



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

Klaipėdos universiteto
STUDIJŲ PROGRAMOS
NAFTOS TECHNOLOGINIAI PROCESAI (621H81003)
VERTINIMO IŠVADOS

EVALUATION REPORT
OF *OIL PROCESSING (621H81003)*
STUDY PROGRAMME
at Klaipėdos University

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Išvados parengtos anglų kalba
Report language - English

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	Naftos technologiniai procesai
Valstybinis kodas	621H81003
Studijų sritis	Technologiniai mokslai
Studijų kryptis	Chemijos ir procesų inžinerija
Studijų programos rūšis	Universitetinės studijos
Studijų pakopa	Antra
Studijų forma (trukmė metais)	Nuolatinė (1,5)
Studijų programos apimtis kreditais	90
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	Chemijos inžinerijos magistro laipsnis
Studijų programos įregistravimo data	2000-06-16 Nr. 831

INFORMATION ON EVALUATED STUDY PROGRAMME

Title of the study programme	Oil processing
State code	621H81003
Study area	Technological sciences
Study field	Chemistry engineering
Type of the study programme	University studies
Study cycle	Second
Study mode (length in years)	Full time (1,5)
Volume of the study programme in credits	90
Degree and (or) professional qualifications awarded	Master of Degree of Chemical Engineering
Date of registration of the study programme	June 16th, 2000 No. 831

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I. INTRODUCTION

1.1. Background of the evaluation process

The evaluation of on-going study programmes is based on the **Methodology for evaluation of Higher Education study programmes**, approved by Order No 1-01-162 of 20 December 2010 of the Director of the Centre for Quality Assessment in Higher Education (hereafter – SKVC).

The evaluation is intended to help higher education institutions to constantly improve their study programmes and to inform the public about the quality of studies.

The evaluation process consists of the main following stages: *1) self-evaluation and self-evaluation report prepared by Higher Education Institution (hereafter – HEI); 2) visit of the review team at the higher education institution; 3) production of the evaluation report by the review team and its publication; 4) follow-up activities.*

On the basis of external evaluation report of the study programme SKVC takes a decision to accredit study programme either for 6 years or for 3 years. If the programme evaluation is negative such a programme is not accredited.

The programme is **accredited for 6 years** if all evaluation areas are evaluated as “very good” (4 points) or “good” (3 points).

The programme is **accredited for 3 years** if none of the areas was evaluated as “unsatisfactory” (1 point) and at least one evaluation area was evaluated as “satisfactory” (2 points).

The programme **is not accredited** if at least one of evaluation areas was evaluated as "unsatisfactory" (1 point).

1.2. General

The Application documentation submitted by the HEI follows the outline recommended by the SKVC. Along with the self-evaluation report and annexes, the following additional documents have been provided by the HEI before, during and/or after the site-visit: 07/11/2016.

No.	Name of the document
1	Student Survey questionnaires
2	Guidelines for Thesis preparation

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

The evaluation process consisted of a complete analysis of the study programme, following a well-established procedure, and finalizing with several recommendations to improve the study programme.

The external committee maintained a very good relation with the members of the self-evaluation report and, in general, with all the staff interviewed and particularly with the Evaluation coordinator - Mr Pranas Stankus. In the entire interviews the review team found full collaboration, good disposition, and honesty in answers. The facilities encountered during the visit that made the work easier.

The University of Klaipeda is located in one of the regions, with around 360.000 inhabitants (Klaipeda city and Western Lithuania Region), which have experienced the third largest development in Lithuania, after the capital Vilnius.

In the region are located a significant number of companies of great importance and size related to the maritime sector, among others the largest oil refinery in the Baltic Sea. The region has very good sea, air, and land communications.

Its Klaipeda Free Economic Zone is one of the most proactive in the region, taking into account the number of investments attracted and the creation of jobs. Among the activities of the companies that settle in the area are: production of plastic packaging and plastic pellets (PET), manufacturing of electronic devices, manufacturing of steel structures, metal processing, manufacturing of architectural glass, processing of fish and its products, biodiesel production, electricity production from renewable sources. Important international companies, such as Philip Morris, Master Food, Siemens, and others with high-tech and well equipped laboratories have build their plants either in the region.

The University of Klaipeda is a young university founded in 1991, at the moment it has 5 faculties: Marine Technologies and Natural Sciences, the Humanities and Education Sciences, the Academic of Arts, Social Sciences, and Health Sciences.

The Faculty of Marine Technologies and Natural Sciences was founded in 2015 by the merger of the Faculty of Marine Technologies and the Faculty of Natural Sciences. It is structured in 4 departments: Natural Sciences, Informatics and Statistics, Engineering and Marine Engineering, it has also 2 Research Centres, of Marine Sciences and Engineering, and Energy Efficiency.

The Engineering Department has most of the responsibility in undergraduate study programmes of Mechanical Engineering, Chemical Engineering, Environmental Engineering,

Electric Engineering, and graduate programmes of Production Engineering, Marine Environment Engineering, Petroleum Technological Processes and Innovative Electric and Automation Systems.

The Chemical Engineering Bachelor Study Programme was evaluated and accredited in 2012, the self-assessment process and experts' recommendations suggested at that time has been used to improve the quality of studies. The Self-evaluation Report shows a summary of concerns and recommendations together with the measures that were implemented

The SER is serious, rigorous and honest. This opinion is shared with the staff, which have read the report, and agreed with members elected to elaborate the report.

1.4. The Review Team

The review team was completed according *Description of experts' recruitment*, approved by order No. 1-01-151 of Acting Director of the Centre for Quality Assessment in Higher Education. The Review Visit to HEI was conducted by the team on 07/11/2016.

- 1. Prof. Laurent Counillon (team leader)** Professor in University Nice Sophia Antipolis (France);
- 2. Prof. Dr. Domingo Cantero Moreno**, Professor in University of Cadiz, Science Faculty (Spain);
- 3. Dr. Elizabeth Briggs**, Retired Head of the School of Chemical and Life Sciences, University of Greenwich (United Kingdom);
- 4. Prof. Jan Lundell**, Professor, Head of the Department of Chemistry, Director of the Central Finland LUMA (STEM) Center (Finland);
- 5. Dr. Šarūnas Zigmantas**, Head of QC Sector, Quality control in *Teva pharmaceuticals* (Lithuania);
- 6. Mr. Benas Balandis**, Student of Master programme in Chemistry at Lithuanian university of health and sciences (Lithuania).

II. PROGRAMME ANALYSIS

2.1. Programme aims and learning outcomes

The programme aims and learning outcomes are well defined and clear in the SER and their publicity is well accessible in the webpage of the University and <http://www.studyinlithuania.lt/>.

The main aim of the Master in Petroleum Technological Processes Programme is to prepare highly qualified petroleum technological processes engineers with profound knowledge

of chemical engineering, petroleum production, oil refining and its interdisciplinary subjects, able to apply research methods for sustainable petroleum industry development.

The study programme contains 24 learning outcomes, they have been classified in six types of skill and competence development: Knowledge, Engineering analysis, Engineering design, Investigations, Engineering practice, and Personal and social skills. These learning outcomes are well formulated, achievable, and are linked with the aims of the programme.

The name of the study in English was changed, from “Oil Processing” to the current name “Petroleum Technological Processes”, in order to reflect in a better way the study programme content and the study programme was shortened from 2 to 1.5 year, following, among others, recommendations of social partners.

There is a strong relationship between the University and the labour market. The aims and learning outcomes has been elaborated taking account the community’s need and the labour market. The demand for MSc in the field of Chemical Engineering in Lithuanian has been established after a deep study of several documents elaborated by official institutions., such as Long-Term Strategy of Lithuanian Economy until 2020; and Lithuania's Progress Strategy “LITHUANIA 2030”.

The study programme complies with requirements of the legal and normative documents of the Republic of Lithuania.

The aims and the learning outcomes match requirements of profession sub-group 2145 Chemical Engineering of the Lithuanian Professions Classifier and is oriented towards the aims of Level 7 of the learning outcomes–base reference levels of the European Qualifications Framework.

The aims and learning outcome of the study programme evaluated can be considered coherent and compatible with the name of the programme, further more the learning outcomes are analysed every year to maintain them close to market needs. Those responsible for the degree are aware that the Master study requires continuous improvements to attend to the constant changes that the discipline undergoes

2.2. Curriculum design

The second cycle Oil Process study programme has been compiled in compliance with the legal documents and fits with requirements of European Federation of Chemical Engineering (EFCE).

The study scope is distributed in an adequate way along 3 semesters. 90 ECTS credits permit enough formation to acquire the knowledge and skills need for a Master in this field. The third semester is intended only for Master Thesis preparation and defence; the topic is selected in the first semester. The list of the topics of the Master's Thesis is based in three sources, from staff, social partners, and student himself. The courses and the topics are not repetitive.

Study course content and study methods allow achievement of learning outcomes. The applied teaching, learning and assessment methods of studies are indicated in the Annex I.

The list of subjects is developed providing many details, including the applied teaching, learning and assessment methods of studies.; including the prerequisite to attend the course, the learning outcomes to be achieved, the teaching learning and assessment methods, main aim, syllabus, bibliography and the complete academic plan.

During the course only teaching methods could be changed, after the course, based on student feedback and social partners' opinion can makes changes in the programme, as an example "Corrosion Engineering" was introduced as a course.

Evidences of pedagogical courses starting this year and the use of e-learning based on Moodle platform has been found in the comments obtained in the meetings recorded during the visit. Review team finds these developments very important.

The study scope is closely related to the learning outcomes and the study methods allow their achievement. The study plan is balanced; the number of contact hours, independent work, final thesis, and total scope of practical training, complies with General Requirements of the second cycle study programme and ensures the provision of the learning outcomes. Of the total 2400 hours, 330 hours correspond to lectures; 270 hours to workshops; 15 hours to laboratory works and 500 hours to self-study.

The courses deal with the core of the fundamental knowledge of this specific orientation of the Chemical Engineering, and enable the graduate to perform professional functions. During the visit the alumni and employers declared to be quite satisfied with the general achievement obtained in the study programme.

However, currently the biological processes are gaining importance in reducing certain environmental impacts derived processed oil, although in some subjects some of these biological techniques are introduced, further development is necessary.

Taking account the importance the English in science and technology all over the word, the Faculty should improve language skills, to prepare the students for employment in industry or related scientific institutions.

2.3. Teaching staff

The analyses of the curricula vitae showed in the SER of the academic staff involved in the study programme can be deduced that they comply with requirements of the legal acts, the aims of the study programme of Oil Processing, and the intended outcomes.

The staff involved (9 teachers) in the Master shows how the scientific level reached in the previous evaluation has been maintained. In the period 2013-2016 they have participated in 4 patents, 11 articles published in prestigious international journals and 7 others with a high citation index, 6 projects (1 EU project). Some of the teachers have practical work experience related to their courses..

Each teacher establishes autonomously the teaching methods and techniques to be applied. There is no evidence or systematized programs of teaching experiences and their implementation in the study programme.

The Faculty should ensure that teaching quality is improved for those teachers who need to develop more interactive teaching skills using an appropriate educational training programme.

The number of teachers, (4 professors, 5 associate professors and 3 lectures), is adequate to ensure learning outcomes of the compulsory courses of the Petroleum Technological Processes study programme. The average ratio is 10 students per one teacher.

The list of teachers in Appendices II show: 4 are older than 60- 3 between 50 and 60 and only 2 younger than 40. The Staff has changed slightly during analysed time-period; only one professor was changed by another teacher due to retirement.

Experiences with the figure of mentor, where an older staff member “mentor” helps new staff in particular subjects has been carried out. The measures taken allow distributing academic load in much more effective way comparing with the previous assessment period allowing perspective staff members to spend more time for research activities. In any case, the teachers still have too many contact hours. The average of contact hours taking account professors, associate professors is around 270 hours, an average of 240 hours could be consider as normal in Europe.

The Institution ensures the professional development of the staff is via the system of annual courses. The staff of the study programme of Petroleum Technological Processes can participate in courses of English, use Moodle as an e-learning platform, information systems, training of Innovative Methods in Study Process and others, but the teaching load can prevent their use. It might necessary to diminish the teaching load.

The scientific activity of the teaching staff is quite consistent and related with the study programme, their curriculum vitae prove that they are qualified and are able to achieve the learning outcomes of the study programmes. Their recent research activity is related among others with: environmental engineering, simulation, heavy oil products, fuel transport engineering and renewable energies, is very close to the study programme.

2.4. Facilities and learning resources

The premises, taking account the reduced number students, meet the minimum requirements. The University has prepared an investment plan for the construction of a new laboratory block at the University campus. The construction of a new Faculty building is also planned, but there is no information about when it will be built. The planning of new campus is a great input for programme management as it shows strategic planning for future developments. If finalized, will greatly improve the programme. However, as this is not the case yet, the review team can only evaluate the current conditions.

The review team during the visit indicated, that Laboratory safety is a very big issue in the Faculty. There are no safety and caution signs in the laboratories. This must be improved. Additionally, not only signs but also the safety culture should be installed over pinning different courses explaining the real health and safety implications.

The Faculty has been making an effort to improve the students' and Teacher's facilities since the former evaluation, however, the material resources only meet the established minimum requirements, Those need to be improved specially by introducing new techniques, new equipment, especially at pilot scale, computer facilities and specific software. The second level study programmes require specific and modern resources especially in experimental equipment. The master students should be able to be updated about the new instruments and techniques, which play now an important role in the Petroleum and related industry

The effort of those responsible for the degree to increase the offer in practices in companies of the sector and agreements with other universities for exchanges has been very important and positive in the last years, furthermore, the students can carry out scientific research at the Open Access Centre for Marine Research. The use of this facility by the students has some inconveniences since it is on another campus and is not closely related to the study programme

The library has been making an effort in the last years in order to improve the quality and accessibility of textbooks, books, periodical publications and databases. However, as was recommended in the previous evaluation, the library still needs to do a major effort to increase supporting places with computers and facilities for the student's independent work. The Faculty

has wireless network that allows access to Internet for students with their own computers.

To summarize, in general, the Faculty tries to maintain equipment, acquire textbooks, keep subscriptions to scientific journals and databases, and update software versions, but this maintenance policy has to be more formally established.

2.5. Study process and students' performance assessment

The admission requirements are well defined and are developed in accordance with an approved protocol at the University of Klaipeda. There is a formula to score those graduates for the first cycle University who apply to the Master studies. There is a formula to score those graduates for the first cycle University who apply to the Master studies. This formula take account the lever mean of the grades in the first cycle University studies diploma supplement (60%), and the grade for the Final Thesis of the Final Exam (40%), one additional point shall be added if they had scientific publication. All necessary information on admission to studies of the Oil Processing curriculum is presented on the KU Website as well as in the KU information brochure for applicants. Students also have several alternatives to get all the information they need, by phone and during the open days held at KU.

The organization structure of study process of the Master is rational and appropriate for the implementation of the study programme and ensures an adequate provision of the achievement of the learning outcomes.

The students at this level start the degree with a strong motivation. The Faculty enhance the motivation of the admitted students with several actions, among others, by involving students in applied research and actual scientific projects; by promoting participation in Erasmus+ students' mobility and by encouraging taking up third cycle studies.

Students have international mobility options through the Erasmus program. The University carries out actions to try to motivate the students, by selecting the most appropriate mobility time, adjusting programmes and their scopes and motivating to learn foreign languages. This opportunity was not much used by the students of Master, in the period 2011-16, only three students went abroad under the Erasmus+ programme. The reason is mainly because almost all the students have job and it is difficult for them to obtain permission to leave the work for some months.

Information about academic, financial and other kind of support for students can be found on the Klaipeda University and on the KU Students Union websites, in the University newspapers and in the brochure "Students ABC", which is annually produced by the KU Students Union.

During the studies, the students have access to information related to the realisation of this study and study innovations, future career opportunities and other activities. This information is received by the students in various ways: electronic, at meetings, during lectures and written (posted on the bulletin board). The web of the department publishes Employers' requests and job advertisements for Chemical Engineering specialists.

Students, alumni were happy about their study programmes. There are surveys where students can express their opinion about the studies/teachers/courses. Approx. 100 % of the students participates in these surveys.

Students can have academic consultations with the teachers. The study programme provides opportunities for students to participate in scientific activities and project work of the Department. The assessment of the students' performance is clear from the beginning of their courses. There are discussions where teachers discuss test results, what students have done well, or wrongly and how it might be improved.

The information obtained from the interviews with Alumni and Employers revealed that most of the graduates are successfully employed according to their level of education. A high percentage of Master study students work half time during their time free from studies.

2.6. Programme management

The process of study programme administration and quality assurance is supported by the Academic Information System (AIS), completely implemented at the university in the 2013/2014 academic year. There is a protocol well described in the SER, for the decisions of changes in the study programme, at three levels (University, Faculty, and Department). During the different meetings it was possible to ascertain that the whole process is well known and works effectively.

Evidences about changes in the study programme from the influence of students and social partners were found. The influence of the student is very important, as an example, it is not possible to make any change of renaming the programme title without student agreement. The changes started through feedback from students, social partners, demands from regulations, and the Faculty itself.

The AIS stores the information about study programmes, study subjects and the operative information of programme implementation, including information on student progress along the courses. The normative acts, such as Senate's decisions, Rector's orders, and others, describing the sequence of decision-making and a procedure for consideration and approval of the program's quality assurance are also available via AIS.

As a result of the former evaluation (2012), in 2013 the Petroleum Technological Processes Master Study Programme was accredited and seven recommendations for improvement were suggested. Measures and activities have been presented for each of the recommendations, and in a qualitative way the current status of each one of them. In the opinion of the review team, the degree of implementation of the measures taken is very high. Some of recommendations, such as that related to the activity of teachers and students in international projects and the cooperation programmes with the industry and employers needs to continue. .

There is a strong relation with social partners; this fact was evidenced during the meetings. This relationship is formalized through the questionnaire for employers prepared by the Department. The social partners suggest courses, present research areas of interest, and often request assistance in problem solving.

The procedure of quality assurance is well specified in the Regulations of Studies of the University and complies with quality assurance regulations and guidelines of the EU and the Republic of Lithuania. The process is supported by the Academic Information System (AIS). During the interviews realized there were no demonstrations that cast doubt on the effectivity and efficiency of the process.

The Faculty and the Department of Engineering, from the point of view of the review team, provides a strategic vision and action plan of study programme development with respect to the needs and requirements of industry and employment of student's master in the region. The Petroleum Technological Process study programme was essentially modernised, to reflect the brisk market demands and recommendations of social partners. However, the review team has the impression that the actions being only carried out to respond in the short term to the needs of constantly changing technologies in this specific area of chemical engineering and not for long time term.

II. RECOMMENDATIONS

1. The Faculty building shows important security deficiencies, and there have been no substantial changes since the previous evaluation. The future building in KU campus could solve these problems but there is a need for modernising security in the existing building including architectural security, alarm systems, and information security.
2. During the visit the review team observed a lack of culture in personal security in laboratories. It is recommended that mandatory courses of safety and hygiene should be implemented from the beginning of practices in laboratories.
3. It is recommended to establish formal mechanisms for the maintenance of equipment, textbooks, subscriptions to database and journals and software versions.
4. Taking into account that English is the language of communication in the scientific and technical world, it is recommended to increase the use of technical English in the study programme.
5. The biological processes are gaining importance in reducing certain environmental impacts derived from processed oil, although in some subjects some of these biological techniques are introduced, further development is necessary.
6. It is recommended to introduce systematized programs of teaching experiences and implement them in the study programme.
7. The Faculty must establish mechanisms not only to respond in the short term to the needs of constantly changing technologies in this area of chemical engineering, but also to establish longer-term actions taking into account the international evolution of the sector.

IV. SUMMARY

The report of the evaluation of the degree of Oil Processing of the University of Klaipeda is based on the self-assessment report (SER 2016) and the visit of the external committee held on November 7, 2016.

The Academic Information System (AIS) supporting the process of study programme administration and quality assurance was completely implemented at the university in the 2013/2014 academic year. The AIS stores, among others, all the information about the study programmes, the normative acts and the description of the sequence of decision-making.

The students at this level start the degree with a strong motivation. The Faculty enhance the motivation of the admitted students with several actions, among others, by improving the facilities, by involving students in applied research and actual scientific projects; by prompting participation in Erasmus+ students' mobility and by encouraging taking up third cycle studies.

The number of students has been maintained throughout the evaluated period; the last year there was a slight increase (9 students), despite the serious demographic problem facing the Republic of Lithuania. The students are very motivated and the dropout is practically non-existent. There is a need to increase the number of students because there is a clear demand from employers

The name of the study in English was changed in order to reflect in a better way the study programme content and was shortened from 2 to 1.5, following, among others, recommendations of social partners. The study scope is distributed in an adequate way along 3 semesters. 90 ECTS credits permit enough formation to acquire the knowledge and skills need for a Master in this field. The third semester is intended only for Master Thesis preparation and defence

The aims and learning outcomes are well defined and clear. The aims and learning outcomes of the study programme evaluated can be considered coherent and compatible with the name of the programme. The Faculty has established mechanism to analyse the learning outcomes every year to maintain them close to market needs

The number of teachers is adequate to cover the docent charge and the ratio teacher-student is quite good. The teachers have very good scientific and technological levels to teach in the course.

Since the previous evaluation, there has been a significant increase in the number of publications in internationally renowned journals, research international projects, and research project with private companies by teachers involved in the degree. Their research activities are very close to the subjects they teach.

The students are quite happy about the attention they receive from their teachers in class and out of class

The alumni and employers revealed a high grade of satisfaction with the students' formation received during the Petroleum Technological Processes. The graduates are successfully employed according to the obtained education at industries enterprises of Klaipeda region.

The premises, taking account the reduced number students, are adequate, including the teaching and learning equipment. The University has prepared an investment for the construction of a new laboratory block at the University campus. The construction of a new Faculty building is also planned, but there is not any information about when the building will be completed. However, this situation remains practically the same from the last evaluation process in 2012. The Faculty needs a substantial reform in order to comply the health and safety regulation. Furthermore, during the visit a lack of culture of health and safety was observed, this matter needs to be corrected in an urgent way.

V. GENERAL ASSESSMENT

The study programme *Oil processing* (state code – 621H81003) 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	2
5.	Study process and students' performance assessment	3
6.	Programme management	3
	Total:	17

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

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

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

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

Grupės vadovas:

Team leader:

Prof. Dr. Laurent Counillon (team leader)

Grupės nariai:

Team members:

Prof. Dr. Domingo Cantero Moreno

Dr. Elizabeth Briggs

Prof. Dr. Jan Lundell

Dr. Šarūnas Zigmantas

Mr. Benas Balandis