described above, is adequate to ensure learning outcomes.

The teaching staff turnover is able to ensure an adequate provision of the programme, there are 6 teachers over 60 years. However, there is a number of PhD students and post-doc who are planning to be a part of the programme. It seems that the programme committee is working on the aging issues.

The higher education institution creates conditions for the professional development of the teaching staff necessary for the provision of the programme. There is a possibility to obtain the

faculty funds for the travelling to the international conferences for the teachers and the personnel is aware of external funds as well. Some of the lecturers are members of national and international professional societies, such as IEEE, Biomedical Engineering, Engineering societies. However, membership in national and international societies (e.g. IEEE) could be wider in the near future.

The teaching staff of the programme is rather limited involved in research (art) directly related to the study programme being reviewed. During the discussion with the SER preparation team as well as teaching staff COST actions and EU Structural Funds project "Smart Go". According to SER (p.5) – in addition to the pedagogical activities, the teachers of the department do research in the following areas: human oculomotor system, means of human-computer interaction, computer vision. The department teachers participate in international projects, international conferences and seminars and publish research papers. However, as it was indicated during the discussion rather low co-operation with the industry in terms of research projects.

As positively to mention, the Recommendations 3.4, 3.1, and 3.5 of the previous evaluation have been taken into account and the following improvements can be followed, also for the evaluators.

Referring to Recommendation 3.4 closer cooperation with companies like JSC Salda, JSC Splius, JSC Duomeno Centras. ISC Jupojos Technika and JSC Hampidjan- were established. More final thesis works became oriented to industry, so allowing in the future increasing the co-operation with industry at research level. As it was formulated in Recommendation 3.1 ("Increase and extend research activities of the staff") the following information was got:

a)   G.Daunys and N. Ramanauskas joined COST action IC2O2 (TACI.e);
b)   Department prepared application to join COST action 1C1307 ((iV &L Net);
c)   R.Zemblys won a grant for postdoc (one year) studies in Sweden;
d)   G.Dainys and D. Dervinis joined a project funded by the European Social Fund "Micro-sensors, micro-actuators and controllers for mechatronic Systems (Go-Smart)".

About the Recommendation 3.5 (Evaluation 2011) to "Develop the eye controlled computer input into a commercial product as positive knowledge transfer"- it was reported, that the Biomedical Engineering Center is involved in the activity and a company "Imeds" has been involved into the process by the researches of the Department.

Still teachers could be more pro-active for the international exchange and in the participation of various international conferences. Also the staff could have more international (non-Lithuanian) publications. If possible the lecturers could also pursue different projects (and maybe not to be limited by a single high-level research topic). Also, as the department is quite small, more collaboration with other departments within the University could be considered (and not only in the research field).

4. Facilities and learning resources

The premises for studies are adequate both in their size and quality. The teaching and learning equipment (laboratory and computer equipment, consumables) are adequate both in size and quality, laboratories have some improvements since the last evaluation in 2011; the laboratories meet students' expectations and they are sufficiently updated. Still, the number of laboratories seems to be just minimalistic. As a positive – a special room for the students' practical works has been established.

The University has adequate arrangements for students' practice. A sufficient number of placements are available.

Teaching materials (textbooks, books, periodical publications, databases) are adequate and accessible. Textbooks of other universities are used and e-books are rather popular among the students. A good impression is about the availability in really large number (by titles) of Lithuanian language good textbooks. Also, in parallel, English language international books are available and used, in many cases. Still, having access to the IEEE database at the University could be really beneficial for both the staff and the students.

Compared with the previous evaluation and according to the Recommendation 3.3 to improve the facilities of labs by "Putting up mid and long term strategies for the modernization of laboratories" the following changes were reported and could be also much seen by the evaluators' team:

a)   Old equipment (oscilloscopes, generators, power supplies) were replaced by new one;
b)   Some development boards for embedded systems were purchased;
c)   A plan or future is to purchase more development boards based on ARM processors and different sensors;
d)   Long term strategy was established to arrange laboratory with integrated workplaces and smart board.

The general picture regarding the computer classes and the equipment (and also the software e.g. for development of micro-controllers) is quite good and clear improvements are seen and developments are ongoing. Still, some computers and displays look a little bit old, though they are suitable to run the software for the study process.

As positive, the labs and other resources are freely available for students, for their own projects and personal development in the field of speciality (electronics). For example, the purchased medical Electronics equipment, which is although used in the MA programme, the bachelor students still have access to it.

As a recommendation, further continuous development and modernization of labs is important, of course. Maybe participation of the University programmes of companies like Texas Instruments, Analogue Devices or other similar - could be considered, in this context.

The experts found that there are possibilities for active leisure (e.g. "ping - pong" table), spaces for the creative activities to prepare bachelor final theses (together with some demonstration equipment) and beyond that (projects of interest).

5. Study process and student assessment

The admission requirements are well founded; as positive (probably seen also for other engineering specialities in Lithuania) – an increase of competitive score for admitted students could be mentioned (SER, p.32).

The organisation of the study process ensures an adequate provision of the programme and the achievement of the learning outcomes; as positive- students' representative(s) in the study programme are rather active and the "students voice is heard".

Students are encouraged and supported (by staff and facilities) to participate in research, artistic and applied research activities. After practises in the industry, a number of students were hired by the same companies.

Students have opportunities to participate in student mobility programmes; (e.g. with institutions in Turkey, the Netherlands and Italy); according to SER (p.32) the programme is

"best in the faculty". Still more students' participation in mobility programmes, for example – ERASMUS+ would be useful.

Compared with the previous evaluation (2011), when the Recommendation 3.2 was given - to increase the student mobility in both directions and to enable visiting students to participate in project and laboratory activities carried out in English- the following improvements were reported by the staff:

a) The number of outgoing Erasmus students has been increased.

b) Every year 2 students go for one week of internship to Etten-Leur (The Netherlands).

c) Earlier there were Erasmus students, who studied single subjects of Electronics Engineering, but during last years, Erasmus students arrive just to the Electronics Engineering programme.

University ensures an adequate level of academic and social support. Also, to mention positively, the students are really satisfied with the study process (possibilities to communicate with the teaching staff, labs and equipment for hand-on activities, etc); also, it seems – the students are happy to live and study just in this city, study at this University and this department.

The assessment system of students' performance is clear, adequate and publicly available; the evaluators mark positively, that for example - all final theses for year 2011-2013 were presented to the expert group and were by their opinion adequately graded. Many of the bachelor theses are industry-driven.

Professional activities of the majority of graduates meet the programme providers' expectations; this was heard also during the meeting with the alumni and companies.

Also, as mentioned in the context of the staff development, during the last evaluation (2011) the Recommendation 3.4 was given to develop more industrial contracts, as also developing the students' knowledge, skills etc., being part of the study process. In this direction the following improvements were reported:

a) Closer cooperation has been established with companies like with JSC Salda, JSC Splius, JSC Duomeno Centras. ISC Jupojos Technika and JSC Hampidjan;

b) More final bachelor works became oriented to industry.

Also to mention, as possible problem for the study process is the decreasing number of students, what could influence the financial and other resources, available for the teaching. Positive side of the decreasing number of the students and improved entry level of students is probably the better quality of the teaching.

The experts have also found that there are good possibilities for active leisure or extra curricular activities. There is enough space for the creative activities to prepare bachelor final theses (together with some demonstration equipment) and beyond that (projects of interest). The students have their own room, which is freely accessible and where they can work on individual projects, participate in assembling electronics devices. This was viewed as a very positive thing by the review group.

As a general positive comment - the teacher-student co-operation, as seen during the evaluation, could be a good practise also to other the electronics and electrical engineering programmes. Students confirmed that some of the job opportunities in the companies, they are receiving through the teachers.

6. Programme management

The responsibilities for decisions and monitoring of the implementation of the programme are clearly allocated. Department staff is aware and participates in the Programme Study Committee, also the students are well represented in the process. For the programme management in "two-level" Study Programmes Committees: one per each study programme at the Department level and one for couching all the programmes at the Faculty level. The latter Study Programme Committee is established in order to harmonise relations between Faculty study programmes and if possible by joint actions minimise costs.

1)   Information and data on the implementation of the programme are regularly collected and analysed; among other methods filling of feedback forms are used for that purpose;

2)   The outcomes of internal and external evaluations of the programme are used for the improvement of the programme; also the feedback is given to the staff members about their teaching methods, subjects etc.;

3)   The evaluation and improvement processes involve stakeholder, active social partner are involved in the Study Programme Committee activities.

The evaluators' impression, how the study programme is managed and continuously improved- in close co-operation with all partners and participants – students, staff, stakeholders, and administration - seems to be really positive.

The internal quality assurance measures are effective and efficient. As positive, the University and the Study programme seems to handle quite small groups of students and staff, so making the communication smooth, fast, fruitful and stress-less.

As from critical side, to mention, the Self-evaluation report prepared for the Evaluation was with several inconsistencies (starting from precise names of the degree or profession, currently valid study modes etc.).

Also, about the general management of the study programme - to mention, during the last evaluation (2011) the Recommendation 3.7 was given -"To tighten links to neighbouring departments, consider merger if necessary"- it was now reported by the administration of the department, that "At Faculty level it was decided to merge departments of Electronics and Information Technology, the final decision depend on Council of Siauliai University". This question could be currently (2014) even more acute (compared with the situation in 2011), as the number of students in the study programme has been quickly and significantly decreased, during last years – starting 25 students in 2010 vs. 11 in 2013, according to the current Self-Evaluation report).

The experts emphasize the requirement for the future to prepare more "consistent" Self-Evaluation report, as just explained hereby. It should be precisely checked in order to avoid factual errors and outdated information. Furthermore, the information should be assessed on the period from the last evaluation. Also, as mentioned during in the previous evaluation report in 2011 – a closer co-operation with other departments of the University should be strongly considered.

III. RECOMMENDATIONS

As for recommendations – generally the points could be partly the same, as after the previous evaluation – the things has improved much – but there is still space and need for improvements. So the recommendations are:

1. Increase and extend research activities of the staff;

2. Be involved in international conferences and journal publications;

3. Increase student mobility in both directions;

4. Put up mid and long term strategies for the modernization of laboratory equipment;

5. Open more links to the industry and try to obtain industrial contracts;

6. Continuously develop the curriculum, include hot up-to-date subjects;

7. Tighten links to neighbouring departments, consider merger if necessary.

IV. SUMMARY

Overall impression of the evaluation process is positive, in practically all aspects. Everything seems to work well and sides (students, staff, administration, companies) are satisfied. The programme aims and study outcomes, the staff, facilities, study process, facilities and the study programme management are considered rather well.

The programme aims and learning outcomes are well defined, clear and publicly accessible (as in the university website and "AIKOS" Information system), but still, some improvements could be done to make the programme aims and learning outcomes better available publicly (on the web of the University and department) 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 perceived and accepted by the students, staff and stakeholders. Still, the programme aims with learning outcomes and the Curricula (subjects) related to these "outputs" could be checked for the consistency, as explained in the current Report.

While teaching staff is adequate in size and qualification (including several professors) – could be more pro-active for the international exchange and in the participation of various international conferences. As positive, the staff is able to teach the international exchange students in English. Two teachers are members of IEEE. Also the students' mobility has been increased, but there is still place to improve the situation. Of course, the experts find that encouragement of the staff (and students) could be increased, to be more international, to publish more and also outside Lithuania and highly ranked journals, to acquire more research and industrial projects, locally and outside of Lithuania.

The labs and equipment are adequate both in size and quality, improvements since the last evaluation were made and the laboratories meet students' expectations. Still, the number of laboratories seems to be just minimalistic and updating of the labs to the latest modern technologies is necessary. As a really positive thing, the labs and other resources are freely available for students, for various projects.

Studijų kokybės vertinimo centras

The study process-the admission requirements are well founded. As positive (probably seen also for other engineering specialities in Lithuania) – competitive score for admitted students have increased. Not only the staff and administration, but also the students' representative(s) are actively supporting the study programme management to improve the study process. Also, as positive, involvement of the all parties (students, teachers, administration, stakeholders) into the development and maintenance of the study process and study programme management is evident; the got feedback is used to improve the study process and to give feedback to the teachers; also close co-operation between teaching staff and the students is seen.

One important issue was stressed out – the decreasing number of the students, as well as decreasing of the possible funding. More co-operations with other departments inside of the university could be probably beneficial, not only by this reason. Also the paperwork in preparing of the Self-Evaluation Report could be better prepared (everything written, to be checked and over-checked, to be consistent with other documents, official databases, web-sites and the report itself). Also, all other documentation (on the papers, on the web of the University, AIKOS, etc.) about study outcomes, modules, various coding and naming/titling of the things could be more carefully checked and double-checked for the possible inconsistencies.

Also, looking into the recommendations of the previous Evaluation (2011), the present evaluation team received answers, clearly showing, that all recommendations have been taken into account and there has been more-or-less progress in all topics. Still, in spite of the progress-the same recommendations are still actual and so further improvements are needed. It is also noted that some critical points mentioned above do not have influence on positive opinion of this particular Electronics Engineering study programme evaluated by the international team, as it was visibly improved since last accreditation.

V. GENERAL ASSESSMENT

The study programme *Electronics Engineering* (state code – 612H61003) at Šiauliai University 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	3
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)	3
	Total:	**19**

*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. Krzysztof Kozlowski

Grupės nariai:
Team members: Prof. dr. Lyudmila Zinchenko

                      Dr. Olev Martens

                      Dr. Rolandas Urbonas

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Studijų kokybės vertinimo centras

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V. APIBENDRINAMASIS ĮVERTINIMAS

Šiaulių universiteto studijų programa *Elektronikos inžinerija* (valstybinis kodas – 612H61003) 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	4
6.	Programos vadyba	3
	Iš viso:	**19**

* 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

Bendras vertinimo proceso įspūdis yra teigiamas praktiškai visais aspektais. Atrodo, kad viskas veikia gerai ir kad visos šalys (studentai, personalas, administracija, įmonės) yra patenkintos. Programos tikslai ir studijų rezultatai, darbuotojai, patalpos, studijų eiga, patalpos ir studijų programos vadyba yra gana geri.

Programos tikslai ir studijų rezultatai yra gerai apibrėžti, aiškūs ir viešai prieinami (universiteto interneto svetainėje ir AIKOS informacinėje sistemoje). Tačiau vis tiek yra ką tobulinti, kad programos tikslai ir studijų rezultatai galėtų būti geriau viešai prieinami (universiteto ir katedros tinklalapyje) siekiant pačios programos naudos. Programos tikslas ir studijų rezultatai grindžiami akademiniais ir profesiniais reikalavimais, visuomenės poreikiais ir darbo rinkos poreikiais. Vertinimą atlikę ekspertai susidarė aiškų įspūdį, kad programos tikslus ir studijų rezultatus gerai suvokia ir priima studentai, dėstytojai ir socialiniai dalininkai. Vis dėlto reikėtų patikrinti programos tikslų kartu su studijų rezultatais ir studijų turinio (dalykų), susijusio su šiais rezultatais, nuoseklumą, kaip aiškinama šiose išvadose.

Nors pedagoginis personalas yra tinkamas pagal kiekį ir kvalifikaciją (įskaitant keletą profesorių), jis galėtų aktyviau dalyvauti tarptautiniuose mainuose ir įvairiose tarptautinėse konferencijose. Kaip teigiama, dėstytojai gali dėstyti tarptautinių mainų studentams anglų kalba.

Studijų kokybės vertinimo centras

Du dėstytojai yra Elektros ir elektronikos inžinierių instituto (IEEE) nariai. Studentų mobilumas padidėjo, bet situaciją dar reikėtų gerinti. Žinoma, ekspertai mano, kad reikia skatinti dėstytojus (ir studentus) veikti daugiau tarptautinėje plotmėje, skelbti daugiau publikacijų, taip pat skelbtis už Lietuvos ribų ir pripažintuose žurnaluose, įsigyti daugiau mokslinių tyrimų ir pramonės projektų vietoje ir už Lietuvos ribų.

Laboratorijos ir įranga savo dydžiu ir kokybe yra tinkamos, po paskutiniojo vertinimo buvo atlikti patobulinimai ir laboratorijos atitinka studentų lūkesčius. Vis dėlto laboratorijų skaičius, atrodo, yra tik minimalus. Reikėtų atnaujinti laboratorijas naujausiomis šiuolaikinėmis technologijomis. Tikrai teigiamas dalykas yra tas, kad laboratorijomis ir kitais ištekliais studentai gali laisvai naudotis įgyvendindami įvairius projektus.

Studijų eiga, priėmimo reikalavimai yra pagrįsti. Kaip teigiama (tikriausiai tinka ir kitoms inžinerijos specialybėms Lietuvoje), konkursinis priimamų studentų balas padidėjo. Ne tik dėstytojai ir administracija, bet ir studentų atstovas (-ai) aktyviai remia studijų programos vadybą, siekdami pagerinti studijų eigą. Geras dalykas yra tai, kad visų šalių (studentų, dėstytojų, administracijos, socialinių dalininkų) dalyvavimas studijų eigos ir studijų programos vadybos plėtroje ir palaikyme yra akivaizdus; gautas grįžtamasis ryšys yra naudojamas studijų procesui tobulinti, be to, grįžtamasis ryšys pateikiamas dėstytojams; taip pat vertinamas glaudus dėstytojų ir studentų bendradarbiavimas.

Buvo akcentuotas vienas svarbus klausimas – mažėjantis studentų skaičius, taip pat mažėjantis galimas finansavimas. Bendra veikla su kitomis universiteto katedromis gali būti naudinga ne tik dėl šios priežasties. Dokumentacija savianalizės suvestinei rengti gali būti geresnė (viskas pateikta raštu, patikrinta ir pertikrinta, ar atitinka su kitais dokumentais, oficialiomis duomenų bazėmis, interneto svetainėmis, taip pat pati suvestinė). Be to, reikėtų kruopščiai patikrinti visus kitus dokumentus (raštu, universiteto svetainėje, AIKOS ir t. t.) apie studijų rezultatus, modulius, įvairius kodus ir pavadinimus, taip pat atlikti dvigubą patikrą siekiant išvengti galimo nesuderinamumo.

Be to, žiūrint į ankstesnio vertinimo (2011 m.) rekomendacijas, šiai vertinimo grupei pateikti atsakymai aiškiai rodo, kad buvo atsižvelgta į visas rekomendacijas ir pasiekta didesnė ar mažesnė pažanga visose srityse. Nors pažanga matyti, tos pačios rekomendacijos vis dar aktualios, todėl reikės studijų programą gerinti toliau. Reikia pažymėti, kad kai kurie kritiniai pirmiau nurodyti pasisakymai neturi įtakos teigiamai nuomonei apie šią konkrečią studijų programą *Elektronikos inžinerija*, kurią vertino tarptautinė ekspertų komanda, nes patobulinimai, padaryti gavus paskutinio akreditavimo išvadas, yra akivaizdūs.

III. REKOMENDACIJOS

Kalbant apie rekomendacijas, galima pasakyti, kad punktai iš dalies gali likti tokie patys, kurie buvo pateikti, atlikus ankstesnįjį vertinimą. Daug kas buvo patobulinta, tačiau vis dar yra dalykų, kuriuos reikia ir galima pagerinti. Rekomenduojama:

1. didinti ir plėsti dėstytojų mokslinių tyrimų veiklą;
2. dalyvauti tarptautinėse konferencijose ir skelbti publikacijas žurnaluose;
3. didinti abipusį studentų mobilumą;
4. parengti tarpines ir ilgalaikes strategijas dėl laboratorinės įrangos modernizavimo;
5. užmegzti daugiau ryšių su pramone ir pabandyti pasirašyti sutartis su pramonės įmonėmis;

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6. nuolat tobulinti studijų turinį, įtraukti aktualius šiuolaikinius dalykus;
7. stiprinti ryšius su gretimomis katedromis, apsvarstyti jų sujungimą, jei reikia.

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