STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Klaipėdos universiteto

NAFTOS TECHNOLOGINIŲ PROCESŲ PROGRAMOS (621H81003, 62405T101)

VERTINIMO IŠVADOS

EVALUATION REPORT

OF *OIL PROCESSING* (621H81003, 62405T101)

STUDY PROGRAMME

at Klaipėda University

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Išvados parengtos anglų kalba
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DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	***Naftos technologiniai procesai***
Valstybinis kodas	621H81003, 62405T101
Studijų sritis	Technologijos mokslai
Studijų kryptis	Chemijos ir procesų 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	Chemijos inžinerijos magistras
Studijų programos įregistravimo data	2000-06-16 NO 831

INFORMATION ON ASSESSED STUDY PROGRAMME

Name of the study programme	***Oil Processing***
State code	621H81003, 62405T101
Study area	Technological Sciences
Study field	Chemical and Process Engineering
Kind of the study programme	University studies
Level of studies	second
Study mode (length in years)	Full-time (2)
Scope of the study programme in credits	120
Degree and (or) professional qualifications awarded	Master of Chemical Engineering
Date of registration of the study programme	2000-06-16 NO 831

CONTENTS

I. INTRODUCTION

The Master Programme of Oil Processing at Klaipeda University (KU) is given in the Marine Engineering Faculty (FME) in the Department of Technological Processes (DTP) after registration in 2000. It is a second level study programme in the field of Chemical and Process Engineering scoped to the Oil Industry. The programme was designed for granting master's degree in Chemical Engineering. The scope of the study programme is related to the Oil Refinery Plant "ORLEN Lietuva" as well as to oil business at the regional level. International oil companies ("Statoil", "Lukoil", etc) show interest in the professional education in the topic, but it is not clear what demand is related to Professional Bachelors and what to Master graduates. It has not been found any formal agreement between stakeholders and the Master study programme, but some students are able to collaborate with the regional companies.

The self-evaluation report (SER) of Oil Processing Master's Study Programme was performed following the methodological guidelines approved by the Centre for Quality Assessment in Higher Education on 20 December, 2010. SER includes six Annexes following the established rules. The analytical work shown in the Annexes agrees well with the evaluation procedure recommendations.

The present review has been carried out under the guidelines and procedures of The Centre for Quality Assessment in Higher Education. The initial stage involved the preparation of a self-assessment report by the University, which was seen and commented on by the team of experts. The team visited Klaipėda University in September 2012. During the site visit the expert team discussed the programmes with faculty administrators, self-evaluation group members, teaching staff, students, graduates and employers. They also visited the library, offices, teaching space and laboratories associated with the programme.

After the visit the expert group held a meeting in which the content of the evaluation was discussed and modified to represent the opinion of the whole group.

II. PROGRAMME ANALYSIS

1. Programme aims and learning outcomes

The programme aims and learning outcomes are defined at a satisfactory level. The aim of the programme to educate high qualification Masters of Oil Processing is connected with the needs of the industry and society of the West Lithuania and with the marine sector of the Lithuanian Baltic Sea. The regional development of the oil industry is one of the main aims of the study programme. The aims of the programme are publicly accessible, based on the academic relationship with the Bachelor of Chemical Engineering and they also connect with the regional characteristics and economic agents.

The learning outcomes are consistent with the type and level of the studies and the offered qualification, but they need a deeper insight into the expected description of a second cycle learning outcomes according to the Order of the Minister of Education and Science of the Republic of Lithuania (Order No. V-2212 of 21 November 2011) where the descriptors: (i) knowledge and its application, (ii) research skills, (iii) special abilities, (iv) social abilities and (v) personal abilities need to be developed.

The regional interest of the study programme is developed in the SER and it has been clarified during the visit, but it has to be correlated with the national and international trends. The international trends for the second cycle Oil Processing study programme should be considered deeper. The integration of the aims and learning outcomes of the programme with the strategic plans of the Baltic Valley project and with the Faculty or Department development plans has not been identified in the SER and during the visit.

2. Curriculum design

The second cycle Oil Processing study programme of the Chemical Engineering study field has been compiled in compliance with the legal documents: the volume of the Programme is 120 ECTS, the subjects of the study field are not less than 60 ECTS, but they are not of a higher qualitative problem-solving or scientific innovation level as regards the study content and in comparison with the first level of the Bachelor studies. The number of subjects studied during one semester within the programme does not exceed 5. However, there are not supplementary studies for long-life learning and the independent work is not clarified to be not less than 30% of the volume of every subject.

The preparation of final thesis and its final examination is 30 ECTS and the programme leads to a Master in Chemical Engineering, according to the legal requirements for a second level study programme corresponding to a Master Degree. However, the final thesis of Oil Processing study programme is not analytical work, based on independent scientific or applied research. Moreover, the committee for the final project evaluation is not selected including external members. By the Master's thesis a student must not only demonstrate the ability to analyse a selected topic, evaluate other relevant research previously carried out in the field, independently and successfully carry out the research of the field, but also clearly and reasonably formulate the findings, format the research work in accordance with the requirements approved at the University.

3. Staff

The teaching staff (3 Professors and 6 Associate Professors) of the programme meets the established requirements, but it is not deeply involved in the research activity directly related to the study programme and the level of research activities, publications and participation of teachers in research projects is low. The scientific activity is mainly based on the participation in Lithuanian conferences, showing a reduced number of international publications. In addition, the research projects are not closely connected to the technical demands of the oil industry. In general, the number and the qualifications of the teaching staff are adequate to ensure the learning outcomes.

Young scientists and employees, who are deepening their knowledge in doctoral studies, are involved into the study process. However the number of doctors involved in the study programme is reduced. The staff includes doctors (scientists) but the orientation of the practical activities (oil industry) is not supported by professional trained engineers.

Evidences of an appropriate staff turnover able to ensure an adequate provision of the programme have been found in the comments during the site visit related to a new group of teachers doing their PhD studies.

4. Facilities and learning resources

The premises for studies both in their size and quality are enough taking considering a reduced number of Masters students related to the regional market. Laboratories of chemical engineering

and in general of oil engineering study programmes are equipped at a minimum level, without any new technical development. The equipment and laboratory premises should be renovated because new instruments and techniques play now an important role in the oil and related industry and Master students should be able to know about it. A research laboratory of environmental chemistry has been selected during the visit to show new equipment but it is in another campus and it is not close related to the study programme.

The library and the reading room can be improved for studying and independent work supporting places with computers and facilities for the students' independent work, this was the main comment during the meeting with the students.
There is an internet connection and the wireless internet access, which allows connecting to the internet data bases from PCs, but students were not able to explain the main databases.

5. Study process and student assessment

Students, staff and administrators are satisfied with the study process and student assessment. The admission requirements to the study programme are well founded and publicity available. The individuals having higher university education of technology area are admitted to the Oil Processing studies without entrance examinations. Recently, the demand for this study programme is significantly reduced. Due the reduced number of students the organization of the study process is mainly based on the direct contact between teachers and students which leads to the operative problems solving and close relationship.

Analysing the reasons of drop out rate, it noticeable that Master studies are usually terminated in the first semester, or not started at all by those who have entered to self-financed places. Such decisions are usually influenced by the high technological sciences study programme tuition fee, low financial support and unfavourable credit conditions.

The students are encouraged to participate in research and mobility programmes but there are not many students participating in research projects and the participation in the mobility programmes is reduced. During the assessment period only one student of Oil Processing programme took part in Erasmus mobility programme, while in the self assessment report it is stated "Student mobility being the main and priority field of internationalization of the studies [...]. Sustainable mobility is the aspiration of KU student mobility, which is encouraged by selecting the most appropriate mobility time, adjusting programmes and their scopes and motivating to learn foreign

languages." Low mobility could be related with the poor knowledge of English, which was clear during the visit. For the visiting students conditions are created to carry out scientific research at university laboratories, to present the research results at the Department meetings and take part in scientific conferences. During the assessment period four students came under the Erasmus programme.

The final grade points are accumulated during the semester. Points accumulated during the semester do not exceed 50% of the final grade. The final assessment of the study subject (a grade) shows the level of student familiarity with definitions of the terms of the study subject and literature sources; ability to use knowledge in solving theoretical and practical issues; independent argumentative approach to the subject matter. Overall, the assessment system of students´ performance is clear, adequate and publicly available, leading to a general satisfaction with the assessment system.

Students are supported in many ways. They are consulted on career possibilities. The teaching staffs collaborate with employers and pass their job offers to the students; discuss the knowledge and skills required for the job. Students are also consulted on career issues in students' publications and KU website. The Career Centre provides vocational orientation, practical training organization and relations with social partners' services. KU has a psychological help centre, a language consulting point, etc., there is an Art centre, sports club, concert hall, educational theatre, specialised rehearsal halls; students play sports in 3 sports halls. Klaipeda University has got a student support mechanism and student financial support system. Moreover, students are provided with living places in dormitories. Priority to reside in the dormitory is given to students with more difficult financial situation.

In the current study programme lectures make up 12 % of the programme scope, workshops – 11 % of the study scope and self-study – 77 % of the study scope including the preparation of the Final Thesis. The scope of contact hours, independent work, scientific research, preparation of the final Thesis complies with general requirements to the Master degree study programme.

The professional activities of the graduates have not been different depending on the Bachelor and Master Degree. There is not a clear difference and the stakeholders in the visit do not show any preference. The possibility to follow PhD studies does not play also an important role. Approximately 70% of graduates work according to the skills they have qualification in, some of them are in managerial positions. This is a good employability rate.

6. Programme management

The responsibilities for decisions and monitoring of the implementation of the programme are clearly described in the SER the different groups in the visit knew about it. Programme management activities are organized by the Faculty Council, the Dean and the Dean's office. The realisation of the Chemical engineering study programme is a responsibility of the Department of Technological Processes (SER, 30 p.).

Klaipėda University has an internal study quality assurance system, which helps to ensure the quality of higher education. There is enough information of data on the programme implementation and persons responsible for programme realisation took into account the outcomes of the previous evaluation. The programme improvement processes involve stakeholders, but mainly at a regional level.

The entire team in the study programme is improving their knowledge and skills continuously, and they know that the responsibilities for decisions and monitoring of the programme are clearly allocated. The study subjects are updated and they introduce new teaching techniques from the inputs of the quality system.

However, the main improvement needs to be done in the collection and analysis of data regularly: surveys of satisfaction and other systematic procedures are necessary to support the quality management of the study programme. It is not clear how this collected information is analyzed and applied in ensuring quality of study programme. Moreover, employment and/or further studies demand and general surveys of students and teachers satisfaction have not been included in the programme management and these are important numbers to be obtained in the future.

III. RECOMMENDATIONS

1. The strategic projects for the region in the University such as the Baltic Valley project should consider the possibility to include the Oil Master study programme

2. The learning outcomes should be adapted according to the national (Lithuanian) descriptors for the second study cycle (Master). Order No V-2212 of 21 November 2011, of the Minister of Education and Science of the Republic of Lithuania

3. It is recommended to compare and match the program aims and learning outcomes with national (Kaunas University of Technology, Vilnius Gediminas Technical University,) and international standards (EFCE) for engineering programs or external guidelines elaborated by international organizations.

4. The international trends for the second cycle Chemical Engineering studies programme should be considered. For example the European Federation of Chemical Engineering (EFCE) has published some recommendations (see http://www.efce.info/Bologna_Recommendation.html) but many other international recommendations could be taken into account.

5. It is recommended to increase the number of Master thesis courses related to oil processing. Most of the topics are now related to environmental chemistry and/or applied Chemistry.

6. Identify clearly the cooperation programmes with the industry and employers, agreements and education/research programmes are strongly recommended.

7. Teachers' activity in research must be increased and related to the oil industry, which is the main objective in the Masters study programme

8. The international mobility exists as well for teachers and for students, but it can be more active involving the staff and the students in international education and/or research projects.

9. A systematic study of the final employment of Master graduates will help to design the practical work of students in the programme.

10. Analyse the economic development of the western region of Lithuania in a broader way, including all employment possibilities for graduates in Chemical Engineering: chemical laboratories, ecology field etc.

IV. SUMMARY

The Evaluation Report of the Chemical Engineering Study Programme at Klaipeda University is based on the Self Evaluation Report (SER, 2012) and the visit of the international evaluation team to the Klaipeda University, which took place on Tuesday, 11 September 2012.

The SER and the external visit were performed according to the Methodology for Evaluation of Higher Education Study Programmes (SKVC-Lithuania), which agrees well with the European Higher Education Quality Assessment procedures.

The Evaluation Report develops six main points, starting with a short introduction. The first point is the evaluation of the Programme aims and learning outcomes, where some improvements related to the description of the learning outcomes according to the descriptors of study cycles Order No V-2212 of 21 November 2011, of the Minister of Education and Science of the Republic of Lithuania are necessary.

The oil process specialization of the second level of studies in Chemical Engineering is very specific (oil) and it is located in the appropriate place near the Lithuanian industrial sector.
The difference between the Master and Bachelor studies in Chemical Engineering is not clearly identified. The identification of the aims and learning outcomes for a second level study programme in Chemical Engineering needs to be related to the first level of studies. The research objective and/or the professional objective are not identified.

A deeper insight into international learning outcomes related to chemical engineering and to oil processing study programmes is strongly recommended in the curriculum design. The content of the programme does not reflect the latest achievements in oil science and technologies. The research activities are reduced and they are not connected to the topic, as it is shown in the final projects.

The staff needs to take into account the research activities especially at an international level including mobility in order to promote research in the master studies, which is an important part of the second cycle study programmes. The qualifications of the staff from the scientific point of view are not relevant at an international level. A second level of studies (Master)

needs a stronger support of research activities like national and/or international research projects

The material resources meet the established minimum requirements taking into account the reduced number of students, but they need to be improved specially introducing new techniques, computer facilities and specific software. The second level study programmes require specific and modern resources especially in experimental equipment. The library does not show any special attention to the oil sector in specialised books and/or journals and the computer software is not specific for the oil studies.

The study process and assessment is well organized and students and teachers seem to be satisfied the ratio student/professor is low allowing a close contact and satisfaction.

The programmer management follows the rules and meets the established minimum requirements but some improvement is necessary to gain quantitative evidences and data. The final workplaces of the graduates are very important information to be collected.

V. GENERAL ASSESSMENT

The study programme *Oil Processing* (state code – 621H81003, 62405T101) at Klaipėda University is given a **positive** evaluation.

Study programme assessment in points by fields of assessment.

No.	Evaluation Area	Evaluation Area in Points*
1.	Programme aims and learning outcomes	2
2.	Curriculum design	3
3.	Staff	2
4.	Material resources	2
5.	Study process and assessment (student admission, study process student support, achievement assessment)	3
6.	Programme management (programme administration, internal quality assurance)	2
	Total:	**14**

*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.

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V. APIBENDRINAMASIS ĮVERTINIMAS

Klaipėdos universiteto studijų programa *Naftos technologiniai procesai* (valstybinis kodas – 621H81003, 62405T101) vertinama **teigiamai**.

Eil. Nr.	Vertinimo sritis	Srities įvertinimas, balais*
1.	Programos tikslai ir numatomi studijų rezultatai	2
2.	Programos sandara	3
3.	Personalas	2
4.	Materialieji ištekliai	2
5.	Studijų eiga ir jos vertinimas	3
6.	Programos vadyba	2
	Iš viso:	**14**

* 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 universiteto chemijos inžinerijos studijų programos vertinimo išvados pagrįstos savianalizės suvestine (Savianalizės suvestinė, 2012) ir 2012 m. rugsėjo 11 d., antradienį, vykusio tarptautinės vertinimo grupės vizito Klaipėdos universitete rezultatais.

Savianalizės suvestinės ir išorės vizitas atliktas pagal Vykdomų studijų programų vertinimo metodiką (SKVC), gerai derančią su Europos aukštojo mokslo kokybės vertinimo tvarka.

Vertinimo išvados pradėtos trumpu įvadu, toliau aptartos šešios vertintos sritys. Pirmajame punkte įvertinti programos tikslai ir numatomi studijų rezultatai; numatomų studijų rezultatų aprašus reikėtų gerinti atsižvelgiant į studijų pakopų aprašus (2011 m. lapkričio 21 d. Lietuvos Respublikos švietimo ir mokslo ministro įsakymas Nr. V-2212).

Chemijos ir procesų inžinerijos krypties antrosios pakopos studijų naftos technologinių procesų specializacija labai konkreti (nafta) ir siūloma tinkamoje vietoje netoli Lietuvos pramonės sektoriaus. Chemijos inžinerijos magistro ir bakalauro studijos nėra aiškiai atskirtos. Nustatytus antrosios pakopos chemijos inžinerijos studijų programos tikslus ir numatomus studijų rezultatus reikia sieti su pirmąja studijų pakopa. Nenustatyti tyrimų ir profesinis tikslai.

Sudarant programą labai rekomenduojama geriau atsižvelgti į tarptautinius numatomus studijų rezultatus, susijusius su chemine inžinerija ir naftos technologinių procesų studijų programomis. Programos turinys neatspindi naujausių naftos mokslo ir technologijų pasiekimų. Kaip matyti iš baigiamųjų projektų, tyrimų veiklos sumažėjo, ji nesusijusi su tema.

Siekdami magistro studijų metu skatinti tyrimus kaip svarbią antrosios pakopos studijų programų dalį dėstytojai turi atsižvelgti į tyrimų veiklą, pirmiausia tarptautiniu lygmeniu, įskaitant judumą. Dėstytojų kvalifikacija moksliniu požiūriu nėra tarptautinio lygio. Antros (magistro) studijų pakopos studijas reikia geriau susieti su tyrimais, pvz., nacionaliniais ir (arba) tarptautiniais tyrimų projektais.

Studentų sumažėjo, todėl materialiniai ištekliai atitinka nustatytus būtiniausius reikalavimus, bet šiuos išteklius reikėtų gerinti, pirmiausia reikėtų naujų metodų, kompiuterinės ir specialiosios programinės įrangos. Antros pakopos studijų programoms reikėtų specialių šiuolaikiškų išteklių, pirmiausia eksperimentinės įrangos. Atrodo, bibliotekoje neskiriama dėmesio konkrečiai naftos sektoriui, nes trūksta specializuotų knygų ir (arba) žurnalų, o kompiuterinė programinė įranga nėra pritaikyta konkrečiai naftos studijoms.

Studijų eiga ir vertinimas organizuojamas gerai, atrodo, studentai ir dėstytojai patenkinti, o dėl nedidelio dėstytojų ir studentų skaičiaus santykio galima užmegzti glaudžius ryšius ir užtikrinti pasitenkinimą.

Programos vadyba atitinka taisykles ir nustatytus būtiniausius reikalavimus, tačiau ją reikėtų šiek tiek pagerinti, kad būtų galima gauti kiekybinių įrodymų ir duomenų. Labai svarbu rinkti informaciją apie galutinę absolventų darbo vietą.

III. REKOMENDACIJOS

1. Reikėtų apsvarstyti galimybę naftos technologinių procesų magistro studijų programą įtraukti į universiteto strateginius regiono projektus, pvz., projektą *Baltijos slėnis*.

2. Antros pakopos studijų programos numatomus studijų rezultatus reikėtų pritaikyti atsižvelgiant į nacionalinį studijų pakopų aprašą (2011 m. lapkričio 21 d. Lietuvos Respublikos švietimo ir mokslo ministro įsakymas Nr. V-2212).

3. Programos tikslus ir numatomus studijų rezultatus rekomenduojama lyginti ir derinti su nacionaliniais (Kauno technologijos universiteto, Vilniaus Gedimino technikus universiteto) ir tarptautiniais inžinerijos programų standartais (EFCE) arba tarptautinių organizacijų parengtomis išorės gairėmis.

4. Rengiant antros pakopos chemijos inžinerijos studijų programą reikėtų atsižvelgti į tarptautines tendencijas. Pavyzdžiui, kai kurias rekomendacijas paskelbė Europos chemijos inžinierių federacija (EFCE) (žr. http://www.efce.info/Bologna_Recommendation.html), taip pat būtų galima atsižvelgti į daugelį kitų tarptautinių rekomendacijų.

5. Rekomenduojama didinti su naftos technologiniais procesais susijusių magistro darbų kursų skaičių. Dabar dauguma temų susijusios su aplinkos ir (arba) taikomąja chemija.

6. Labai rekomenduojama aiškiai apibrėžti bendradarbiavimo su pramonės atstovais ir darbdaviais programas, sudaryti susitarimus ir rengti švietimo ir (arba) tyrimų programas.

7. Būtina skatinti aktyvesnį dėstytojų dalyvavimą tyrimų veikloje ir tyrimus labiau sieti su naftos pramone – tai pagrindinis magistro studijų programos tikslas.

8. Dėstytojų ir studentų tarptautinis judumas pastebimas, bet jis galėtų būti aktyvesnis ir apimti dėstytojų bei studentų dalyvavimą tarptautiniuose švietimo ir (arba) tyrimų projektuose.

9. Kad būtų lengviau rengti praktinę programos studentų veiklą, reikėtų sistemingai tirti magistro studijų programos absolventų galutinės darbo vietos duomenis.

10. Reikėtų plačiau analizuoti ekonominę vakarinio Lietuvos regiono plėtrą, įskaitant visas chemijos inžinerijos studijų programos absolventų įsidarbinimo galimybes: chemijos laboratorijose, ekologijos srityje ir pan.

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