



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

ŠIAULIŲ UNIVERSITETO  
STUDIJŲ PROGRAMOS  
*MECHANIKOS INŽINERIJA (valstybinis kodas – 621H30004)*  
VERTINIMO IŠVADOS

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EVALUATION REPORT  
OF *MECHANICAL ENGINEERING (state code – 621H30004)*  
STUDY PROGRAMME  
At SIAULIAI UNIVERSITY

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Išvados parengtos anglų kalba  
Report language - English

Vilnius  
2015

## DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Mechanikos inžinerija</i>
Valstybinis kodas	621H30004
Studijų sritis	Technologijos mokslai
Studijų kryptis	Mechanikos inžinerija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Antroji
Studijų forma (trukmė metais)	nuolatinės (2)
Studijų programos apimtis kreditais	120
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Mechanikos inžinerijos magistras
Studijų programos įregistravimo data	2010-05-03 įsakymas Nr. V-635

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## INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Mechanical Engineering</i>
State code	621H30004
Study area	Technology Sciences
Study field	Mechanical Engineering
Type of the study programme	University studies
Study cycle	Second cycle
Study mode (length in years)	Full-time (2)
Volume of the study programme in credits	120
Degree and (or) professional qualifications awarded	Master in Mechanical Engineerring
Date of registration of the study programme	2010-05-03 Order No. V-635

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The Centre for Quality Assessment in Higher Education

## CONTENTS

I. INTRODUCTION .....	4
1.1. Background of the evaluation process .....	4
1.2. General.....	4
1.3. Background of the HEI/Faculty/Study field/ Additional information.....	5
1.4. The Review Team.....	5
II. PROGRAMME ANALYSIS .....	7
2.1. Programme aims and learning outcomes.....	7
2.2. Curriculum design .....	8
2.3. Teaching staff .....	9
2.4. Facilities and learning resources .....	12
2.5. Study process and students' performance assessment.....	14
2.6. Programme management .....	15
III. RECOMMENDATIONS .....	17
IV. EXAMPLES OF EXCELLENCE (GOOD PRACTICE) .....	18
V. SUMMARY.....	19
VI. GENERAL ASSESSMENT .....	20

## 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 the 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 SKVC. Along with the self-evaluation report and annexes, the following additional documents have been provided by the HEI during the site-visit:

No.	Name of the document
1.	List of subjects taught for Erasmus students at Šiauliai University (2015-2016 academic year; 201-2015 academic year)

2.	Schedule of Šiauliai University “Quality Days” events
3.	Protocols of Study Programme Committee meetings of Šiauliai University Mechanic Department (including social partners)
4.	Šiauliai University Action Plan of Mecanical Engineering Department (2013-2015 academic year)

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

Master’s degree studies in *Mechanical engineering* have started at Siauliai University in 1999. Since then 158 Master’s graduates were educated until November 2014, when the last Self-evaluation report was conducted. In academic years 2011–2014 the second cycle Master’s programme in Mechanical Engineering was delivered at the Faculty of Technology that was in November 2013 restructured and merged with the Faculty of Natural Sciences into a new Faculty of Technology and Natural Sciences under which the programme is held in present time. Publicly available information (official internet site of the university) is a little bit confusing as the old faculties have not been replaced by the new faculty in a consistent manner. For example, the Department of Mechanical Engineering that was established in 1971 and is among other Mechanical Engineering programs also responsible for the Master’s programme evaluated in this report, is still presented as the entity of the Faculty of Technology.

The previous external evaluation of *Mechanical engineering* Master’s study programme at Siauliai University was carried out in 2012. The programme received a positive evaluation and was accredited for three years. Strengths and weaknesses of the study programme were evaluated and proposals for it’s improvement were pointed out in the report. According to the Self-evaluation report, throughout the period under analysis (2011–2014), the programme was being constantly perfected, following conclusions and recommendations received from external experts, who evaluated the programme; also following new national documents on higher education and suggestions of social partners. One of the aims of the present evaluation was also to assess the real impact of changes made in accordance with the remarks and recommendations of the previous evaluation.

This evaluation report is based on the Self-assessment report submitted by Siauliai University and a visit to the university by the Expert team on 28th January 2015, during which relevant facilities were inspected, the students' final works/course papers were reviewed, and discussions were held with the following groups: University administration, Self-assessment group, Teaching staff, Students, Alumni, Social partners.

#### **1.4. The Review Team**

The review team was assembled in accordance with the *Expert Selection Procedure*, approved by Order No 1-55 of 19 March 2007 of the Director of the Centre for Quality Assessment in Higher Education, as amended on 11 November 2011. The Review Visit to HEI was conducted by the team on 28<sup>th</sup> January, 2015.

1. Dr. Oluremi Ayotunde Olatunbosun (team leader), Senior Lecturer and Head of the Vehicle Dynamics Laboratory, School of Mechanical Engineering, University of Birmingham, United Kingdom.
2. Dr. Rynno Lohmus, Head of the commission of Estonian Higher Education Quality Agency; Senior Researcher at Faculty of Science and Technology, Institute of Physics, University of Tartu, Estonia.
3. Dr. Bojan Dolšak, Associate Professor and Head of Department for Construction and Design at Faculty of Mechanical Engineering, University of Maribor, Slovenia.
4. Dr. Andrius Vilkauskas, Dean of the Faculty of Mechanical Engineering and Design, Kaunas University of Technology, Lithuania.
5. Dr. Vigantas Kumšlytis, Manager of materials engineering and technical analysis at Public Company "Orlen Lietuva", Lithuania.
6. Mr. Justinas Staugaitis, student representative from Kaunas University of Technology, Lithuania.

## II. PROGRAMME ANALYSIS

### 2.1. Programme aims and learning outcomes

The stated aim of the Master's study programme of *Mechanical Engineering* at the Siauliai University is to expand and deepen knowledge and abilities obtained during undergraduate university studies in order to educate masters of mechanical engineering that will be able to work successfully in companies of Siauliai region, Lithuania or foreign countries (SER p. 7). The aim of this Master's study programme is closely related to the aim of undergraduate study programme *Mechanical Engineering* at the same university. The programme aims and learning outcomes are clearly defined, yet they are not publicly available, as username and password are needed to access the information at the University Academic Information System.

The university arranges formal and informal meetings with social partners each year to discuss issues on studies and anticipated learning outcomes. In this context the most important event is carried out every spring, when so called "Quality Days" are taking place at the university, where university staff, social partners and students meet together and discuss various quality issues in a form of a round table. During the visit the schedules of these events were presented to the Expert team. In such a way the programme aims and learning outcomes can be adjusted to the public needs of the local labour market. Yet, it is not clear how the programme is being reviewed against the needs in global market in order to prepare the students to work in foreign countries, following one of the aims of the Master's study programme. Moreover, only a few courses are being taught in English and the curriculum does not contain any subject specific foreign language course. It would be advisable to add such a course into the curriculum at least as an elective subject.

The programme aims and learning outcomes are consistent with the second cycle university Master's degree engineering studies. The name of the programme *Mechanical Engineering* is straight forward and as such compatible with the classically oriented curriculum, learning outcomes and the qualifications offered.

#### Strengths

- The objective and learning outcomes of the study programme are well defined in terms of the knowledge, awareness, abilities and skills which the graduate will be expected to possess on completion of the Master's programme.

- Learning outcomes of the study programme are based on academic and professional requirements as well as public and labour market needs.
- Annually organised “Quality Days” represent an example of a good practice in meeting with social partners and asking them for help towards various issues the programme managers face.
- There is a strong demand for the graduates in the region.

### **Weaknesses**

- The programme aims and learning outcomes are not publicly available.
- The programme is carried out mostly in Lithuanian language, which does not ensure a consistent achievement of the stated aim of the programme to educate masters of mechanical engineering that will be able to work successfully also in foreign countries.

### ***2.2. Curriculum design***

The curriculum has been designed following legal requirements for the second cycle Master’s degree studies in Lithuania. The total volume of the study programme is 120 ECTS credits in four semesters (2 years). More than half of the total volume is represented by the subjects from the field (72 ECTS). 12 credits are devoted to the individual research work in the second and third semester (6 ECTS in each semester), and 30 ECTS for the final Master thesis in the last semester. The elective subjects comprise 24 credits, where three subjects (18 ECTS) shall be selected from three alternatives proposed by the faculty, and one subject (6 ECTS) can be selected freely.

Study subjects are spread evenly and their themes are not repetitive. However, the names for some of the subjects presented in the plan of the study programme (Table 2.4 in the SER) are not consistent with the names in the Annex 1, where subjects are described. For example, the subject “Computer modelling of mechanical systems” in the Self-evaluation report is presented as “Spatial modelling” in subjects’ descriptions.

The content of the subjects is consistent with the Master’s study of Mechanical Engineering. The teaching methods presented can lead to the achievement of the intended learning outcomes. However, more applications of modern learning methods, group and interdisciplinary projects should be encouraged, as it was already recommended in the previous external evaluation in



2012. Lectures still represent more than half of the contact hours in the first three semesters. In addition, it is not clear how the anticipated learning outcomes are checked and evaluated at the examination.

Quite specific prerequisites are prescribed for some of the subjects, which might be a problem to enrol students that finished their bachelor degree in mechanical engineering elsewhere. For example, not in every first cycle engineering programme the students can get acquainted with microeconomics and macroeconomics, which are among prerequisites for the elective subject “Management of labour processes”. In this context, the prerequisites are the most notable and at the same time questionable for the subject “Spatial modelling” prescribing actual subjects from the first cycle *Mechanical Engineering* programme accredited at the same faculty.

The scope of the programme is sufficient to ensure learning outcomes, under condition that the students have the appropriate possibilities and means to perform their independent work and study. In this context, enough study literature has to be available, which is not the case for all the subjects, at least not in printed form. For example, the subject “Spatial modelling” again stands out with 5 study references listed in the subject’s description, where none of them is available either in the university library or in the university bookstore. However, the students are satisfied with the literature provided at the university web pages, and do not report about any problem considering the means to perform their studies.

Taking into account the high average age of the teaching staff, very low level of their international mobility (only a few teachers, mostly for very short period of a few days) and the relevance of the most significant scientific/methodical papers published during the last 5 years (most of them are published in a local journals “Journal of Young Scientists” and “KTU Mechanika”), it raises serious doubts that the content of the programme reflects the latest achievements in science and technologies.

### **Strengths**

- The design of the curriculum meets all legal requirements.
- Study subjects are spread evenly over the programme and a logical sequence in their delivery consistent with learning outcomes is apparent.
- The learning outcomes of the study programme correspond to the type and cycle of study.

## **Weaknesses**

- Insufficient use of modern learning methods based on group and interdisciplinary projects.
- Too specific prerequisites are prescribed for some of the subjects.
- It is not clear how the anticipated learning outcomes are checked and evaluated at the examination.
- The periods of international mobility of most teachers is too limited to enable them to engage with the research of host institutions. Hence the content of the specialist technological subjects may not reflect the latest achievements in technology in these subjects.

### ***2.3. Teaching staff***

The study programme seems to be provided by the staff meeting legal requirements, although it is very difficult to check this thoroughly, as the data about the number of teachers are not consistent through the Self-evaluation report (13 teachers are mentioned on page 5, 10 on the top of page 14 and 9 just in the next sentence, while there are 12 teachers listed in the Annexes 1 and 2). According to the Self-evaluation report the absolute majority of teachers are permanently employed at the university. However, some of them are employed also at other institutions.

The teachers possess basic qualifications to ensure learning outcomes. A professional communication in foreign language is still a problem for some of them (the interpreter was needed during the interview), which was already pointed out in the previous external evaluation.

The number of teaching staff is adequate to the number of students (the ratio is about 1:5). Yet, there is no evidence of any significant teaching staff turnover. According to the Self-evaluation report the average age of the teachers is 57 years, where 5 teachers are older than 60 years. A closer look at the Annex 1 shows that four teachers are over 70 years old (the oldest one has 76 years). On the other hand, there is only one teacher younger than 40 years. It was also confirmed during the meeting with the administration staff that no new teachers have joined but some of the existing teachers have upgraded their qualifications. It is obvious that younger teachers need to be attracted to ensure an adequate provision of the programme. 2 teachers in the last 2 years have gained their PhD degrees (but not in Siauliai University).

Since the last external evaluation in 2012 the mobility of teachers has improved. This trend should be continued, taking into account also more even distribution of mobility among the teachers. However the period of international mobility of teachers still remains to be very short (usually 5 days).

The teaching staff uses different ways for professional development necessary for the provision of the programme (internships, scientific conferences, courses and seminars). University has an international conference fund to which lecturers can apply for funds to attend conferences and seminars. Those, who are doing PhD are given only part teaching load but they are also paid as part-time.

The Department of Mechanical Engineering takes part in projects and has signed long-term agreements with many industrial companies. In 2002, the Centre of Technological Experiments has been established under the Department. Teaching staff and the students are involved in activities of this centre. On the ground of works carried out at the centre, several Master's theses have been prepared.

Considering the list of scientific publications authored by the teaching staff, the level of scientific research needs to be improved in order to obtain results that will enable writing high quality scientific papers publishable in more prominent international scientific journals.

There was also a discussion on how changes are being implemented in the subjects in case of a need. Teachers claimed to announce their ideas and later the approval from the Study programme committee is necessary however there is no plan for a constant review of study subjects and it seems that no recent changes were implemented in subjects after discussions (if any!) with students or social partners.

Also teachers were unable to answer the question about learning outcomes – how they are formulated or updated – this raises some doubts if they are actively involved in LO reviewing or changing.

### **Strengths**

- Teachers have the possibilities and funds to develop their professional competence through professional development courses, internships in industry, international conferences and seminars.

## Weaknesses

- The age profile of the teachers is not good and demands an immediate action to attract new teachers that will be able to take over from the older colleagues when they will retire.
- Teachers spend too high a proportion of their time in pedagogical activity leaving insufficient time for research.
- The level of English is not sufficient for most of the staff.
- Most study visits are very short and insufficient for teachers to engage in the research of the host institution and absorb the latest technological developments in their field.
- Insufficient participation in international conferences and publication in top international journals.
- Only one teacher who also works in a real company outside the university is involved in the study process.

### ***2.4. Facilities and learning resources***

Premises of Siauliai University Faculty of Technology and Natural Sciences (Vilniaus St. 141) are used. The area used for studies and scientific research (rooms, laboratories, etc.) covers approximately 5000 m<sup>2</sup>. Covered area and work places there are more than sufficient, as the number of students participating in the study process is small. Administration staff and teachers during the site visit also confirmed the space to be more than needed. The Department runs 5 rooms-laboratories, 2 computerised rooms and 5 rooms for research activities used by Master's students if needed. Classes of Master's students set in study plans are held in general use rooms or rooms-laboratories of the Department. At the Centre of Technological Experiments (Pagegiu St. 43), a basis is used (395 m<sup>2</sup>) to carry out laboratory work of the subject Experimental Mechanics. The conditions to carry out research for graduation works are provided.

The equipment of the Department intended for use in Master's study programme *Mechanical Engineering* is listed in Self-evaluation report in Table 2.9. Some of the equipment was donated by industrial partners for projects involving industry. During the visit the Expert group has seen pretty good Mechatronics lab but some of material testing and metal cutting equipment including CNC (listed in SER, P. 33) are quite old and should be replaced in the near future. The visit to the Centre for technology experiments was also organised. It is an internationally accredited test laboratory for homologation of bicycles supported by regional bicycle company, and as such

represents an example of good practice of how research work at the university level may and should exceed the limits of the local environment.

Practical work at the companies is not part of the curriculum. On the other hand, all domestic students that are currently involved in the study process are part-time students, who are employed in regional companies where they perform their job in field of their studies. However, the students and graduates share the opinion that there is too much theory and not enough practical work at Masters' level within the curriculum. They also pointed out that they should spend more time with 3D modelling to really become proficient.

According to the students, most of the teaching materials are accessible online. Only a few teachers are using Moodle, while others publish their teaching materials on web pages. The teaching staff and students have access to Siauliai university central library. During the visit to the library the expert group was convinced that the library is new and very well equipped. Moreover, a lot of computers that are not in use there (apparently because most of the students are using their own laptops) are much better quality than most of those seen in the laboratories at the Department. All funds of the University library are accessible and ordered via internet Aleph Library portal. The teaching staff and the students have a possibility to use 29 subscribed scientific information data bases (eBooks on ScienceDirect, Reference Library, Springer LINK etc.).

### **Strengths**

- Some laboratories are renovated and well equipped.
- Technological experiments centre is certified testing laboratory.
- The university central library is new and very well equipped.

### **Weaknesses**

- Some laboratories are outdated (material testing, metal cutting) and need immediate investment to be improved on acceptable level.
- Only minority of the teachers use Moodle in e-learning mode.

## ***2.5. Study process and students' performance assessment***

Due to the fact that a small number of state funded places is allocated to the programme and the tuition fee for non-funded places is high, the enrolment was going down in the last few years and the number of students is low. Companies are willing to provide topics and some help for the final projects but not so willing to sponsor the students for their studies. Although there are possibilities for others to apply, the students at Master's level programme almost exclusively come from the Bachelor's level of the same faculty. However, the university has attracted two Indian students studying for Master's degree. They are very satisfied with the programme and are looking to do an exchange programme in Germany in their second year.

A very few changes can be noticed in the field of study process, since the last external evaluation. Most of the students are employed and have to combine their work and studies. For their convenience, the classes are held in the afternoon or in the evening. Yet, it is not clear when and where the students do their research work. In previous years they had Saturday as study day so they could work throughout the week. They felt that this was good.

The students would prefer to have more lectures in English to improve their professional vocabulary. They also think that social partners should present their experience during the lectures. On the other hand, social partners are willing to do that if the Department would invite them.

Although the student mobility is promoted, none of the students used the opportunity to study at the foreign university in the evaluation period, reportedly as they are unable to combine mobility with their every day job.

The higher education institution ensures an adequate level of academic and social support (scholarships, dormitories, psychological consultations, informal relations among students and teacher, etc.).

The assessment system of students' performance is clear but it leaves the impression that it is not sufficiently connected to the anticipated learning outcomes. The assessment criteria are presented to the students at first lectures of a particular subject, but they are not publicly available. Most of the students do not know what the anticipated learning outcomes are.

Professional activities of the majority of graduates meet the programme providers' expectations. Most of graduates are working in industrial companies of the Siauliai region as design and

production engineers, and those who attended the interview with the expert group are very happy with the education they got from their studies.

### **Strengths**

- The graduates and their employers are satisfied with the knowledge and competencies gained within the study program. This is of special importance, as there is a big demand for graduates in the area.
- The faculty was able to attract two foreign students.

### **Weaknesses**

- Reduced number of entrants.
- Not enough courses are taught in English. Due to low number of domestic students, the university should do more to attract foreign students.
- The potential of social partners in study process is not fully exploited.

## ***2.6. Programme management***

The responsibilities for decisions and monitoring of the implementation of the programme are clearly allocated within the university internal system for management of quality of studies. On the faculty level, the quality of a study programme is ensured by the Faculty Council, which discusses new study programmes and submits to the Senate for approval, approves changes in programmes being delivered, and makes decisions on publishing matters. The Study Programme Assessment Committee is a structural formation of the Department and is responsible for constant supervision and control of particular study programme. The most important task is to periodically assess quality of study programme, to analyse assessment results and provide suggestions to other parties. Social partners are members of this committee.

According to the Self-evaluation report the information and data on the implementation of the programme are regularly collected and analysed. Questionnaires are completed by students at the end of each semester for each subject taught. The analysis is discussed on “Quality Day” events at which discussions are held and decisions taken about changes to the programme. There are no questionnaires for the alumni and employees, although they are willing to respond.

The outcomes of internal and external evaluations of the programme are used for systematic improvement of the programme, as an action plan is made upon the recommendations, where

deadlines and responsible persons are defined. The last action plan was shown to the expert panel during the visit.

The evaluation and improvement processes involve all stakeholders. However, the internal quality assurance measures should be improved. All stakeholders should be better informed and encouraged to take part in quality assurance process. The quality assurance process should also be better documented and should form a closed loop. After the action plan is made, based on the information gathered and processed for a certain time period, its implementation needs to be also systematically monitored.

### **Strengths**

- Good process of involving social partners in programme committee.
- Programme is constantly being adjusted in consultation with social partners and students.
- An action plan is made upon the recommendations.

### **Weaknesses**

- There are no questionnaires for the alumni and employees, although they are willing to respond. This is important, as not everybody can attend the „Quality Days“ events.
- The quality assurance does not form a closed loop as the implementation of the action plan is not systematically monitored.



### **III. RECOMMENDATIONS**

1. Modern learning methods based on group and interdisciplinary projects need to be used more in order to enable the students to gain some additional soft skills like project management, presentations skills, etc.
2. Attract new teachers that will be able to take over from the older colleagues when they will retire. As the university is positioned in a quite remote area, the new teachers will probably need to be produced from inside.
3. The teachers need to perform more international oriented research work and publish more scientific papers in high ranked international journals and conferences.
4. Some laboratories need to be updated as soon as possible – university needs to find funds to invest.
5. More teachers should use Moodle – university administration should provide regular training courses – 2 or 3 times a year. Each department may have a Moodle ‘champion’ to whom colleagues can turn for help.
6. More courses should be taught in English. Students are ready, the university and teachers need to take action to provide it.
7. Invite social partners to present their experience at the lectures.
8. Encourage students and staff mobility.
9. The quality assurance process should be better documented and should form a closed loop by continuous monitoring the implementation of the action plan.

#### **IV. EXAMPLES OF EXCELLENCE (GOOD PRACTICE)**

Every spring in March the university organises the event called “Quality Days”, where university staff, social partners and students meet together and discuss various quality issues in a form of a round table. These meetings with social partners, where the university can ask them for help towards whatever problems they have, represent an example of a good practice. However, the whole potential is not used, as the social partners are enthusiastic to do more.

The Centre for technology experiments is an internationally accredited test laboratory for homologation of bicycles supported by regional bicycle company, and as such represents an example of good practice how research work at the university level may and should exceed the limits of the local environment.

## V. SUMMARY

Master's degree studies in *Mechanical Engineering* have started at Siauliai University in 1999. The curriculum being evaluated is a traditional one and fulfils all legal requirements. The objective and learning outcomes of the study programme are well defined in terms of the knowledge, awareness, abilities and skills which the graduate will be expected to possess on completion of the Master's programme. There is a big demand for mechanical engineers in Siauliai area. Most employers have to recruit engineers from other regions because there are not enough in the region. In this respect, the Master's study programme at Siauliai University is certainly needed and worth to develop further. However, due to the fact that a small number of state funded places are allocated to the programme and the tuition fee for non-funded places is high, the enrolment was going down in the last few years and the number of students is low. All of them except foreign ones are part-time students and are employed in the area of their studies. Companies are satisfied with the knowledge and competences of the graduates. They are willing to provide topics and some help for the final projects but not so willing to sponsor the students for their studies. Thus, there is a big challenge in front of the university that will need to find funds for strategic development of the programme to remain sustainable. There are two major problems that need to be addressed immediately. First, the new teachers that will be able to take over from the older colleagues when they will retire need to be attracted. As the university is positioned in a quite remote area, the new teachers will probably need to be produced from inside, which takes time. Thus, the university must invest more funds and effort in development of their own teaching staff and its internationalisation, from mobility to more active research and higher ranked scientific publications. Secondly, modern learning methods based on group and interdisciplinary projects should be introduced into curriculum and the anticipated learning outcomes should be checked and evaluated more clearly and systematically. And thirdly, some of the laboratories and equipment need to be updated in order to ensure the programme will reflect the latest development in both, scientific and technological field of studies.

The previous external evaluation of *Mechanical Engineering* Master's study programme at Siauliai University was carried out in 2012. The programme received a positive evaluation and was accredited for three years. Taking into account all the changes that were made in accordance with the remarks and recommendations of the previous evaluation, it can be concluded that the university has made a step forward. The organisation of the annual event called "Quality Days", and international accreditation of the Centre for technology experiments are worth to be specially highlighted as the examples of good practice.

## VI. GENERAL ASSESSMENT

The study programme *Mechanical Engineering* (state code – 621H30004) at Siauliai University 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	2
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	3
	<b>Total:</b>	<b>16</b>

\*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:	Dr. Oluremi Ayotunde Olatunbosun
Grupės nariai: Team members:	Dr. Rynno Lohmus
	Dr. Bojan Dolšak
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	Dr. Vigantas Kumšlytis
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**ŠIAULIŲ UNIVERSITETO ANTROSIOS PAKOPOS STUDIJŲ PROGRAMOS  
MECHANIKOS INŽINERIJA (VALSTYBINIS KODAS – 621H30004) 2015-03-16  
EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-53-7 IŠRAŠAS**

&lt;...&gt;

**VI. APIBENDRINAMASIS ĮVERTINIMAS**

Šiaulių universiteto studijų programa *Mechanikos inžinerija* (valstybinis kodas – 621H30004) vertinama teigiamai.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	3
2.	Programos sandara	2
3.	Personalas	2
4.	Materialieji ištekliai	3
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	3
	<b>Iš viso:</b>	<b>16</b>

\* 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)

&lt;...&gt;

**V. SANTRAUKA**

*Mechanikos inžinerijos* magistrantūros studijos Šiaulių universitete pradėtos vykdyti 1999 metais. Vertinamas studijų turinys yra tradicinis ir atitinka visus teisinius reikalavimus. Studijų programos tikslas ir studijų rezultatai yra gerai apibrėžti žinių, supratimo, gebėjimų ir įgūdžių, kuriuos absolventas turės baigęs magistrantūros programą, prasme. Šiaulių rajone yra didelė mechanikos inžinierių paklausa. Dauguma darbdavių turi įdarbinti inžinierius iš kitų regionų, nes Šiaulių regione jų nepakanka. Šiuo aspektu magistrantūros studijų programa Šiaulių universitete yra tikrai reikalinga ir verta ją toliau plėtoti. Tačiau, atsižvelgiant į tai, kad programai skiriamas nedidelis valstybės finansuojamų vietų skaičius, studijų mokestis į nefinansuojamas vietas yra didelis, pastaruosius kelerius metus priimama mažiau studentų ir jų skaičius yra mažas. Visi jie, išskyrus studentus iš užsienio, yra ištęstinių studijų studentai ir dirba savo studijų srityje. Įmonės yra patenkintos absolventų žiniomis ir kompetencija. Jos pasirengusios pasiūlyti baigiamųjų darbų temas ir šiek tiek padėti, tačiau nerodo noro apmokėti studentų studijas. Todėl universiteto laukia didelis iššūkis ateityje, kadangi reikės rasti lėšų strateginei programos plėtrai, siekiant išlaikyti jos tvarumą.

Egzistuoja trys pagrindinės problemos, kurias būtina nedelsiant spręsti. Pirma, turi būti pritraukti nauji dėstytojai, kurie galėtų pakeisti vyresnius kolegas, kai jie išeis į pensiją. Kadangi universitetas įsikūręs gana atokioje vietoje, naujų dėstytojų tikriausiai reikėtų ieškoti universiteto viduje, o tai užims laiko. Universitetas turi skirti daugiau lėšų ir pastangų kuriant savo dėstytojų

komandą ir plėtojant jų tarptautiškumą, pradedant nuo judumo ir aktyvesnių mokslinių tyrimų bei labai gerai vertinamų mokslinių publikacijų skelbimo. Antra, studijų programoje reikia taikyti daugiau šiuolaikinių mokymosi metodų, pagrįstų grupės ir tarpdalykiniais projektais, o numatomus studijų rezultatus reikia nuolat tikrinti ir aiškiai, sistemingai vertinti. Trečia, būtina atnaujinti kai kurias laboratorijas ir įrangą, siekiant užtikrinti, kad programoje atsispindėtų naujausi pasiekimai mokslo ir technologijų srityje.

Ankstesnis Šiaulių universitete vykdomos magistrantūros studijų programos *Mechanikos inžinerija* išorinis vertinimas buvo atliktas 2012 m. Programa įvertinta teigiamai ir akredituota trejiems metams. Įvertinus visus pakeitimus, kurie buvo atlikti atsižvelgus į ankstesnio vertinimo pastabas ir rekomendacijas, galima daryti išvadą, kad universitetas padarė pažangą. Kaip gerosios praktikos pavyzdžius ypač būtina pabrėžti metinio „Kokybės dienos“ renginio organizavimą ir Technologinių bandymų centro tarptautinę akreditaciją.

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### III. REKOMENDACIJOS

1. Taikyti daugiau šiuolaikinių mokymosi metodų, pagrįstų grupės ir tarpdalykiniais projektais, siekiant studentams sudaryti galimybę įgyti tam tikrų bendrųjų tarpasmeninių įgūdžių (angl. *soft skills*), pavyzdžiui, projektų valdymo, pristatymo įgūdžiai ir t. t.
2. Pritraukti naujus dėstytojus, kurie galėtų pakeisti vyresnius kolegas, kai jie išeis į pensiją. Kadangi universitetas įsikūręs gana atokiaje vietoje, naujų dėstytojų tikriausiai reikėtų ieškoti universiteto viduje.
3. Dėstytojai turi atlikti daugiau į tarptautiškumą orientuotų mokslinių tyrimų ir skelbti daugiau mokslinių straipsnių gerai vertinamuose tarptautiniuose žurnaluose ir konferencijose.
4. Kaip įmanoma greičiau atnaujinti kai kurias laboratorijas; universitetas turi rasti lėšų šioms investicijoms.
5. Daugiau dėstytojų turėtų naudoti *Moodle* aplinką, o universiteto administracija turėtų rengti reguliarius mokymo kursus 2 arba 3 kartus per metus. Kiekviena katedra gali turėti *Moodle* lyderį, į kurį kolegoms kreiptųsi pagalbos.
6. Daugiau dalykų turėtų būti dėstoma anglų kalba. Studentai yra pasirengę ir universitetas bei dėstytojai turi imtis atitinkamų veiksmų.
7. Kviesti socialinius partnerius pristatyti savo patirtį paskaitose.
8. Skatinti studentų ir dėstytojų judumą.
9. Kokybės užtikrinimo procesas turėtų būti geriau įformintas ir turėtų sudaryti baigtinį ciklą užtikrinant nuolatinę veiksmų plano įgyvendinimo stebėseną.

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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)