



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

KAUNO TECHNOLOGIJOS UNIVERSITETO
STUDIJŲ PROGRAMOS
TRANSPORTO ELEKTRONIKA
(valstybinis kodas - 612H61007)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF TRANSPORT ELECTRONICS
(state code - 612H61007)
STUDY PROGRAMME
at KAUNAS UNIVERSITY OF TECHNOLOGY

Experts' team:

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Išvados parengtos anglų kalba
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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Transporto elektronika</i>
Valstybinis kodas	612H61007
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), iššęstinė (6 metai)
Studijų programos apimtis kreditais	240 ECTS
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Elektros inžinerijos bakalauras
Studijų programos įregistravimo data	2012-03-02, Įsak. Nr. SR-1137

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Transport electronics</i>
State code	612H61007
Study area	Technological sciences
Study field	Electronics and electrical engineering
Type of the study programme	University studies
Study cycle	First
Study mode (length in years)	Full-time (4 years), part-time (6 years)
Volume of the study programme in credits	240 ECTS
Degree and (or) professional qualifications awarded	Bachelor of Electrical Engineering
Date of registration of the study programme	2 March 2012, Order No. SR-1137

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The Centre for Quality Assessment in Higher Education

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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
1	Projects related with transport electronics (2009 – 2015)
2	Courses directly dedicated to transport electronics
3	List of research and other publications by teaching staff in transport electronics
4	List of visited laboratories

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

The Kaunas University of Technology is one of the biggest technical universities in Lithuania with about 12000 students, 13 faculties and 73 departments. The mission of the university is to provide high level studies and research opportunities at international level suitable for a sustainable development and growth of the country. Kaunas University of Technology is an active member in many international organizations and participates regularly in a variety of scientific research and educational international programmes.

The basic division of the first cycle programme Transport Electronics (hereafter - TE) is the Faculty of Electrical and Electronics engineering (FEEE). The department of Electronics engineering takes part in the implementation of the study programme (hereafter – SP) TE. In 2014 two faculties were merged (Telecommunications and electronics faculty with the Electrical and Control engineering faculty) and a new Faculty of Electrical and Electronics Engineering was established. The merge of the two faculties into one is the basis of a significant efficiency improvement and causes many synergies both in teaching and research activities.

Graduates of Transport Electronics study programme acquire the bachelor degree in Electrical Engineering in the study field Electronic and Electric Engineering.

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 10th November, 2015.

- 1. Prof. Dr. Edmund Handschin (team leader)**, *professor emeritus at Technical University of Dortmund, Germany;*
- 2. Prof. Dr. Tadeusz Skubis**, *professor at Silesian University of Technology, Faculty of Automation, Electronics and Informatics, Poland;*
- 3. Prof. Dr. Toomas Rang**, *professor at Tallinn University of Technology, Faculty of Information Technology, Estonia;*
- 4. Prof. Dr. Dainius Balbonas**, *Head of the Electronics and Electrical Engineering department at Šiauliai University, Lithuania.*
- 5. Mr. Rytis Koncevičius**, *students' representative from Vytautas Magnus University.*

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The SER states that the exclusivity of the study programme (SP) in transport electronics (TE) is that the programme mainly aims focus on vehicle electronic systems design, integration and working capacity maintenance. This aim is not completely clear because at present there also are intended learning outcomes e.g. in the field of railway systems. The field of railway systems should be treated in a much more complete manner covering all aspects of modern railway systems including signaling and safety aspects or as an alternative entirely cancelled. Since this elective option appears to be a result of the faculty merger there seems to be sufficient teaching capacity to design a suitable module in this field. A second comment concerns transport system engineering aspects such as e.g. road congestion management, car internet, self-driving cars, parking automation. These aims should be further developed and expanded with an adequate module emphasising system engineering aspects in the curriculum. At present the programme aims are not sufficiently differentiated from the electronics engineering SP offered by the same department.

The programme aims and learning outcomes should be clearly different from the SP in electronic engineering. More focus is recommended to clarify the intended specific learning outcomes of this SP. The aims are in good alignment with the general political intention and the industrial needs to strengthen the electronic engineering sector. The completed questionnaire with industry is a good basis for knowing and taking care of the industrial needs towards a SP in TE. The demand for specialized graduates of the SP in TE has been confirmed during the on-site visit in the interview with the industrial representatives.

There are number of other study programmes in the field of transport electronics offered by technical colleges. According to the mission of a college the main emphasis of the SP at a college is on vehicle maintenance. Hence the aspects of vehicle maintenance can be deemphasized in the programme's aims and learning outcomes for the SP in TE at KTU. Aims and learning outcomes are publically accessible through internet. A recently produced internet video gives a clear and understandable picture of the aims and intended learning outcomes of the SP in TE.

In conclusion, the aims and intended learning outcomes of this SP in TE are fully in alignment with the industrial needs; this is the result of the discussion with industrial representatives during the on-site visit. The qualification offered is a good answer to the industrial demands.

2.2. Curriculum design

The volume of the first level SP in TE consists of 240 ECTS credits. This SP has no specialization. The duration for full-time studies is four years, and for part-time studies six years. After the completion the SP graduates are awarded a Bachelor's Degree in Electronic Engineering. The SP corresponds to the legal requirements with respect to the credits assigned: general education (15 credits); study area modules (21 credits); mathematics and physical science (42 credits); social sciences (15 credits); main modules of study area (189 credits); student selections (12 credits) and freely chosen modules (6 credits); practice (18 credits); final project preparation and defense (15 credits). It is worthwhile mentioning that 15 credits in the 8th semester are dedicated to an industrial training in electronics-oriented companies. In order to create additional benefits from this industrial training it is recommended to shift it into the 6th semester.

The modules specially dedicated to the topics of TE are only 20 – 25 % of all lectures offered to the SP in electronic engineering and hence it is difficult to differentiate this SP from the existing SP on electronic engineering. On the other hand there are important modules missing e.g. in the field of modern assistance systems in particular related to safety aspects and in the field of electronic transport system engineering aspects such as electromagnetic compatibility or modelling systems for automatic control of the traffic flow. In order to create the necessary space in the curriculum existing lectures with little contact to TE such as e.g. chemistry could be dropped. The content and methods of the existing dedicated lectures directly related to TE are by and large appropriate for the achievement of the intended learning outcomes. The courses directly dedicated to TE are listed in the table handed out during the on-site visit (see 1.2).

According to the discussion with the students the low acceptance of this SP with respect to new students is the missing clear specification where the differences lie between the SP in TE and the SP in electronic engineering. The modules specifically dedicated to TE should be highlighted. The common modules with electronic engineering should be concentrated in the first and partly in the 2nd year such that the SP in the 3rd and 4th year is sufficiently differentiated from the parallel SP in electronic engineering.

The links between the intended learning outcomes and the curriculum are not yet completely convincing. They are consistent with the professional requirements of industry and labor market. The name of the SP is not fully compatible with the intended learning outcomes because transport includes far more engineering fields than road and railways. New emerging topics such as e.g. modern driving assistance systems in cars and trucks should be covered in the curriculum in a new additional module. It is recommended that the curriculum of the SP in TE either concentrates on cars and railways or it will be opened in order to address in a wider scope

all kinds of terrestrial transport means including e.g. autonomous vehicles in warehouses or self-driving autonomous cars.

There are several inconsistencies in the prerequisites for different courses: e.g. the SER states that the course on “Technology on Railway transport” requires “Technology on Railway transport”. No circular reference should be made in the curriculum. No study module requires “engineering graphics” nor “theoretical mechanics” as prerequisite. The module on railway transport requires a major revision with respect to additional lectures covering the necessary prerequisite information in order to understand the correct specifications of railway electronics including the valid norms and standards. Following the discussion in section 2.1 the curriculum needs to be adapted to the precise definition of the aims and intended learning outcomes. Furthermore the curriculum does not yet show differentiation to the existing SP in electronics engineering. From the 45 modules offered in the SP TE there are only 10 courses directly dedicated to TE (see list under 1.2). It is recommended to revise the current curriculum in order to be sufficiently differentiated from the current SP in electronic engineering.

2.3. Teaching staff

During the starting phase from 2012 to 2014 the SP in TE is offered by 10 professors, 16 associate professors, and two lecturers with doctoral degree thus meeting the legal requirements. The age structure of the teaching staff is well balanced. The qualification and number of the teaching staff is adequate to ensure the learning outcomes. The work load of the teaching staff leaves sufficient time for projects and national research. More practical projects between industry and academic staff are desirable. During the on-site visit the interview with the teaching staff also addressed the topic of “quality of teaching”. There is little emphasize on this aspect and hence it is recommended to offer specific training opportunities to the teaching staff in this important field. The university administration is invited to develop an adequate course programme to guarantee a high level with respect to quality of teaching for the teaching staff at KTU. As mentioned in section 2.2 the differentiation between electronic engineering and TE is not very strong and this is reflected by the large amount of teachers serving with the same lectures in both SP.

The teaching staff increased the number of projects related to TE considerably from 2009 till 2015. Furthermore the list of research and publications by the involved teachers is impressive. For more details reference is made to the lists in the table shown in section 1.2. In some cases the coherency between the lecture content and the project/research work is rather loose; e.g. the SER does not indicate any project work in the field of energy sources in transport systems for the teacher responsible for the lecture “Energy Sources in Transport Systems”. Since

the content of this lecture only deals with electric cars the title of this lecture is misleading and needs revision. Important subjects such as e.g. electric charging systems for electric cars are not included in the actual curriculum.

The teaching staff turnover is steady and based on a well-defined quality assurance programme. The engagement in international teacher exchange programme must be intensified for the TE staff. Since Prof. Marozas apparently has no obligation in the study programme TE, he should not be included in the SER of TE.

Following the discussion with the students during the on-site visit the relationship between them and the teaching staff is trustful; the students have direct access to the teaching staff whenever needed. The teaching staff individually cares about the student's needs.

2.4. Facilities and learning resources

The SP TE has well-equipped classrooms and laboratories. During the on-site visit the evaluation team visited the eleven laboratories listed in the table under 1.2. Ten of the visited laboratories (signals and systems laboratory, design and experimental research laboratory, electronics and digital circuits laboratory, electrodynamics laboratory, embedded systems laboratory, electronic circuit laboratory, materials science and engineering laboratory, measurement laboratory, radio-frequency laboratory, interactive electronic system research group laboratory) are also used for the SP in electronic engineering. The transport electronics laboratory is dedicated to the SP in TE; it meets all the requirements of a modern and well equipped laboratory with a clear focus on TE. The ongoing modernization of the laboratories shows very good results and has to be continued in the coming years. During the last four years there was a continuous and adequate financial support for laboratory maintenance and new equipment. However, large efforts are necessary to keep up the modernization of the laboratories. A computer based innovation plan should be developed in order to put priorities in the innovation schedule of the laboratories. There are adequate individual working places in the library for self-learning studies.

The faculty library is well equipped and offers good access to important data base systems and periodicals. Since the access to the IEEE data base has been recently discontinued it is strongly recommended to reinstall the important source of information IEEE Xplore as soon as possible. Computer and internet access is guaranteed to each student. Adequate arrangements are available for the student's industrial practice. Teaching materials are well developed and available to the students. The free object oriented course management system Moodle is offered for several courses. The teaching material for the subject „Automotive Electronics“ needs to be updated because the referenced textbooks do not describe the present state of the art in this field.

Generally speaking it could be stated that enough evidence was provided to indicate that the facilities and equipment provided for the students on this study programme is appropriate to the level of the programme.

2.5. Study process and students' performance assessment

Admission rules and procedures are well defined and publically accessible. They agree with the legal requirements of university access. The number of students admitted to TE lies in the order of about 18% of all students in the faculty of electric and electronic engineering with a considerable decrease over the last few years. Although the SER emphasizes a close collaboration with schools through participating in study events it has not yet led to an increase in students for the SP in TE. It seems that there is not enough information available to attract interested pupils from gymnasiums. The extremely low percentage of female students in TE should be improved by massive information campaigns in the different media and press. The organization of a girl's day in the university may be an effective measure to improve this deficiency.

Since the SP TE only started in the autumn of 2012 there are no graduates yet. The SER shows that there are no drop out of students so far; nine students terminated their studies on their own request. The participation of students in the international exchange programme ERASMUS is not yet satisfactory due to the recent start of this programme. Although there are ERASMUS agreements for student exchanges with 58 universities the students claim that there is no adequate opportunity in the field of TE. The student academic support concerning the SP TE is well developed and based on regular information exchange. The social support is limited by the university budget; however big efforts are undertaken by KTU concerning the soft factors of social support such as allocation of residential accommodation in dormitories. In addition, the students' union participates in activities of the Faculty Council, issues student identification cards, duplicates, renews them, organizes cultural and sports events, student and faculty meetings, debates, seminars, conferences, surveys carried out by students on matters of mutual interest. In view of the many different economical situations it is a great advantage that students have ample opportunities to adapt their study plans to their individual needs.

The criteria of student's achievements evaluation are clear, adequate and publically available. Although in the first lecture of a study subject the lecturer introduces the students with study subject's aims, themes, tasks and schedule of self-study and the influence of their grade to the final grade the students do not feel adequately informed. Furthermore they complain about an inadequate feedback between teachers and students concerning their achievements. Since there

are not yet any graduates of the SP TE no assessment can be given whether the graduates meet the expectations of industry.

The students mention that they are lacking practical work and experience. Their participation in project work along with the teaching staff is presently rather limited.

2.6. Programme management

The responsibility of all study programmes, including TE, lies with the Study Programmes Committee (SPC) in the Faculty. The SPC cooperates with Faculty administration and also the departments supervising the study programmes. In regular meetings, suggestions and modifications proposed by the teaching staff are discussed and included in the revised SP. Although it is claimed in the SER that at least once per year representatives of the electronic industry companies take part in the Faculty Council meetings this could not be verified during the discussion with the representatives of industry. Using a questionnaire at the end of each semester the students have the opportunity to suggest their possible changes in the SP. But the participation of students in this questionnaire is rather low and hence not very representative. More motivation by the teaching staff is required to improve this low participation. The students suggest that the questionnaires should be filled out only after the semester is finished and the corresponding exams have been completed.

Recently a marketing video was created for promoting this specific programme. Although the video itself is publicly accessible through KTU website, it should be put to a better use on a national and international level, so that it would reach more potential students. It must be noted that this kind of initiative is very well appreciated and thus media could be used more often in the future for marketing purposes, as it is quite effective these days.

Based on the modifications carried out during the past few years it may be concluded that the quality assurance measures are effective and efficient. However, the feedback from industry and the alumni should be improved because their opinion presently enters the programme improvement only sporadic. Since the industrial representatives could not confirm written cooperation agreements between KTU and Lithuanian transport and electronic companies, it is recommended to conclude such agreements in the near future and make them public to the teaching staff and students. During the on-site visit the representatives from industry expressed their readiness to be formally involved in the programme management.

III. RECOMMENDATIONS

1. The aims and the intended learning outcomes of the SP in TE are not yet fully consistent with the proposed curriculum. In order to differentiate the SP TE adequately a clear focus on design aspects in the curriculum of transport electronics is suggested. More emphasize should be put on system engineering aspects while maintenance aspects should be deemphasized.
2. The module on railway systems has not been chosen by the students interviewed during the on-site visit. Either a substantial expansion of this module can be achieved or its cancelation is recommended.
3. A long-term, consistent plan for the modernization of the laboratories should be established and approved by the university authorities.
4. The participation in the ERASMUS programme must be substantially increased both for teachers and students.
5. The acquisition of an international research project in the field of TE is strongly recommended to strengthen the SP.
6. New emerging topics such as e.g. modern driving assistance systems in cars and trucks should be covered in a new additional module.

IV. SUMMARY

The strong points of this programme begin with the merger of the two faculties created a lot of new synergies to build up the new study programme in Transport Electronics. The aims and learning outcomes for TE are well explained. The contacts between university and industry are based on project specific contracts and hence there is a good and continuous exchange of information in both directions. The curriculum of TE corresponds to a timely and important SP where there are clear needs from industry and academics. The highly trained and qualified teaching staff offers an interesting teaching programme. The interaction between the teaching staff and the students is based on a trustworthy cooperation. Substantial efforts are undertaken to modernize teaching material, computers and laboratories. The number of specific projects in the field of TE has steadily increased since this SP has been started. A good and stringent programme management procedure may ensure a continuous update of the study contents. In view of its recent installation there is not yet sufficient information available about the practical implementation of the proposed programme management system. The drop-out rate is low even

though in the first year several students changed their study subject due to missing information at the beginning of their studies.

Despite many decent points of this programme, there are certain aspects which should be improved. First of all the name of this SP in TE does not entirely reflect the content of the current curriculum because it is not clear whether the SP addresses all types of transport systems including road and railways. A clear focus should be formulated and implemented in the curriculum. At present there is not a sufficiently clear explanation about the differences between TE and electronic engineering. The SER does not explain which lectures are only offered to the SP in TE. The teaching staff is not sufficiently informed about the entire SP; they know very well their own lectures but profound knowledge concerning links to other modules is missing. Despite the ongoing projects the teaching staff does not show a high and independent research profile especially with respect to transport electronics and hence the internationality of the teaching staff is not yet satisfactory. The acquisition of an international research project together with a European consortium could improve this situation very much. The students are not yet adequately informed about the lecture contents and their professional future. They expect more practical work especially in their laboratory courses. The participation of students in the project work done by the teaching staff members is not yet adequate. The students are not sufficiently encouraged to attend conferences. There is a weak and not regular feedback of students' assessment from the teachers. The practical work should not be placed in the last semester because if planned in an earlier semester (e.g. 6th semester) it may positively influence the study progress in higher semesters and the final thesis.

With respect to the SP management a clear strategy is suggested but not yet proven to be successful. Furthermore, the industrial partners and the future alumni should be actively engaged in the regular revision of the SP. A formal agreement with them might improve the current situation very much.

V. GENERAL ASSESSMENT

The study programme Transport Electronics (state code – 612H61007) at Kaunas University of Technology 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	2
3.	Teaching staff	3
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	17

*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. Edmund Handschin
Grupės nariai: Team members:	Prof. Dr. Tadeusz Skubis
	Prof. Dr. Toomas Rang
	Doc. Dr. Dainius Balbonas
	Mr. Rytis Koncevičius

KAUNO TECHNOLOGIJOS UNIVERSITETO ANTROSIOS PAKOPOS STUDIJŲ PROGRAMOS IŠMANIOSIOS TRANSPORTO ELEKTRONIKA (VALSTYBINIS KODAS – 612H61007) 2015-12-17 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-358 IŠRAŠAS

<...>

V. APIBENDRINAMASIS ĮVERTINIMAS

Kauno technologijos universiteto studijų programa Transporto elektronika (valstybinis kodas – 612H61007) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	3
2.	Programos sandara	2
3.	Personalas	3
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	3
	Iš viso:	17

* 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

Studijų programos *Transporto elektronika* stiprybę lemia tai, kad, susijungus dviem fakultetams (Telekomunikacijų ir elektronikos fakultetą bei Elektros ir valdymo inžinerijos fakultetą reorganizavus į Elektros ir elektronikos fakultetą), atsiranda galimybė bendrai veikiant

sukurti naują studijų programą *Transporto elektronika*. Šios studijų programos tikslai ir numatomi studijų rezultatai aiškiai apibūdinti. Universiteto ir pramonės sektoriaus ryšiai grindžiami projektų sutartimis, nuolat keičiamasi naudinga informacija. Studijų programos *Transporto elektronika*, kuri yra svarbi ir savalaikė, turinys atspindi pramonės sektoriaus ir akademinis poreikius. Aukštos kvalifikacijos dėstytojai įdomiai dėsto programą. Dėstytojų ir studentų sąveika pagrįsta bendradarbiavimu pasitikint. Labai stengiamasi atnaujinti metodinius išteklius, kompiuterius ir laboratorijas. Konkrečių transporto elektronikos srities projektų skaičius nuo šios studijų programos įgyvendinimo pradžios nuolat didėjo. Gera ir griežta programos vadybos procedūra gali užtikrinti nuolatinį studijų turinio atnaujinimą. Atsižvelgiant į tai, kad siūlomos programos vadybos sistema įdiegta neseniai, dar nėra gauta pakankamai informacijos apie praktinį jos įgyvendinimą. Studentų nubyreėjimo lygis žemas, nors pirmaisiais studijų metais keli studentai pakeitė savo studijų dalyką, nes studijų pradžioje jiems trūko informacijos.

Nepaisant daugelio gerų šios programos aspektų, yra ir tokių, kuriuos reikėtų tobulinti. Visų pirma šios studijų programos pavadinimas – *Transporto elektronika* – ne visiškai atspindi dabartinį studijų turinį, kadangi neaišku, ar ši programa apima visų rūšių transporto sistemas, įskaitant kelių ir geležinkelių. Reikėtų aiškiai suformuluoti ir įgyvendinti studijų turinio objektą. Šiuo metu nėra aiškiai nurodyti skirtumai tarp transporto elektronikos ir elektronikos inžinerijos. Savianalizės suvestinėje nepaaiškinta, kokios paskaitos yra skirtos tik studijų programai *Transporto elektronika*. Dėstytojai nepakankamai informuojami apie visą studijų programą; jie labai gerai žino apie savo paskaitas, bet nežino, kaip jos susijusios su kitais moduliais. Nepaisant vykdomų projektų, dėstytojai *nėra atlikę daug savarankiškų* mokslinių tyrimų, ypač transporto elektronikos srityje, taigi ir dėstytojų tarptautiškumas dar nėra patenkinamo lygio. Ši padėtis galėtų labai pagerėti gavus tarptautinį mokslinį projektą kartu su europiniu konsorciūmu. Studentai dar nėra tinkamai informuojami apie paskaitų turinį ir jų profesinę ateitį. Jie tikisi daugiau praktinio darbo, ypač laboratorinio. Studentai dar nepakankamai dalyvauja dėstytojų vykdomuose projektuose. Studentai nepakankamai skatinami dalyvauti konferencijose. Dėstytojų grįžtamasis ryšys apie studentų vertinimą yra silpnas ir nereguliarus. Praktika neturėtų būti nukelta į paskutinį semestrą, kadangi, jei ji būtų dėstoma anksčiau (pvz., šeštąjį semestrą), galėtų turėti teigiamo poveikio vėlesnių semestrų studijų pažangai ir baigiamajam darbui.

Kalbant apie programos vadybą, siūloma strategija yra aiški, bet dar nepasitvirtinusi kaip sėkminga. Be to, pramonės sektoriaus partneriai ir būsimieji alumnai turėtų aktyviai dalyvauti nuolatiniame šios studijų programos persvarstymo procese. Dabartinę padėtį galėtų labai pagerinti oficialus susitarimas su jais.

<...>

III. REKOMENDACIJOS

1. Studijų programos Transporto elektronika tikslai ir numatomi studijų rezultatai dar ne visiškai atitinka siūlomą studijų turinį. Norint šią studijų programą tinkamai atskirti, siūloma aiškiai akcentuoti transporto elektronikos programos sandaros aspektus. Daugiau dėmesio turėtų būti skiriama sistemos inžinerijos klausimams, mažiau – techninės priežiūros aspektams.
2. Studentai, su kuriais ekspertai kalbėjosi vizito metu, nepasirinko modulio apie geležinkelių sistemas. Rekomenduojama pamėginti šį modulį smarkiai išplėsti arba panaikinti.
3. Turi būti parengtas ir universiteto vadovybės patvirtintas ilgalaikis ir nuoseklus laboratorijų modernizavimo planas.
4. Privalu padidinti dėstytojų ir studentų dalyvavimą ERASMUS programoje.
5. Norint sustiprinti šią programą, rekomenduojama gauti (įgyvendinti) tarptautinį mokslinių tyrimų projektą transporto elektronikos tema.
6. Į naują, papildomą modulį, reikėtų įtraukti naujai atsirandančius dalykus (temas), pvz., šiuolaikines automobilių ir sunkvežimių vairavimo pagalbos sistemas.

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)