



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

**KLAIPĖDOS UNIVERSITETO
STUDIJŲ PROGRAMOS
MECHANIKOS INŽINERIJA (valstybinis kodas – 612H30003)
VERTINIMO IŠVADOS**

**EVALUATION REPORT
OF *MECHANICAL ENGINEERING (state code – 612H30003)*
STUDY PROGRAMME
At KLAIPEDA UNIVERSITY**

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Išvados parengtos anglų kalba
Report language - English

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2015

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Mechanikos inžinerija</i>
Valstybinis kodas	612H30003
Studijų sritis	Technologijos mokslai
Studijų kryptis	Mechanikos inžinerija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Pirmoji
Studijų forma (trukmė metais)	nuolatinės (4), iššęstinės (6)
Studijų programos apimtis kreditais	240
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Mechanikos inžinerijos bakalauras
Studijų programos įregistravimo data	Nr. 565, 1997-05-19

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	<i>Mechanical Engineering</i>
State code	612H30003
Study area	Technology Sciences
Study field	Mechanical Engineering
Type of the study programme	University studies
Study cycle	First cycle
Study mode (length in years)	Full-time (4), part-time (6)
Volume of the study programme in credits	240
Degree and (or) professional qualifications awarded	Bachelor in Mechanical Engineerring
Date of registration of the study programme	No. 565, 19-05-1997

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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 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. No additional documents have been provided by the HEI before, during or after the site-visit.

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

Klaipeda University (hereafter – KU) was established on 1st January, 1991. It offers academic studies in humanities, social, physical biomedical and technological fields and has 58 undergraduate programmes, 56 Master degree programmes and 10 PhD study programmes. KU Mechanical Engineering Department has 7 research-training laboratories with the total area of 588 m², specialized labs, and training workshops. They are responsible for a Bachelor degree “Mechanical Engineering” study programme. KU (together with the Ministry of Economy) is the founder of Klaipeda Science and Technology Park.

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 26th 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, Kaunas University of Technology.

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The programme aims and learning outcomes are well defined and clear. The overall aim of the programme is the training of competent professionals in the field of Mechanical Engineering (hereafter – ME) with knowledge of ME functioning and service patterns, issues and requirements at the society and enterprise levels that are able to maintain and improve the quality of ME services, to participate in processes of ME analysis, administration, planning and management. However, the claim that ME study programme (hereafter – SP) is naturally related to Klaipeda University common aim of “...*training highly qualified researcher's...*”(p. 7 in SER) does not measure up to the international standard, as most scientific publications from the staff are published in national journals.

The relationship between the study programme learning outcomes and the outcomes required of all first cycle degrees (according to the Bologna Process, based on the Dublin Descriptors) is clearly set out in the SER. However, in SER the Knowledge and Skills, which a graduate should have are not clearly presented. Also, the description and list of graduates' Competences is missing. The study programme is also consistent with the requirements of the Ministry of Education and Science in terms of the type and level of qualification offered which is a University Bachelor degree on the basis of 240 ECTS. The aims and learning outcomes are publicly accessible on both the national study information and qualification description system AIKOS and the website of Klaipeda University (<http://www.ku.lt/jtf/struktura/katedros/mechanikos-inzinerijos-katedra/studijos/>), however, only in Lithuanian language. Expert team would recommend that all information is also provided in English as it would help to inform the foreign students about the possibility to study in KU.

The SER was produced by a group which included the Head of the Mechanical Department, also acting as a social partner, from Klaipėdos Nafta (Oil company) and this gives confidence that the programme aims are based on the needs of the labour market. In SER page 29 it is stated: “[...] representatives of outside institutions are involved in the activity of the Committee of Study Programs”. However, site visit meeting with stakeholders confirmed that they are ready to provide the direct input about market situation more often as currently their involvement to SP development is episodic one. Therefore, expert team suggests to organize regular meetings with alumni and social stakeholders for information exchange at least once per year.

The learning outcomes also correlate well with the EU directives that regulate the environmental protection aspects in the industrial enterprises. Also, the national science policy strategies are considered.

The SER was prepared by a group of eight people. During the site visit it was confirmed that the content for SER was also discussed with other staff members.

The name of the programme (Mechanical Engineering), its learning outcomes, content and qualifications offered (Mechanical Engineering Bachelor Degree) are compatible with each other. However, some aims of the study programme are too broad and therefore some of the learning outcomes can be hard to evaluate, e.g. “*Knowledge*”-> “*Mathematical other physical sciences knowledge...*”. Therefore the expert group suggests to justify some of the learning outcomes. Still, the way of presenting linkage of subjects and learning outcome in table format (SER p. 9-11) is really appropriate.

During the site visit programme management claimed that there is no big difference between other similar SP in other Lithuanian HEI. On the other hand, it was also mentioned that they are closely related with ship building and it could be one of their uniqueness. The expert team recommends that the SP’s strongest aspects would be highlighted to be more attractive to future students and also with this would guarantee the SP’s sustainability.

2.2. Curriculum design

The curriculum design meets the legal requirements according to the legal documents for a Bachelor degree study programmes.

The study subjects appear to be evenly spread and their themes are not repetitive. There is an effort to ensure that the students are led from general courses to basic professional ones and thence to more complex professional courses. During the site visit the students were satisfied with the study subjects and their arrangements.

The content of the subjects is consistent with a university Bachelor’s degree. However, during the site visit expert’s team saw lack of lectures given by people from labour market and asked alumni and social partners if they would consider giving some lectures as a support for the university. They expressed their willingness to participate in such events and also maybe give short lectures for students about their experience in company.

During the the site visit the students expressed their wish to have more opportunities to link the theoretical subjects to the real life examples. Many alumni and stakeholders expressed their willingness to transfer their knowledge to students and therefore the senior management of the programme should use this intention for their own benefit.

The content and methods of the subjects are appropriate for the achievement of the intended learning outcomes.

As a good example, HEI presented their recently started activity related to international innovation competition for students - „pneumobile“. Expert team encourages KU to support and advertize similar competitions as it gives students the team-work experience and also strengthens the cooperation linkage between students and teaching staff.

The scope of the programme (4-years full-time, 6 years part-time) appears adequate to allow the achievement of the learning outcomes. The recently renovated laboratory facilities also enable the achievement of the learning outcomes.

The programme is taught by a team of lecturers whose activities despite the pedagogical work cover also scientific, contract research and company contracts activities. However, the English language skills of some teaching staff should be improved. Also, teaching staff seem to prefer publishing their scientific papers in national journals. This limits the latest scientific achievements knowledge transfer to the students. There are many on-going research projects, both national and international. As stated in previous point, Expert team encourages KU to support joint activities of teaching staff and students by participating in international students' competitions.

During the site visit Expert team evaluated students final and course works and confirmed their conformity to requirements of Bachelor's degree. Students can propose a topic for final thesis by themselves or receive suggestion by teacher. Expert teams suggests KU to encourage students to present their final thesis in English as it would be a good way of improving their language skills.

2.3. Teaching staff

The programme is covered by staff members who meet the legal requirements in terms of qualifications and experience. Of the 47 staff teaching the programme, 31 members have a doctoral degree which is above the legal requirement.

It is indicated (p. 17 of SER) that staff members are encouraged to regularly attend foreign universities and colleges for upgrading of their academic capacities. Several staff members have benefitted from international experience both in the Baltic area and beyond, including Germany, Turkey, Netherlands, Italy, etc. However, in most cases those were short time visits (up to one week). Expert team encourages HEI to find possibilities for lecturers for their self-improvement internationally for longer periods. Especially it is beneficial for teaching staff members who are currently in their PhD studies. It is good faculty policy for lecturers currently obtaining their PhD degree to have teaching activities only in one semester per year allowing them to concentrate on their own studies in another semester.

Faculty should encourage teaching staff in self-improvement for longer period in foreign universities and colleges.

The qualifications of staff in terms of their degrees in their disciplines are certainly adequate (31 with doctoral (incl. 3 professors) and all others with Master's degrees). 3 staff members have recently defended their PhD degree. However, the part-time engagement of company related lecturers should be encouraged as direct link to modern industry. Many teachers have industrial experience, but in many cases not in recent years. As this field is a fast-developing one, the "updated" direct link would be beneficial.

The students to staff average ratio is 11:1. For current SP this is essential to keep the knowledge transfer quality.

45,45% of academic staff is below 40 years old. During the site visit expert team met several young and motivated lecturers. Therefore this ensures the teaching staff sustainability.

During the site visit alumni and company representatives supported the idea to increase the use of English language in SP. At the meeting with students they were ready to participate in lectures

presented in English and supported the idea to prepare their final thesis in English. This would improve the communication skills and also familiarise them with the subject specific vocabulary.

In 2010-2014 the staff members have published 46 scientific papers. Since 1994, in every two years the Faculty of Marine Engineering organizes national scientific conference *Technological Research in Western Lithuania*, where the research outcomes are presented by researchers and Master students. However, the Expert team advises to add more international dimension to the publications. Currently the national journals dominate.

2.4. Facilities and learning resources

KU is located on a substantial campus which was previously an army barracks. It has some historic buildings that date from an earlier era and one very modern complex (which adjoins a shopping centre) which provides large lecture auditoria (for up to 250 students), conference facilities and a library. Many rooms were recently renovated.

The facilities listed in SER page 19 assure their adequacy to perform SP tasks. The laboratories facilities are really impressive as they reflect the latest modern set-up's for teaching mechanical engineering and perform Research&Development (hereafter – R&D) tasks for companies. Also, the computer facilities were recently renewed and with all software needed for modern education.

Student practice is an integral part of the KU philosophy for ME studies. Most practice involves working in the industry. This is performed in tight collaboration between company and KU. The system works well, as during site visit social stakeholders confirmed that many of the graduates continue working in their practice place.

KU professors and students have access to 9 of Klaipeda university libraries. Special literature for ME students is located in the library of the Marine Engineering Faculty. Also students have possibility to use the Lithuanian technical library department, which is in Klaipeda and Lithuania Maritime Academy libraries funds. Students have also access to several electronic research databases.

2.5. Study process and students' performance assessment

The admission requirements are based on national guidelines from Lithuanian Association of Higher Schools Joint Admission (LAMA BPO).

The ME SP is not the easiest one, as it involves several complicated engineering subjects (SER p. 27). Therefore the higher drop-off rate ~25% is clear. During the site visit teaching staff claimed that every student is valuable for them and each abandon issue is treated personally.

Students are encouraged to participate in research jointly with teachers and students and teachers organise annual national scientific conferences. Still, expert team encourages department to support students and teachers to participate in international students competitions in relevant fields. KU has established links with European partners to enable students to participate in student mobility programmes. The results, however, are disappointing as only 9 students have participated in a five year period. This falls far short of the European target that 20% of all students should study abroad by 2020. One would hope for an even higher target for students of ME. During the mobility period they have opportunity to improve their professional English vocabulary and encounter foreign engineering methods. So, much more needs to be done to stimulate mobility. It is recommended that this issue receives further attention by KU management with a view to enhancing the internationalisation of the ME programme.

There are regular meetings about SP quality issues. In addition to SP management, students and company representative also participate there. There is a system of academic support for students delivered via consultation meetings with staff and with employers. At the end of each semester students have an opportunity to fill the questionnaire about the lectures' quality. This gives direct feedback to SP management about potential issues. In the SER, the programme managers declare, that only 3% of alumni are working in the field that is not related with their studies. The social partners (employers) expressed themselves to be satisfied with the graduates produced by KU. However, they would like to improve topics related to the project management skills.

2.6. Programme management

KU has allocated responsibilities as between the Dean's Office, the Faculty Council and the Department of Mechanical Engineering and these arrangements appear adequate. While the management responsibilities are allocated, the prevailing philosophy of the Department is to involve teachers in discussing issues. The university has also developed its mechanism for

quality assurance of all programmes whereby a self-assessment is performed according to needs and the programme is updated according to it.

The quality assurance mechanisms make provision for the collection and analysis of data on the implementation of the programme. The mechanisms include an anonymous survey of student opinions on each subject and an analysis of student performance in each examination. The data is discussed by teachers at a Departmental meeting and changes to the programme are agreed. However, during the site visit alumni and social partners presented their willingness to participate more actively in SP updating process. Therefore, Expert team recommends the establishment of advisory panel, which meets at least once per year for exchanging information about latest trends in industry and improvements in SP.

Since the last evaluation many improvements have taken place. Laboratory facilities have been recently renewed. Also, tasks related to students practise in companies are arranged better. However, the student's activity of participation in mobility programs has not increased. Therefore HEI should give more attention to this.

There is a social partner representative engaged in SP process. However, during the site visit many stakeholders presented their willingness to participate more actively in SP evaluation process. So, HEI should engage more their practical experiences.

A scheme of quality assurance includes provision for the review of every programme according to needs.

III. RECOMMENDATIONS

1. Study programme teaching staff language skills need to be improved;
2. Improving of scientific publication quality by choosing international journals instead of national ones;
3. More active engagement of alumni and social partners through advisory panel and lecture activities;
4. Supporting and encouraging teachers and students to participate in mobility programs;
5. Supporting and encouraging students for participating in international “students engineering” competition for strengthening the group work skills and solving complex tasks.

IV. EXAMPLES OF EXCELLENCE (GOOD PRACTICE)

1. The teacher of “Solidworks subject” has 7 professional certificates. The graduate’s excellent skills especially in this topic were also confirmed by the stakeholders.
2. Recently renewed laboratory base is far above the average. The modern facilities ensure the sustainability of the studies and also opens opportunity for department for performing high level R&D projects with companies.

V. SUMMARY

Klaipeda University has classical study programme providing bachelor level education in mechanical engineering. There is a high demand for such specialists and therefore only 3% of graduates are working in the field not directly related to their studies. The study programme has well-balanced structure and the study programme aim and learning outcomes are related to subjects. The teaching staff as well as students are highly motivated. Some lecturers are real experts of their topic. The teaching staff age-balance is well composed and many recently defended PhD's are engaged in the study process. Recently renewed laboratory facilities ensure the sustainability of the studies and also open opportunity for department for performing Research and Development projects with companies. However, the international level activities require English language. Several teachers should improve their English language skills. Also scientific publication activities should be improved from national level to the international one. The mechanical engineering topic is a fast developing one and therefore the alumni and stakeholder participation in SP monitoring and improvement should be more valued. Their involvement in the SP will link the latest technological trends to the subjects. Faculty should also support and encourage the students participation in international competition programs for improving their teamwork skills. Beside the minor challenges the SP is sustainable and the demand for graduates is increasing.

VI. GENERAL ASSESSMENT

The study programme *Mechanical Engineering* (state code – 612H30003) at Klaipeda 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	4
2.	Curriculum design	4
3.	Teaching staff	3
4.	Facilities and learning resources	4
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	21

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;

2 (satisfactory) - meets the established minimum requirements, needs improvement;

3 (good) - the field develops systematically, has distinctive features;

4 (very good) - the field is exceptionally good.

Grupės vadovas: Team leader:	Dr. Oluremi Ayotunde Olatunbosun
Grupės nariai: Team members:	Dr. Rynno Lohmus
	Dr. Bojan Dolšak
	Dr. Andrius Vilkauskas
	Dr. Vigantas Kumšlytis
	Mr. Justinas Staugaitis

**KLAIPĖDOS UNIVERSITETO PIRMOS PAKOPOS STUDIJŲ PROGRAMOS
MECHANIKOS INŽINERIJA (VALSTYBINIS KODAS – 612H30003) 2015-03-16
EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-53-4 IŠRAŠAS**

<...>

VI. APIBENDRINAMASIS ĮVERTINIMAS

Klaipėdos universiteto studijų programa *Mechanikos inžinerija* (valstybinis kodas – 612H30003) vertinama **teigiamai**.

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

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

2 - Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)

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

4 - Labai gerai (sritis yra išskirtinė)

<...>

V. SANTRAUKA

Klaipėdos universitetas vykdo klasikinę studijų programą, kurią baigus įgyjamas mechanikos inžinerijos bakalauro laipsnis. Tokių specialistų poreikis didelis, todėl tik 3 proc. absolventų dirba srityje, kuri nėra tiesiogiai susijusi su jų studijomis. Studijų programos struktūra yra gerai subalansuota, studijų programos tikslas ir studijų rezultatai susieti su dalykais. Dėstytojai ir studentai yra motyvuoti. Kai kurie dėstytojai yra tikri savo dalyko ekspertai. Pedagoginio personalo amžiaus balansas yra geras, o daugelis tų, kurie neseniai apgynė daktaro disertaciją, dalyvauja studijų procese. Neseniai atnaujinta laboratorijos įranga užtikrina studijų tvarumą ir atveria galimybę katedrai vykdyti mokslinių tyrimų ir plėtros projektus su įmonėmis. Tačiau tarptautinei veiklai reikalingos anglų kalbos žinios. Kai kurie dėstytojai turėtų tobulinti savo anglų kalbos įgūdžius. Mokslinės leidybos veikla turėtų būti tobulinama pereinant nuo nacionalinio lygio prie tarptautinio. Mechanikos inžinerijos dalykas sparčiai vystosi, todėl alumnų ir dalininkų dalyvavimas studijų programos stebėsenoje ir tobulinime turėtų būti labiau

vertinamas. Jų įtraukimas į studijų programą susies naujausias technologines kryptis su studijų dalykais. Dėstytojai turėtų remti ir skatinti studentus dalyvauti tarptautinių konkursų programose, kur jie galėtų tobulinti savo komandinio darbo įgūdžius. Nepaisant nedidelių iššūkių studijų programa yra tvari, o absolventų paklausa didėja.

<...>

III. REKOMENDACIJOS

1. Tobulinti studijų programą vykdančių dėstytojų kalbos įgūdžius.
2. Gerinti mokslinės publikacijų kokybę, renkantis tarptautinius žurnalus vietoj lietuviškų.
3. Aktyviau įtraukti alumnus ir socialinius partnerius per patariamąsias grupes ir dalyvavimą paskaitose.
4. Remti ir skatinti dėstytojus bei studentus dalyvauti judumo programose.
5. Remti ir skatinti studentus dalyvauti tarptautiniuose „studentų inžinierių“ konkursuose, kuriuose gerintų komandinio darbo gebėjimus ir spręstų sudėtingas užduotis.

<...>

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)