STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Klaipėdos universiteto

STUDIJŲ PROGRAMOS *GAMYBOS INŽINERIJA* *(valstybinis kodas - 621H70007)* VERTINIMO IŠVADOS

EVALUATION REPORT OF *PRODUCTION ENGINEERING* (*state code - 621H70007*) STUDY PROGRAMME

at Klaipėda University

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5. **Ms. Dovilė Kurpytė,** *students' representative.*

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Išvados parengtos anglų kalba
Report language – English

Vilnius
2016

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	***Gamybos inžinerija***
Valstybinis kodas	621H70007
Studijų sritis	Technologijos mokslai
Studijų kryptis	Gamybos inžinerija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Antroji
Studijų forma (trukmė metais)	Nuolatinė (2)
Studijų programos apimtis kreditais	120
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Gamybos inžinerijos magistras
Studijų programos įregistravimo data	1997

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	***Production Engineering***
State code	621H70007
Study area	Technological Sciences
Study field	Production and Manufacturing Engineering
Type of the study programme	University studies
Study cycle	Second
Study mode (length in years)	Full-time (2)
Volume of the study programme in credits	120
Degree and (or) professional qualifications awarded	Master of Production Engineering
Date of registration of the study programme	1997

CONTENTS

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.	Information on gender distribution
2.	Information on one of the elective subjects ("Numerical modelling of engineering systems (FEM)"
3.	Course descriptions for "Analysis and synthesis of mechatronic systems", "Composite materials manufacturing research", "Numerical modelling of engineering systems (FEM)"

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

Klaipeda University (hereafter – KU) was established in 1991. It offers academic studies in humanities, social sciences, physical and biomedical sciences, and technological fields and has 58 undergraduate programmes, 1 special professional study programme, 57 graduate study programmes, and 10 post-graduate study programmes (including one in the study field of Ecology).

The Master degree study programme of Production Engineering is based in the Department of Engineering of the Klaipeda University Faculty of Marine Technologies and Natural Sciences (FMTNS) which was founded in 2015 by the merger of Marine Engineering and Nature Science Faculties. The Department of Engineering has 20 research-training laboratories, specialized labs, and training workshops.

The Master study program *Production engineering* (until 2015 *Engineering of Processing Industry*) is the only master programme in the Production Engineering field of study in KU. Up to 2015 there were two study programs of *production engineering* field in KU: *Technology Management* and *Processing of Industrial engineering* when it was decided to offer only 1 study program. In 2012 an external evaluation of the *Engineering of Processing Industry* study programme was conducted by an International Group of Experts on behalf of the Lithuanian Centre for Quality Assessment in Higher Education (SKVC). As a result, the study programme was accredited and some recommendations for improvement were suggested. Following an analysis of the evaluation report of the study programme, some adjustments of the study programme were made: the title of the programme *Processing Industry Engineering* was changed to *Production Engineering*; *Research practice* (6 ECTS) was included into the study programme; *Industrial Logistics* was included into the programme as a compulsory course; additional elective courses were included into the study plan in every semester.

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 on *15th November, 2016.*

1. **Dr. Oluremi Olatunbosun (team leader)**, *Head of Vehicle Dynamics Laboratory, School of Mechanical Engineering, University of Birmingham, United Kingdom;*
2. **Prof. Marti Casadesus,** *Full Professor, Department of Management, University of Girona, PhD in Industrial Engineering, Spain;*
3. **Prof. Mats Hanson,** *Professor in Mechatronics, Department of Machine Design, KTH Royal Institute of Technology (until 2014), Sweden;*
4. **Mr. Audrius Jasėnas,** *director of public organization "Intechcentras", Lithuania;*
5. **Ms. Dovilė Kurpytė,** *student of Vilnius Gediminas Technical University study programme Electrical and Electronics Engineering, Lithuania.*

Evaluation coordinator – Ms. Ina Šeščilienė.

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The programme aims are well defined and clear i.e. *to prepare professionals who are able to do research and apply them to the production companies of technological equipment structures and processes.* The learning outcomes are described in terms of the skills and competences required of the graduate of the study programme. They are publicly accessible on the University web site. They conform to the common aims of Klaipeda University *to train highly qualified researchers in the field of technological sciences who would be able to engage in intellectual and creative activities* and support the long-term strategy of Lithuanian economy until 2020 of building a knowledge economy and information society.

The aims and learning outcomes are defined in terms of both the academic content and professional requirements for Masters' level studies in Production Engineering and the high level manpower needs of the labour market in the country and specifically in the Klaipeda region.

The name of the programme was changed in 2015 to MSc in Production Engineering following the recommendation of the external evaluation. The name now better reflects the content of the programme and its learning outcomes.

2.2. Curriculum design

The curriculum design meets legal requirements set by the Ministry of Education and Science for the second cycle study programme in the field of Production Engineering. It consists of 120 ECTS credits, from which 51 ECTS are directly related with research. Thus it fulfils the aim of preparing professionals who are able to do research and apply them to the production companies of technological equipment structures and processes. It also provides high level

education in engineering related to the production industries equivalent to level VII of the European Qualification Framework.

The study modules are divided equally between three terms with the number of study subjects not exceeding 5 courses per semester. This leaves the last semester for thesis preparation. There is a good variety of elective subjects to choose from, some reflecting the research interests of the staff in Mathematics and Materials Engineering (e.g. "Tribology", "Rheology", "Composite Materials Manufacturing Technologies and Research"), and the student is required to take one elective subject in each of the first three terms.

Following the last evaluation, 'Industrial Logistics' has been included as a compulsory subject which accords with the recommendations of the International Expert Group. With the addition of 'Packaging Technologies and Equipment' as a compulsory subject, there is now a better balance of the curriculum towards Production Engineering. The subjects are delivered through a mixture of lectures, practical's (including case studies) laboratory work and self-study (accounting for no less than 40-50%) which is appropriate for achieving the intended learning outcomes.

However, there is a lack of a core subject covering production planning (ERP, MRP, quality management, etc.). It is recommended that 'Production Management' which is currently an elective course should be made a compulsory subject. The course content should be reviewed to ensure that students are acquainted with modern concepts of the Digitalized Industry and widely used terms and their applications such as *"Concurrent Engineering", "Lean Production"*, *"Industry 4.0", "Data security", "Smart Industry",* etc.

The reading lists for the subjects are appropriate for this level of study and reflect some of the latest developments in the field of manufacturing engineering. However, some of the criticism of the previous evaluation still remains, e.g. insufficient internationalisation of the study programme. While subjects can be taught in English language, most subjects are still taught in Lithuanian and competence of students in English language needs to be improved. Internationalisation is especially important since there are several large international enterprises in the Klaipeda Sea Port, Baltic Sea Valley region.

Another point raised by the last evaluation is the study module of 'Research' whereby most of the final theses were oriented towards research topics of academic staff members, mostly materials engineering and machine dynamics, rather than industrial applications. This has been addressed to some extent with more research projects now industrially based.

It is stated in the SER that an additional research practice for Master students is planned, to be done in the student's own free time in accordance with Order of Minister of Education and Science of the Republic of Lithuania No. V-540, 19-04-2010, "*On Recommendations for*

Graduate Students' Additional Practices". This will provide students with well needed industrial practice.

2.3. Teaching staff

The teaching staff meets legal requirements. The programme is delivered by 13 members of staff, all of whom hold doctorate degrees. Of these 3 are Professors, 9 are Associate Professors and 1 is a Lecturer. Most of the teaching staff is actively involved in research relevant to the field of study with many research projects provided by the local industry (18 during the period under review). This is a good trend both for the academic staff and students involved in these projects. This should enable the programme to reflect current developments in science and technology in the field of Production Engineering.

No less than 25% of the subjects are taught by professors. The teaching load is spread evenly and the number of teaching staff is adequate to deliver the programme and ensure the learning outcomes are achieved.

Some of the academic staff are active in international programmes of staff mobility (10 mobility's in the last 5 years) and give lectures to university students abroad as well as industrial internships. There is also an increasing number of visits by teaching staff from abroad under the EU Erasmus programme (21 in the last 2 years) to give lectures to students of the Faculty of Marine Technologies and Natural Sciences which enables the students to gain an international perspective.

The age profile of the teaching staff is good enough to ensure sustainability of the programme for the immediate future. Turnover of teaching staff has been adequately dealt with by bringing in younger staff to replace those retiring with PhD graduates of the department being appointed as academic staff. However, the replacements are mainly from within the faculty. It is therefore even more imperative that staff engage in international mobility programmes and internships in the interest of internationalisation of the programme.

The research output of the teaching staff, in terms of publications, over the last 4 years (40 appeared in Scopus database) shows an improvement from the previous review period, but still needs to be improved and more publications in international journals should be encouraged. The Faculty of Marine Engineering holds a national scientific conference *Technological Research in Western Lithuania* every 2 years and this provides an opportunity for both teaching staff and Masters' students to present the results of their research work.

Apart from research training, teachers of the Production Engineering participated in over 25 specialized professional development courses during the period 2011-2015 designed to

facilitate the delivery of the programme. Other teachers have participated in courses relevant to the study programme.

2.4. Facilities and learning resources

The department of Engineering has adequate facilities for the delivery of the bachelors and masters study programmes in Production Engineering. The laboratories are well equipped both for teaching and research with equipment housed in laboratories covering a total area of 588 m^2. The laboratory teaching equipment has recently been renewed under the project "Marine valley core creation and study infrastructure renewal" (SEA) (project code No.VP-2-1.1-ŠMM-04-V-01-003). In addition, research equipment was purchased under the SEA project to supplement existing facilities for realisation of final projects for both Bachelors and Masters Engineering study programmes. Also, the computer facilities were recently renewed and provide most software needed for modern engineering education including design and simulation. These modern facilities enable Research and Development projects to be carried out for companies and there is evidence of increasing links between university and industry.

Auditoriums and lecture rooms are adequate for the delivery of theoretical lectures and are equipped with computer and projector for efficient delivery of lectures.

Student practice is an integral part of the Production Engineering Masters study programme. Close relations between KU Engineering Department staff and business organisations supported with various cooperation agreements facilitates the placement of Masters' students to carry out their *Research practice* in the companies. In addition students can also carry out their *Research Practice* in the Klaipeda University Marine Science and Technology Centre of Maritime Constructions Reliability Research Laboratory.

The library units are well equipped with related textbooks (including a large variety of e-books) and specific scientific journals. Library collections and databases are also accessible through computer network to students and academic staff members either at the university or at home. Each year new books and research journals are added to the catalogue on the recommendation of the teaching and research staff.

2.5. Study process and students' performance assessment

Admission to the Production Engineering study programme at KU is by competition with criteria clearly laid out. The number of filed applications over the last few years has been almost constant with an average of 16 while the number of admitted students has also been constant at 5 or 6 per year depending mainly on the number of state funded places. The entry scores are consistently high indicating the high quality of the admitted students. The number of vacancies

in the industry is increasing. Therefore there is an opportunity to increase the number of admitted students if more self-funded students can be recruited. There should therefore be a strategy to recruit more students (local and international) to the study programme by further internationalisation of the programme

The study programme is full time with lectures organised flexibly to suit the students. The study process is well organised and provides adequate study time and examination preparation time for the students to achieve the learning outcomes. Students are generally well motivated as most graduates take up employment related to their study. Nevertheless there is a dropout rate of just less than 20% attributed to students working while studying.

Students have the opportunity to participate in mobility programmes at a wide variety of EU institutions under the EU Erasmus exchange programme. However, the number of students of the study programme participating in mobility programmes is quite small – 6 in the period 2011-2016. This is attributed to the fact that most students are in employment.

KU provides excellent facilities for sports, artistic and cultural activities and students are encouraged to take advantage of these facilities. Adequate academic and social support is provided including a Virtual Learning Environment System (VLES), scholarships and grants, provision of dormitories, psychological help etc. All staff should be encouraged to use the VLES.

The assessment methods are transparent and students are well informed about their implementation. The criteria for the assessment of the final projects are clearly communicated to the students and are rigorously applied. During the site visit students expressed satisfaction with the study programme.

Surveys of previous graduates of the programme indicate that the content of the Production Engineering masters' programme matches the requirements of their employers fairly well. During the site visit both graduates and employers indicated that the theoretical knowledge that graduates of the programme acquire enables them to solve new problems. They expressed satisfaction with the programme generally. However, they consider that there is need to improve the students' competences in the areas of English language communication, computer programming (including CNC programming), business administration and marketing.

2.6. Programme management

The management of the Masters programme conforms to the Statute of Klaipeda University and Regulations of Studies of Klaipeda University. The programme is monitored by the Study program committee of Production Engineering which consists of experienced academic staff, and representative of the students and social partners.

The process of study programme administration and quality assurance is managed using a new electronic academic information system *Point* which was introduced by the university in 2014. Data collected along the process of implementation includes statistics of student and lecturer mobility, information on student progress and student wastage, etc., as well as external evaluations and these are used to improve the programme's quality.

At the end of each semester students have an opportunity to rate the course content and quality of instruction by completing questionnaires. The results of such student surveys along with information provided during interviews with the social partners, with which the Engineering Department maintains a close relationship, are used in the internal audit of the MSc programme with the aim of improving the programmes' quality.

Information about aims, stages, area, performance, evaluation methods, tools and the results of the study program quality assessment is open, and it is discussed at the meetings of the department, and with students. Reports of internal quality assessment (on teachers' lectures) are stored in the Department and the information on the internal quality assessment is available to all concerned: students, teachers and social partners.

The social partners are willing to contribute more to the improvement of the study programme by providing internships for students and offering projects for final thesis research. In this regard they would like the lecturers to be more proactive in approaching them and involving them more formally in reviewing the programme.

2.7. Examples of excellence *

From the self-evaluation report and the site visit there is no obvious area to be mentioned as an example of excellence.

III. RECOMMENDATIONS

1. Links of learning outcomes to individual subjects should be improved and coordinated in order to ensure that all the necessary skills that the graduate needs are actually provided in the programme, e.g. English language proficiency and presentation skills.

2. Students should be encouraged to improve their English language proficiency by making it compulsory to make some presentations in English language during the programme.

3. It is recommended that the course *'Production Management'* which is currently an elective course should be made a compulsory subject. The course content should be reviewed to ensure that students are acquainted with modern concepts of the Digitalized Industry and widely used terms and their applications such as *"Concurrent Engineering", "Lean Production", "Industry 4.0", "Data security", "Smart Industry",* etc. It could replace *"Composite Materials Manufacturing Technologies and Research"* which should become an elective subject as it covers a specialist part of the industry.

4. During the site visit, employers and graduates expressed a wish for improvement of competence of graduates of the study programme in computer programming. The compulsory subject *"Automatic manufacturing control systems"* includes programming of PLCs. The course content should be reviewed to include CNC programming. Practical use of computer programming (e.g. Matlab/Simulink) could be introduced in *"Analysis and Synthesis of Mechanical Systems"* to enable students to develop their computer programming skills.

5. The research output of the teaching staff, in terms of publications, should be improved and more publications in international journals with high impact factor should be encouraged.

6. There should be an effort to further internationalise the programme by recruiting more international students.

7. All staff should be encouraged to use the Virtual Learning Environment System.

8. Some of the laboratory facilities need to be improved if the aim is to increase the number of students on the study programme.

9. Lecturers should be more proactive in approaching industry to provide internships for students and projects for final thesis research. They should also involve the social partners more formally in reviewing the programme.

IV. SUMMARY

The main strengths and weakness of the master programme in *Production Engineering* at Klaipėda University, according to each one of the analysed standards, are:

4.1 Programme aims and learning outcomes

Strengths:

There is growth of the industry in the Klaipėda region resulting in a shortage of engineers in processing manufacturing sector (mainly large and service-oriented enterprises). The study programme addresses a real on-going need of providing manpower to fill vacancies in companies in the general engineering sector of the Lithuanian economy. Therefore graduates are very likely to find employment. The skills set also means that graduates have a wide range of employment opportunities. The title of the programme has been changed to Production Engineering which now better reflects the content of the programme.

Weaknesses:

Links of individual subjects to learning outcomes needs to be improved and better coordinated in order to ensure that all the necessary skills that the graduate needs are actually provided in the programme, e.g. English language proficiency and presentation skills.

4.2 Curriculum design

Strengths:

The main strength of the curriculum design is its integrative nature in engineering. Research practice affords the students an opportunity to carry out research either in companies or in the Klaipeda University Marine Science and Technology Centre of Maritime Constructions Reliability Research Laboratory. Students are required to publish a scientific paper from their research at the national scientific conference *Technological Research in Western Lithuania* which is held every 2 years. This indicates a strong emphasis on scientific research.

Weaknesses:

Inadequate level of English language proficiency of some students.

There is still a lack of computer aided production planning content quality management and production management in the programme.

4.3Teaching staff

Strengths:

All teachers are well qualified, sufficiently experienced and meet the qualification requirements. There is growing evidence that teaching staff is involved in research directly related to the study programme with many research projects provided by the local industry (18 projects during the period under review). There is a growing involvement in international mobility programmes by teachers. Teachers are also taking available opportunities to undertake research trips to universities and companies abroad. There is an increase in incoming international lecturers.

Relations between teaching staff and students, alumni and social partners are excellent.

Weaknesses:

Insufficient participation in international conferences, publication in top international journals and insufficient internationalisation of the staff.

4.4 Facilities and learning resources

Strengths:

The project "Marine valley core creation and study infrastructure renewal" (SEA) has been completed resulting in the renewal and development of the laboratories for both teaching and research. This complements the excellent library facilities and well equipped lecture rooms.

Students have the opportunity to participate in mobility programmes at a wide variety of EU institutions under the EU Erasmus exchange programme. Close relations between KU Engineering Department staff and business organisations supported with various cooperation agreements facilitates the placement of Masters' students to carry out their *Research practice* in the companies.

Adequate academic and social support is provided including a Virtual Learning Environment System (VLES), scholarships and grants, provision of dormitories, psychological help etc.

Weaknesses:

There is evidence from the students that not all lecturers are using the VLES. Some of the laboratory facilities need to be improved if the aim is to increase the number of students on the study programme.

4.5 Study process and student assessment

Strengths:

Admission to the study programme at KU is by competition with the state funded places going to the best students.

The assessment methods are transparent and students are well informed about their implementation. The criteria for the assessment of the final projects are clearly communicated to the students and are rigorously applied. Most of the Masters projects are related to industry.

The employment rate of graduates is very high. In fact most of the students already have jobs in the industry before they graduate. There is general satisfaction of the students, alumni and social partners with the Masters' programme.

Weaknesses:

The number of admitted students is low due to the limited number of state funded places and changing demographics and there is an inability to increase the number of admitted students in spite of the evident needs of the market for the graduates of the programme. There is a low take-up of mobility programmes by students.

4.6 Programme management

Strengths:

The programme is monitored by the Study program committee of Production Engineering. The new electronic academic information system *Point* for managing the collection and analysis of data related to the study programme was recently introduced.

There is good cooperation between the study programme and *Baltic Sea Valley* project.

The social partners are very engaged with the study programme and are willing to contribute more to the improvement of the study programme by providing internships for students and offering projects for final thesis research.

Weaknesses:

There is a lack of formal involvement of social partners in the review of the study programme.

V. GENERAL ASSESSMENT

The study programme *Production Engineering* (state code – 621H70007) at Klaipėda 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	3
3.	Teaching staff	3
4.	Facilities and learning resources	3
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	**18**

*1 (unsatisfactory) - there are essential shortcomings that must be eliminated;
2 (satisfactory) - meets the established minimum requirements, needs improvement;
3 (good) - the field develops systematically, has distinctive features;
4 (very good) - the field is exceptionally good.

Grupės vadovas: Team leader:	Dr. Oluremi Olatunbosun
Grupės nariai: Team members:	Prof. Marti Casadesus
	Prof. Mats Hanson
	Mr. Audrius Jasėnas
	Ms. Dovilė Kurpytė

KLAIPĖDOS UNIVERSITETO ANTROSIOS PAKOPOS STUDIJŲ PROGRAMOS
***GAMYBOS INŽINERIJA* (VALSTYBINIS KODAS - 621H70007)**
2017-01-18 EKSPERTINIO VERTINIMO IŠVADŲ NR. SV4-10 IŠRAŠAS

<…>

V. APIBENDRINAMASIS ĮVERTINIMAS

Klaipėdos universiteto studijų programa *Gamybos inžinerija* (valstybinis kodas – 621H70007) vertinama **teigiamai**.

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

*1 - Nepatenkinamai (yra esminių trūkumų, kuriuos būtina pašalinti)
2 - Patenkinamai (tenkina minimalius reikalavimus, reikia tobulinti)
3 - Gerai (sistemiškai plėtojama sritis, turi savitų bruožų)
4 - Labai gerai (sritis yra išskirtinė)

<…>

IV. SANTRAUKA

Klaipėdos universitete vykdomos magistrantūros studijų programos *Gamybos inžinerija* pagrindinės stiprybės ir silpnybės pagal kiekvieną išanalizuotą sritį:

4.1 Programos tikslai ir studijų rezultatai

Stiprybės

Pramonė Klaipėdos regione auga, todėl trūksta inžinierių pramonės perdirbimo sektoriuje (daugiausiai stambioms ir į paslaugas orientuotoms įmonėms). Studijų programa stengiamasi išspręsti realų nuolatinį darbo jėgos poreikį įmonėse ir užpildyti laisvas darbo vietas Lietuvos bendrajame inžinerijos sektoriuje. Todėl absolventai, panašu, labai lengvai įsidarbins. Įgūdžių visuma taip pat reiškia, kad absolventai turi didelį darbo vietų pasirinkimą. Studijų programos pavadinimas buvo pakeistas į *Gamybos inžineriją* ir dabar geriau atspindi programos turinį.

Silpnybės

Reikia gerinti atskirų dalykų sąsają su programos studijų rezultatais, siekiant užtikrinti, kad studijų programoje būtų faktiškai numatyti visi studentams būtini gebėjimai, pvz., anglų kalbos mokėjimas ir pristatymo įgūdžiai.

4.2 Programos sandara

Stiprybės

Pagrindinė programos sandaros stiprybė – integruotas požiūris į inžineriją. Tiriamojo darbo praktika studentams sudaro galimybę mokslinius tyrimus atlikti bendrovėse arba Klaipėdos universiteto Jūros mokslų ir technologijų centro Jūrinių konstrukcijų patikimumo tyrimų laboratorijoje. Reikalaujama, kad studentai mokslinius darbus iš savo tiriamųjų darbų publikuotų nacionalinėje mokslinėje konferencijoje „Technologiniai tyrimai Vakarų Lietuvoje“, kuri vyksta kas dvejus metus. Tai rodo, kad daug dėmesio skiriama moksliniams tyrimams.

Silpnybės

Netinkamas kai kurių studentų anglų kalbos mokėjimo lygis.

Studijų programos dalykuose vis dar trūksta kompiuterizuotos gamybos planavimo turinio kokybės valdymo ir gamybos valdymo.

4.3 Personalas

Stiprybės

Visų dėstytojų kvalifikacija yra tinkama, jie turi pakankamai patirties ir atitinka kvalifikacijai keliamus reikalavimus. Vis daugiau dėstytojų dalyvauja moksliniuose tyrimuose, kurie tiesiogiai susiję su šia studijų programa, ir daugelyje mokslinių tyrimų projektų, kurie vykdomi vietos pramonėje (vertinimo laikotarpiu buvo 18 projektų). Dėstytojai vis aktyviau dalyvauja tarptautinio judumo programose. Dėstytojai taip pat naudojasi galimybėmis apsilankyti užsienio universitetuose ir bendrovėse mokslinių tyrimų tikslais. Daugėja iš užsienio atvykstančių dėstytojų.

Dėstytojų ir studentų, alumnų ir socialinių partnerių santykiai yra puikūs.

Silpnybės

Nepakankamas dalyvavimas tarptautinėse konferencijose, publikacijų skaičius geriausiai vertinamuose tarptautiniuose žurnaluose ir nepakankamas personalo tarptautiškumas.

4.4 Materialieji ištekliai

Stiprybės

Užbaigtas projektas „Jūrinio slėnio branduolio sukūrimas ir studijų infrastruktūros atnaujinimas“ (JŪRA), kurį įgyvendinus buvo atnaujintos ir įrengtos laboratorijos, skirtos mokymui ir moksliniams tyrimams. Pagyrimo vertos puikios bibliotekos patalpos ir gerai įrengtos auditorijos.

Pagal ES „Erasmus“ mainų programą studentai turi galimybę dalyvauti judumo programose įvairiose ES institucijose. Glaudūs Klaipėdos universiteto Inžinerijos katedros personalo ir verslo organizacijų ryšiai padeda sudaryti įvairias bendradarbiavimo sutartis, kurios magistro studijų studentams padeda rasti vietų atlikti tiriamąją praktiką bendrovėse.

Teikiama tinkama akademinė ir socialinė parama, pavyzdžiui, virtuali mokymosi aplinkos sistema (VMA), stipendijos ir grantai, suteikiamas bendrabutis, teikiama psichologinė pagalba ir kita.

Silpnybės

Studentai nurodė, kad ne visi dėstytojai naudojasi VMA. Kai kurias laboratorijų patalpas reikia gerinti, jei norima padidinti studijų programos studentų skaičių.

4.5 Studijų eiga ir jos vertinimas

Stiprybės

Į Klaipėdos universiteto studijų programą studentai priimami konkurso būdu; valstybės finansuojamos vietos tenka geriausiems studentams.

Vertinimo metodai yra skaidrūs, studentai apie jų taikymą gerai žino. Baigiamųjų projektų vertinimo kriterijai yra aiškiai išdėstyti studentams, jų griežtai laikomasi. Dauguma magistrantūros projektų yra susiję su pramone.

Absolventų įsidarbinimo lygis yra labai aukštas. Iš tikrųjų dauguma studentų dirba dar iki studijų baigimo. Bendrai, studentai, alumnai ir socialiniai partneriai šia magistrantūros studijų programa yra patenkinti.

Silpnybės

Stojančiųjų skaičius yra mažas dėl riboto valstybės finansuojamų vietų skaičiaus ir besikeičiančios demografinės situacijos. Neįmanoma padidinti priimamų studentų skaičiaus nepaisant to, kad rinkai akivaizdžiai reikia šią studijų programą baigusių absolventų. Studentai menkai dalyvauja judumo programose.

4.6 Programos vadyba

Stiprybės

Studijų programą stebi Gamybos inžinerijos studijų programos komitetas. Neseniai buvo įdiegta nauja elektroninė akademinė sistema „Taškas“, skirta valdyti su studijų programa susijusių duomenų rinkimą ir analizę.

Geri bendradarbiavimo ryšiai tarp studijų programos vykdytojų ir projekto „Baltijos jūros slėnis“.

Socialiniai partneriai aktyviai dalyvauja studijų programoje ir pageidauja dalyvauti dar aktyviau siekdami pagerinti studijų programą. Studentams siūlomos vietos praktikai atlikti ir projektai baigiamojo darbo tiriamajam darbui.

Silpnybės

Trūksta formalaus socialinių partnerių įtraukimo į studijų programos vertinimą.

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III. REKOMENDACIJOS

1. Gerinti studijų rezultatų ryšį su atskirais dalykais ir užtikrinti, kad studijų programoje būtų numatyti visi studentams būtini gebėjimai, pvz., anglų kalbos mokėjimas ir pristatymo įgūdžiai.

2. Skatinti studentus gilinti anglų kalbos žinias ir privaloma tvarka numatyti, kad jie studijų programos metu parengtų keletą pristatymų anglų kalba.

3. Dalyką *Gamybos valdymas,* kuris šiuo metu yra pasirenkamasis, padaryti privalomuoju dalyku. Kurso turinį peržiūrėti, siekiant užtikrinti, kad studentai būtų supažindinti su šiuolaikinėmis *Skaitmenizuotos pramonės* koncepcijomis ir plačiai vartojamais terminais bei jų taikymu, pavyzdžiui, tokiais terminais kaip „vienalaikė inžinerija“, „taupi gamyba“, „4-oji industrinė revoliucija“ (angl. *Industry 4.0*), „duomenų saugumas“, „išmanioji pramonė“ ir t. t. Tai galėtų pakeisti dalyką *Kompozitinių medžiagų gamybos technologijos ir tyrimas*, kuris turėtų būti pasirenkamasis, nes apima specializuotą pramonės dalį.

4. Vizito Universitete metu darbdaviai ir absolventai išreiškė norą gerinti studijų programos absolventų kompiuterinio programavimo įgūdžius. Privalomasis dalykas *Automatizuotos gamybos valdymo sistemos* įtraukia PLC programavimą. Šio dalyko turinį reikia patikslinti ir įtraukti CNC programavimą. Kompiuterinio programavimo praktinis naudojimas (pvz.,

„Matlab“, „Simulink“) galėtų būti įtrauktas į dalyką *Mechaninių sistemų tyrimas ir sintezė,* kad studentai galėtų ugdyti savo kompiuterinio programavimo įgūdžius.

5. Gerinti dėstytojų tiriamojo darbo rezultatų publikavimą ir skatinti straipsnių publikacijas tarptautiniuose pripažintuose žurnaluose.

6. Skatinti studijų programos tarptautiškumą priimant daugiau studentų iš kitų šalių.

7. Visus personalo narius skatinti aktyviau naudotis virtualia mokymosi aplinka.

8. Gerinti kai kurias laboratorijų patalpas, jei siekiama didinti studentų, pasirinkusių šią studijų programą, skaičių.

9. Dėstytojai turi aktyviau ieškoti ryšių pramonėje, kur studentai galėtų atlikti praktiką ir baigiamųjų darbų tiriamuosius projektus. Socialinių partnerių įsitraukimas į studijų programos vertinimą turėtų būti daugiau reglamentuotas ir formalus.

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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)