



STUDIJŲ KOKYBĖS VERTINIMO CENTRAS

KLAIPĖDOS UNIVERSITETO
LAIVYNO TECHNINĖS EKSPLOATACIJOS (62403T101,
621H50001)
STUDIJŲ PROGRAMOS
VERTINIMO IŠVADOS

EVALUATION REPORT
OF FLEET TECHNICAL OPERATION (62403T101, 621H50001)
STUDY PROGRAMME
at KLAIPEDA UNIVERSITY

Grupės vadovas:

Team leader:

Prof. Andrew Day

Grupės nariai:

Team members:

Associate Prof. Jørgen Kristiansen

Prof. Mathias Paschen

Prof. Andrzej Reński

Dr. Vaidas Liesionis

Išvados parengtos anglų kalba

Report language - English

Vilnius
2010

DUOMENYS APIE ĮVERTINTĄ PROGRAMĄ

Studijų programos pavadinimas	<i>Laivyno techninė eksploatacija</i>
Valstybiniai kodai	62403T101, 621H50001
Studijų sritis	technologijos mokslai
Studijų kryptis	transporto inžinerija
Studijų programos rūšis	universitetinė
Studijų pakopa	antroji
Studijų forma (trukmė metais)	nuolatinė (1.5), iššęstinė (2)
Studijų programos apimtis kreditais ¹	60
Suteikiamas laipsnis ir (ar) profesinė kvalifikacija	transporto inžinerijos magistras
Studijų programos įregistravimo data	1997-05-19

¹ – vienas kreditas laikomas lygiu 40 studento darbo valandų

INFORMATION ON EVALUATED STUDY PROGRAMME

Name of the study programme	<i>Fleet Technical Operation</i>
State code	62403T101, 621H50001
Study area	Technological sciences
Study field	Transport engineering
Kind of the study programme	University
Level of studies	Second
Study mode (length in years)	Full-time (1.5), part-time (2)
Scope of the study programme in national credits ¹	60
Degree and (or) professional qualifications awarded	Master Degree in Transport Engineering
Date of registration of the study programme	19-05-1997

¹ – one credit is equal to 40 hours of student work

© Studijų kokybės vertinimo centras
Centre for Quality Assessment in Higher Education

CONTENTS

I. INTRODUCTION.....	4
II. PROGRAMME ANALYSIS	5
1. Programme aims and learning outcomes	5
1.1. Programme demand, purpose and aims	5
1.2. Learning outcomes of the programme.....	7
2. Curriculum design	8
2.1. Programme structure.....	8
2.2. Programme content.....	9
3. Staff	11
3.1. Staff composition and turnover	11
3.2. Staff competence	11
4. Facilities and learning resources	12
4.1. Facilities	12
4.2. Learning resources.....	13
5. Study process and student assessment.....	14
5.1. Student admission.....	14
5.2. Study process.....	14
5.3. Student support.....	15
5.4. Student achievement assessment.....	15
5.5. Graduates placement.....	16
6. Programme management	17
6.1. Programme administration	17
6.2. Internal quality assurance	17
III. RECOMMENDATIONS	19
IV. GENERAL ASSESSMENT.....	21

I. INTRODUCTION

Due to the close working relationship between the Fleet Technical Operation MSc programme (State code 62403T101) and the Fleet Technical Operation Management MSc programme (State code 62603T101), most of this Part I: INTRODUCTION and several Part III: RECOMMENDATIONS are identical for the two study programmes. In Part II: PROGRAMME ANALYSIS much of the description is also the same for both study programmes.

The Fleet Technical Operation (FTO) study programme and the Fleet Technical Operation Management programme (FTOM) are supervised by the Marine Engineering Department of the Maritime Institute at Klaipeda University. The Marine Engineering Department is responsible for and supervising all stages of the two study programmes. The Master Degree study programme “Naval Architecture and Marine Engineering” (State code 62603T102), which is carried out under the responsibility of the Ship Engineering Department at the Maritime Faculty of Klaipeda University, also has a potentially strong relationship with the FTO and FTOM programmes.

Klaipeda University (KU) was established in 1991 and offers Cycle 1 (BSc), Cycle 2 (MSc), as well as PhD-programmes across a large field from humanities to natural sciences, engineering, and life sciences. The University comprises 8 independent science and study areas with their associated study programmes, which are 7 Faculties and the Maritime Institute. The University also incorporates the Institute of Continuing Studies, which provides a range of qualification training to higher school programmes in the humanitarian and social science fields.

The Maritime Institute is a “study institute”¹ compared with the other research institutes which belong to Klaipeda University. It has the rights of a Faculty in relation to the FTOM and FTO programmes, but the Institute is much smaller than a Faculty in terms of the number of staff and students. It consists of two departments, viz. the Marine Engineering Department and the Navigation Department, and has a research laboratory dealing with air pollution from ships. Presently the total number of students in the Maritime Institute is approximately 150. The Maritime Institute (MI) was established in 1996. It is located in premises belonging to the Maritime Academy, which is not part of Klaipeda University but provides training and other services for professionals in the maritime sector. One reason of convenience for this location is that the MI uses facilities and equipment belonging to the Maritime Academy, in accordance with a formal agreement between the two institutions.

The FTO and FTOM study programmes mainly admit students who have completed the four year Cycle 1 BSc programme “Ship propulsion system equipment operation” at Klaipeda University’s Maritime Institute (KU MI). From 2010 it is also possible to enter either study programme as a graduate of the “Marine power equipment operation” study programme at the Lithuanian Higher Maritime College (LHMC), with additional studies equivalent to 20 national credits.

In terms of overall focus, the FTO programme is a ‘deepening’ Cycle 2 Masters programme with a focus on ship propulsion technologies. The FTOM programme is considered to be a ‘broadening’ Cycle 2 Masters programme following on from the Maritime Institute’s Cycle 1 BSc programme. Both study programmes offer a full-time and a part-time study route, but the length differs between the two programmes. The length of the FTOM programme is equivalent to 80 national credits, duration 2 years (4 semesters) full-time and 3 years part-time. The FTO programme is equivalent to 60 national credits, duration 1.5 years (3 semesters) full-time and 2 years part-time. The FTOM and the FTO programmes were launched on 1st September 1997, and the language is Lithuanian for both study programmes.

¹ See: http://www.ku.lt/eng/about/doc/about_fakulties.pdf

Until 2009/2010 only a 2 year full time study route was offered for both the FTO and FTOM study programmes. As from the academic year 2010/2011, the FTO programme is being implemented as a 1.5 year full-time study mode and a part-time 2 years study mode. This change has been made in order to pursue an integrated Lithuanian marine and seamen education system in close cooperation between the Maritime Institute and the LHMC. The Reviewers have been informed that the FTO programme is officially registered as an 80 national credits programme. Thus the FTO programme in the version of 60 national credits has not yet been officially registered, and during the next three years it must be re-registered.

The year 2010 self-evaluation reports for the FTO and the FTOM MSc programmes were completed by a team at the Maritime Institute between October 2009 and January 2010. Previous assessments for the two study programmes were carried out in 2001 and 2006. During the following years the programmes were improved in accordance with the recommendations of the assessments. Generally the self-evaluation reports give a fair description and evaluation of the study programmes. However, future self-evaluation reports could be much more ‘reader-friendly’, and there are several issues about which the explanations are not clear, e.g. the aim, scope and contents of the study programmes are mentioned several times in the reports without providing a clear picture of what is the actual vision, similarities, complementarities and differences in comparison with the FTO and the FTOM MSc programmes. In addition, several frequently applied acronyms in the text are not explained. Some inconsistencies regarding the terminology might of course result from the translation from Lithuanian into English.

During the Reviewers’ visit no students on the FTO programme were available for interview, and interviews with graduates and employers / social partners provided more information on the FTOM programme than on the FTO programme. Therefore the Reviewers were not able to gain answers to certain questions, and this is reflected in some of the comments, analysis and recommendations presented here.

Overall the Reviewers have found that the FTO staff are doing good educational work which finds a well-accepted acknowledgement by the students, by the graduates, and by the employers. Beside this successful result, the Reviewers could see potential to improve the operation of both the FTO and FTOM study programmes, to admit more students, and to deliver the teaching in a more efficient manner².

² Since the visit of the Reviewers to Klaipeda University on 19/20 October 2010, the following (summarised) information relating to the FTO and FTOM programmes has been communicated to the Reviewers:

On October 26, 2010 an agreement came into force according to which Master degree studies, including the 60 credit „Fleet Technical Operation“ programme will be renewed at Klaipeda University from the 2011/2012 academic year. This is being financed from EU structural funds (2007-2013 human resource development action plan of the 2nd priority of “Life-long learning” VPI-2.2-MES-09-V tool “Study programme development in national complex programmes”). The implementation term of the “Seamen” Project is 3 years. Updating of the programmes and infrastructure, teacher training means and studies of the FTO students enrolled in 2011/2012 and 2012/2013 (with the 60 credit scope officially registered in the LR MES register) will be financed according to the project.

One of the prerequisites of the agreement is the obligation of Klaipeda University “to ensure the continuity of the project (the realisation of the project) not less than 5 years after the implementation of the project activities”. This circumstance excludes the possibility to combine the FTOM and FTO programmes and introduce separate specialisations as it is recommended by the Reviewers.

According to the FTO updating project 4 new subjects which are being developed at the moment will be introduced into the programme:

- “Technologies of ship power plant repair”;
- “Basics of ship diesel scientific research and testing”;
- “Mathematical modelling of ship diesel parameters”;
- “Prevention and abatement of air pollution from ships”.

A new FTO programme plan including 13 subjects has been compiled, where only one subject i.e. “Prevention and abatement of air pollution from ships”, reflecting the major trend of the development of the transport sector, is common with the FTOM programme. In the FTOM programme it is planned to sustain the programme structure

II. PROGRAMME ANALYSIS

1. Programme aims and learning outcomes

1.1. Programme demand, purpose and aims

The self-evaluation report states (on p.6) that for the FTO and the FTOM study programmes:

“Refining and perfecting the Master Degree study programme is carried out in close communication with the social partners (employers), paying attention to their opinions and recommendations, inviting them to Master Degree Theses Defence Commission sittings; the teaching staff and the administration of the KU MI respectively take part in the activity of seamen’s’ professional association and joint projects.

Collaboration with the social partners allows reacting timely to the changing specialist training requirements and market demand.”

and:

“All social partners expressed their strong opinion on the necessity of the programme implementation, emphasising its particular importance for the maritime sector compared to other study programmes of the Technology Science field: training of the highest qualification specialists of maritime transport energetics for work in the maritime sector objects, which are based on the diesel and turbo machinery”.

During the Reviewers meeting with representatives from six social partners, it was confirmed that the FTO/FTOM study programme is generally adequate, and there is definitely a market demand for graduates. Communication between social partners and teaching staff also takes place to some extent. However, there is a wish to involve the employers more regularly and formally on study programme feedback, planning, curriculum design and implementation.

The self-evaluation report rightly points out that the EU transport policy on pursuing strategic development efforts provides a driver for the study programmes to enhance the efficiency and effectiveness of energy usage. This implies a general increase in the demand for maritime transport specialists in the energy efficiency of propulsion machinery (“energetics”) field. Highly qualified technical specialists of this profile in Lithuania are exclusively educated at the KU Maritime Institute.

The Reviewers also confirm that the interest of social partners in programme implementation is very positive as stated in the self-evaluation reports (on p.6):

“together with Klaipeda University facilities, learning and teaching resources technical specialists and managers of high qualification potential employers’ – marine complex subjects and classification companies- are involved in the process of the realisation and pursuance of the programme; a collaboration agreement has been signed between KU Maritime Institute and SC “Western Ship Repair Yard”; coordinated participation of classification company „Det Norske Veritas“ in the programme realisation, etc.”

In order to improve the quality of the study programmes, the Maritime Institute stated that they regularly carry out surveys of graduates, encouraging them to express their attitudes and indicate weak points and limitations of the study process, and present their suggestions for improvements. The received data is systemised and discussed at the meetings of the Academic Board of the MI, where relevant means for improvement are planned and applied.

but decrease the number of subjects and to exclude 3 subjects, which are alternative to or duplicate the FTO programme. All other subjects in the FTO programme are devoted to deepening of the students’ theoretical knowledge and practical skills and are original. In comparison with the widening FTOM programme the subjects: “Research work. Stage 1“, „Research work. Stage 2“ and „Master of Science theses“ have got formally common titles but during the studies students study individual topics and solve individual problems.

The Reviewers consider that the KU FTO MSc study programme is broadly comparable with similar MSc programmes at international level.

The self-evaluation report states that the motivation to educate students in the fields of “Fleet Technical Operation” and “Fleet Technical Operation Management” at Klaipeda University mostly results from the demand of the maritime industry of Lithuania (see quotations above). Also international enterprises and institutions like “Det Norske Veritas” are supporting this study programme. Interviews with graduates and employers have clarified that the extent of job opportunities in the shipyard and maritime industry in the Klaipeda region seems to match the relatively limited number of annual graduates from the FTO and FTOM programmes; therefore it can be concluded that the demand and purpose are clearly justified.

The self-evaluation report explains (on p.7) that the FTO programme is a ‘**deepening**’ programme with the aim to educate “*specialists of high qualification, scientific workers, managers of technical services for the maritime complex with the competences of marine power equipment operation planning, organisation, operation and development aspects*”. The FTOM programme in comparison is a ‘**broadening**’ or ‘**expanding**’ programme with the aim to educate “*specialists for maritime complex companies, institutions and administration bodies, which economy is based on energy diesel and turbo propulsion plants and the environmental and alternative energy aspects of their operation*”.

Thus the purpose of the FTO and FTOM Master Degree study programmes is to provide shipping, ship building and ship repair companies, administration bodies as well as research and design institutes and centres with highly qualified engineers within the field of turbo- and diesel-based propulsion techniques (“energetics”). The aim of the FTOM programme is to broaden the knowledge of the students with a view to systemic, environmental and management issues, whilst the FTO aims at deepening the technological qualifications acquired in the preceding Cycle 1 BSc programme studies.

However, the FTO and FTOM self-evaluation reports as well as the programme descriptions have not presented a clear vision regarding the future aims of the two programmes within the Maritime Institute. Educational programmes at a university level need a link to research, which has been or is being successfully carried out by professors and researchers of the Maritime Institute in the sustainable solutions field. As an example, student projects could be linked to successful research e.g. on emissions and energy usage reduction. Thus the study programmes should have a strong focus on emission reductions, energy efficiency, maritime safety, and environmental protection. “Sea is the future”, because global progress is mainly based on good performance and well managed sea transport technologies. Such focus will be in accordance with EU strategic policy and would also enhance the international employment potential.

1.2. Learning outcomes of the programme

The Programme learning outcomes (mostly the same for the FTO and the FTOM programmes) are clearly explained in Table 4 of the self-evaluation report under 4 headings: A Knowledge, B Cognitive competences, C Practical competences, and D Transferable competences, and the self-evaluation report describes (on p.10) how the “*comparative analysis verifies their compliance with the highest 7-8 level of qualification requirements described in the EU qualification chart*”. However, there is no summary or table showing how learning outcomes from individual modules (called “Courses” in Appendix 3.1 of the self-evaluation report) are distributed between modules, or integrated to meet the overall programme learning outcomes. Coherency between the programme learning outcomes and the module learning outcomes is therefore not confirmed. The Reviewers recommend that this is addressed by the Programme Management Team.

Several modules are shared between the FTOM and FTO programmes. The Reviewers recommend that the learning outcomes of the two study programmes (ref. Table 4 in the self-evaluation reports) are explained more briefly and specifically, and that a matrix table is presented to indicate the links between the modules and the formulated outcomes (divided into

“knowledge”, “cognitive competences”, “practical competences” and “transferable competences”). The particular points in Table 4 of the self-evaluation reports applying to the FTOM (A1, C1-C2) should be better justified and clarified in comparison with A1, C1-C2 of Table 4 of the FTO. The codes A2, B1-B2, C3-C5 and D1 are identical for the two study programmes; they are generally formulated and could be shortened.

Learning outcome A “Knowledge” should cover both ‘Knowledge’ and ‘Understanding’. Additionally the learning outcomes does not include one element which the Reviewers considered to be essential for an MSc (Cycle 2 programme), viz. communications skills. The Reviewers recommend that communication, in written and verbal form, should be specifically included in ‘Transferable competences’ (D). This learning outcome would, for example, be addressed by a language module, an ICT module, or by a module which involves teamwork (although teamwork is not specified as such, C5 includes the ability to “*organise collective work in a structural unit, considering motivation of the staff etc....*” which is good, although this also needs communication skills).

One of the differentiating features between Cycle 2 graduates and Cycle 1 graduates is their ability to critically review and evaluate not only their own work, but that of others as well. This is clearly specified in B2 – excellent practice - but the Reviewers believe that the principles of critical review and evaluation should be developed across all categories of learning outcomes A – D and specified as such. However, the Reviewers would wish to see more evidence of discussion and reflection in final project dissertations. The Reviewers were pleased to see project planning and management explicitly mentioned in the learning outcomes in Table 4.

The FTO programme appears to be generally consistent in terms of distribution of the learning outcomes (although as previously mentioned these are not explained). The technological aspects of alternative propulsion systems and energy sources are integrated and reflected in the detailed module (study subject) descriptions. The technical scope of the FTO programme appears to be addressing a relevant but narrow field of ship design, i.e. focusing on technical solutions to maritime transport energetics based on diesel and turbo machinery. A widening scope could be considered in relation to the overall technology of naval architecture.

Comments:

It is difficult to review a programme effectively where there are no students to interview. Considering the small number of students and the limited technological scope of the FTOM and FTO programmes, two programmes, one at 80 national credits and one at 60 national credits, are not justified.

The Reviewers considered that the implementation of Learning Outcomes in the FTO programme is weak and should be developed to a more comprehensive standard. It meets the established minimum requirements, but needs improvement.

Recommendations:

The FTOM and FTO programmes should be reviewed for merging into one MSc programme with two specialist branches. The FTO branch should then be upgraded to 2 years and 80 national credits.

The strategic vision of the FTO programme, and the aims and needs of the FTO and FTOM study programmes, should be clearly articulated and reflected in the programme description. The aims and objectives of the programme should be reviewed, in order to clarify the similarities, differences and complementarities in the scope and content of the FTO and FTOM programmes. The FTO programme should be directed towards future challenges e.g. related to emission reduction and energy efficient propulsion techniques. This could also attract a larger annual student intake and ensure better employment opportunities for future graduates.

The implementation of Learning Outcomes in the FTO programme is weak and should be developed to a more comprehensive standard.

Coherency between the programme learning outcomes and the module learning outcomes should be developed and improved by the Programme Management Team. Communication, in written and verbal form, should be specifically included in 'Transferable competences' (D).

2. Curriculum design

2.1. Programme structure

The overall study volume appears adequate. Both the FTOM programme and the FTO programme have a workload of 40 national credits (1600 hours) per year. The FTOM programme covers 80 national credits (3200 hours), but the FTO programme covers only 60 national credits (2400 hours). Whilst this is within national standards, the Reviewers recommend that (a) the FTO programme is re-registered as 60 credits (it appears to be currently registered as 80 credits), and (b) the differences between a 60 credit MSc and an 80 credit MSc is clearly explained in terms of graduate competences and learning outcomes. The current implication is that there is no difference; both study programmes conform to the legal requirement of 60 national credits being defined as a necessary minimum effort for Master Degree study programmes, see remark in Section 2.2. However, in this special case the full-time FTO programme can be considered a subset of the full-time FTOM programme in regard to the modules of each study programme, see Table 5.1 and Appendix 3.1: "Study subject descriptions" in each of the two self-evaluation reports.

13 out of 17 subject modules of the FTO programme are shared between the FTO programme and the FTOM programme, and an additional 2 out of 17 subject modules are quite similar with regard to content. The workload of the two study programmes is equivalent for both the work stage-2 research and the final Master Degree dissertation. The difference of workload between the work stage-1 research of the two programmes is only 1 national credit, i.e. 4 credits instead of 5 credits. As a consequence, the Reviewers could not accept that the FTO programme has the potential of an additional educational offer in comparison with the FTOM programme.

For the FTO programme, the 3rd semester (full-time) is fully devoted to preparation of the final dissertation. Lecturers will give regular consultations (tutoring) to the students in connection with their independent work, but teachers' workload hours for this purpose is not specified in the self-evaluation report.

According to the self-evaluation reports of the FTO programme and the FTOM programme, the annual number of students entering each of the study programmes was 9-10 during the last 3-5 years. During the Reviewers' interview with staff responsible for preparation of the two self-evaluation reports, they gave the additional information that the number of students has recently declined. In order to ensure a satisfactory attendance at the course lectures (minimum allowed number of students in a class is 8 and maximum number is 30), in 2010 students have only been admitted to the FTOM programme, none to the FTO programme.

The above general remarks also apply to the part-time studies for the two study programmes.

The consistency of the study subjects appears to be reasonable. However, (as commented on in Section 1.2) neither of the self-evaluation reports of the FTO and FTOM study programmes presents a matrix table indicating how the study subjects, as listed and scheduled in Table 5.1 and Table 5.2, are related to the learning outcomes as presented in Table 4. Such an indication would have been helpful.

The lists of final dissertations for the FTOM and FTO programmes reveal that the difference in scope and focus of the two programmes is not clearly reflected in the titles and topics of the

theses. Furthermore, a few of the theses seem to fall outside the ship propulsion systems field, such as a dissertation on railway propulsion.

2.2. Programme content

The new directions and subjects as reflected in EU policy on energy efficiency, maritime safety and environmental requirements are well integrated into the module descriptors of the study programme. Some modules (study subject “course” descriptions) are very wide with regard to content. This could mean that the students could find it difficult to follow the lectures, either to understand the subject matter, or if the information density is low. However, during the interview with students no particular concern was expressed on this issue.

The Reviewers’ interview with graduates confirmed that the programmes provide the graduates with a good knowledge background, also enabling them to shift to related technological areas, but it was not clear how much this related specifically to the FTO programme. The graduates recommended that the possibilities for international exchange of students (e.g. through the ERASMUS programme) should be encouraged, and the Reviewers agree with this recommendation. Graduates and employers recommended that the students’ work and projects could usefully be based upon a real-life problem in the maritime industry.

The Reviewers’ impression was that the structure and methodology of the Master Degree dissertations (final dissertation papers) should be more clearly defined, and that the students should be encouraged to present more discussion and reflection in the final project dissertation.

The complementarities and differences in scope and content between the FTO programme and the FTOM programme need to be clarified. The social partners listed in the self-evaluation report and the student intake qualifications and sources are the same, i.e. 1) KU MI 4 year Cycle 1 (BSc) study in “Ship propulsion system equipment operation”; and 2) graduates from the Lithuanian Higher Maritime College (LHMC) basic studies on “Marine power equipment operation”. It should be clarified how the difference in pre-qualifications concerning “*the basic theoretical knowledge*” acquired between students from these two programmes is taken into account and coordinated in the entry stage of the FTO programme. The self-evaluation report for the FTO programme states that additional 20 national credits are required for the LHMC graduates, but this requirement is not indicated in the report for the FTOM programme. It is not clear if it is for the purpose of preparation for a ‘deepening’ programme, or for satisfying prerequisites.

As already mentioned, the FTO and FTOM programmes are much related in terms of outcome and overlapping employment opportunities. As a consequence the text of the two self-evaluation reports is identical for the main parts. A combination of the two existing programmes into one study programme with technology and management specialisation possibilities would be beneficial in terms of promoting the programme to students and industry, and it could enhance the efficiency on study programme management, staff and resource utilisation. As an implication, the FTO programme would need to be expanded from 60 to 80 national credits to be harmonised with the schedule and status of the FTOM programme.

Eventually a comprehensive merge of the FTO and FTOM programmes with the 2-year Master Degree study programme on “Naval Architecture and Marine Engineering” (ship design) could perhaps be considered. The “Naval Architecture and Marine Engineering” programme is supervised by the Ship Engineering Department located at the Maritime Faculty of KU. The Ship Engineering Department is in a unique position, being the only scientific institution in Lithuania educating students in the field of maritime transport engineering, and modules of the FTOM and FTO programmes could be included in the form of specialisations on ship propulsion systems and energy efficiency. For this reason, the attendance by students to relevant courses from different class lectures could be increased as well. Moreover, a widened Master Degree study programme on “Naval Architecture and Marine Engineering” with different pathways,

including FTO and FTOM specialisations, could get the same level with regard to contents as comparable Master Degree study programmes of leading international Universities.

Comments:

Overall the Reviewers observed that the area of curriculum design meets the established minimum requirements, but needs improvement, in particular to clarify the relationship between the FTOM and the FTO programmes in terms of the curricula of these two programmes. In relation to the curriculum design, the Reviewers recommend as follows:

Recommendations:

The curriculum design should be reviewed and improved. The full-time FTO programme looks like a subset of the full-time FTOM programme with regard to the modules of each study programme. Therefore the need for two study programmes with a high degree of shared content within the Maritime Institute should be re-considered with a view to developing one programme in e.g. “Maritime Transport Organisation” including ship propulsion techniques and with two major pathways: Management and Technology. In this way, the attendance of adequate lectures by students from different Master Degree study programmes could be improved, and the demand for the courses could be improved as well.

The integration of FTO and FTOM as a specialisation branch in the KU study programme on Naval Architecture and Marine Engineering should be considered. An extended Master Degree study programme on “Naval Architecture and Marine Engineering” with different pathways, including the specialisations represented by the FTO and FTOM programmes, would then ensure the same level as the content of comparable Master Degree study programmes of leading international universities.

3. Staff

3.1. Staff composition and turnover

The teaching staff at the Marine Engineering Department comprises 16 full-time lecturers, 3 visiting lecturers, and 3 technical staff (lab technician, IT specialist, and chemical lab engineer). The majority of the teaching staff is involved in both the FTOM programme and the FTO programme. The full-time staff composition involves 3 professors, 6 associate professors, and 7 “lectors” (assistant professors etc.). Although the majority of the students are male, there is a good representation of females in the teaching staff. Lecturers from the Ship Engineering Department of the Maritime Faculty of KU contribute to the staff. The staff also includes 3 PhD (doctoral) students.

Staff turnover is low. This is good for continuity but not for updating of the competence and qualification profile of the staff, and as a consequence the average staff age is growing. Presently only 4 out of 16 lecturers are below the age of 40 years, only 5 lecturers are younger than 55 years, and 6 are above 60 years (ref. Appendix 3.2 to the self-evaluation report). The Maritime Institute should be encouraged to include more young lecturers and researchers (male and female) in the permanent staff in order to obtain a more sustainable age and competence profile.

3.2. Staff competence

Out of the total of 16 lecturers involved in the study programme, 10 have full professor status and/or a doctoral (PhD) degree. This reflects a solid, well-qualified and highly professional competence of relevance to the study programme. Significant research activities are, however, missing for some of the teaching staff (including associate professors), although research is one of the ways for improving personal qualification. The students commented that most of the lecturers have experience from the industry, which is very beneficial.

The Reviewers wish to encourage the staff to encourage and help students to get more work experience in local industry e.g. by work-based projects for students. This would be a 'win-win-win' situation, as students would get more experience in practical applications of theory, the teaching staff would get a more effective industry contact including applied research projects, and the industry would gain more experienced graduates to employ.

According to the self-evaluation report, the teaching staff has been involved during the last 3 years in scientific research in 17 international projects and commercial agreements (e.g. EUREKA, PHARE, Leonardo da Vinci, Interreg IIIa). The list of main scientific publications of the lecturers is generally sufficient, but most of the papers were published in local or national journals in Lithuanian only. Because the international publication language is English, these papers will not be read outside Lithuania. The missing presence and recognition in international journals of the activities in the Lithuanian fleet (maritime) technical operation field may also lead to a low attractiveness of the KU to international students. Staff should be encouraged to increase their level of research publication and to publish more in English.

Comments:

The Department's staff have developed systematically over many years and have some distinctive features including a strong practical background in a vitally important technological area. However, some staff development is required in the areas of research track record and achievement, international mobility, and English language capability.

Recommendations:

More emphasis is required on staff development in the areas of research track record and achievement, international mobility, and English language capability.

The Maritime Institute should be encouraged to include more young lecturers and researchers (male and female) in the permanent staff, in order to obtain a more sustainable age and competence profile.

4. Facilities and learning resources

4.1. Facilities

The premises for student teaching, learning and support appear to be sufficient and suitable in general. The self-evaluation report states that for subject studies and theoretical classes the students work in groups of 8-10, and the maximum number of students in practical classes is 30. In each case good learning conditions are provided.

The Reviewers' primary concern was about the limited opening hours of the library which appeared to close at 5 or 6 p.m. each day, but the students were not dissatisfied with the present arrangement. They said that the information and the material provided by the lecturers were sufficient enough to pass examinations highly successfully.

Computer software is available in computer rooms / laboratories. As a priority the computers are used for exercises, project work and self-study based on Microsoft Office as standard. The available computers and workstations allow the application of commercially available Computer-Aided Engineering (CAE) software as well as promoting computer-based learning. The last mentioned task is encouraged by the use of commercial software for CAD e.g. by using software to collect and analyse data from experiments, or by applying tools for numerical simulation of selected scientific questions regarding combustion processes in diesel engines. Computers as well as software seem to match the required standard and capacity both in terms of quality and quantity.

The laboratory equipment of the Maritime Institute includes basic teaching equipment and up-to-date (state of the art) computer controlled facilities. The basic equipment has a high educational

value for fundamental studies, and therefore it is used (and needed) for practical training, with the aim to deepen the understanding of elementary theoretical models which are presented and discussed in lectures. Such devices are often capable to analyse one physical parameter only.

There are many reasons for introducing students to using highly sophisticated laboratory equipment. One typical task is to make students familiar with experimental methods which require the monitoring of more than one parameter at a time. In addition, students have to learn both to calibrate sophisticated computer controlled instruments and to reflect on measured data. Last but not least, students also use such equipment directly for experimental studies of physical phenomena, in order to solve scientific questions e.g. regarding their Master Degree dissertation.

The laboratories belong to the Maritime Institute and for some equipment to the Maritime Academy. Most of the laboratories are very modern and in a good condition.

Well-equipped computer laboratories can be used by the students for self-studying, exercises etc. beyond curricular activities. It is also possible for students to use laboratories for additional experimental work in order to deepen their understanding of theory. For security reasons, the head of the particular laboratory has to be informed about the intended activities early enough.

The Reviewers were satisfied that the modern laboratory equipment of the Maritime Institute, which they inspected, corresponds to EU quality standards for university facilities and is available for use by students. Some of the equipment is portable, which also increases the possibilities of use e.g. for final projects.

4.2. Learning resources

The library of the Maritime Institute has a sufficient stock of textbooks, journals as well as methodological papers mostly published by the teaching staff. The available textbooks and methodological papers are for the main part in Lithuanian, and some in Russian or English. The methodological papers and manuals are normally available in electronic form as well. The conditions for borrowing at the library are known by all users; and they are comparable with the rules in similar libraries in departments in other European universities.

Books, textbooks, periodical publications and other written material, which are available from the library of the Maritime Institute during opening times, are suitable for the FTO programme. This includes high-quality material prepared by the lecturers in Lithuanian. However, the subjects within the FTOM programme are highly influenced by global progress so with this in mind, the Reviewers recommend that the library of the Maritime Institute is supported to increase available international literature.

Comments:

The area of facilities and resources has developed systematically and has distinctive features. The Reviewers were satisfied with the modern laboratory equipment of the Maritime Institute.

Recommendations:

The library resources and opening times should continue to be developed to enhance the learning support for the students.

Links between research facilities and resources and the delivery of the MSc programme should be made more clearly evident.

5. Study process and student assessment

5.1. Student admission

The annual total number of admitted students to the FTO and FTOM study programmes during 2005-2009 has been stable, i.e. around 9-10 students annually. Due to the relatively low number

of admitted students as well as the demographic change in Lithuania, there is a high risk for the student intake to fall below the minimum required number. On the other hand there is now a legal basis for an increase of admitted students.

Presently 17 students follow the FTOM and FTO programmes, distributed with 11 students on the 1st year and 6 students on the 2nd year of the programme. In 2010 only 3 students wanted to start on the new version of the FTO programme, and they were transferred to the FTOM programme because a minimum of 5 students is required for implementing a study programme. The requirements for admission to the study programme appear to be rational and clearly drafted in the self-evaluation report. However, as mentioned in Section 1.2, the specific difference in admission requirements between the FTO programme and the FTOM programme is not clear. No FTO students were available for interview by the Reviewers.³.

It was noted that the Maritime Institute had expected an increase in student intake, since the admittance of LHMC graduates has been made possible and the part-time study was introduced, but this has not as yet had a positive effect on the intake.

There appear to be some factors which need to be resolved to improve admission to the FTO programme. These are especially the fee, the social constraints of Lithuanian students, limited publicity and promotion of the study programme by internet for example, and missing international offers to foreign students to visit the study programme and the Maritime Institute. Some of these factors stem from the current economic situation of Lithuania, but in some cases there are opportunities for change by individual initiatives, and the Reviewers recommend that these are followed up.

5.2. Study process

As already mentioned in Section 2.1, the FTO programme appears to be a subset of the full-time FTOM programme as regards the modules of each programme. The total number of students, who have been enrolled in both study programmes, is relatively low. Thus the Reviewers could not see that it make sense to offer some modules for one programme in the spring semester and for the other programme in the autumn semester. Examples are “Offshore technology and equipment and course project”, “Marine transport and the environment”, “Diesel engine chemistry”, “Air pollution from ships diesel abatement technologies and course project”.

The Reviewers also noted that a large part of the lecturers’ “non-contact” hours appear to be spent on the regular tutoring (as supervisor) of the students on their Master Degree dissertations. This is a positive necessity. The tutoring hours of the lecturers devoted to students’ scientific research and preparation of the final paper are regulated by the order established at KU and the meetings with students are systematically arranged according an approved time-table.

Most MSc programme students need to work up to 8 hours a day to cover their living costs and their fees. As a result, students following the study programme normally work during the day in order to cover their costs. Therefore they generally start attending their lectures on working days at 5 p.m. This means that students complete their full-time study parallel to their jobs. The harmonisation of both tasks requires a strong self-discipline as well as high performance of the students.

³ Since the visit of the Reviewers to Klaipeda University on 19/20 October 2010, the following information relating to the FTO and FTOM programmes has been communicated to the Reviewers:

“During the additional enrolment on the second half of October 2010 the number of applicants increased from 11 to 17. This justifies the KU MI strategy of enlisting the graduates of the Lithuanian Maritime Academy (LMA) to the Master Degree studies to increase the number of students. The extramural studies of the programmes have also proved to be expedient. All six additionally enrolled students, graduates of the LMA of 2009/2010, chose the extramural study form. On the basis of this and also taking into account the additional state financed study places according to the “Seaman” project it can be stated that in the 2011/2012 academic year the planned enrolment to both FTOM and FTO study programmes will be achieved.”

There is high potential for improvement in the mobility of lecturers and students. Lecturers have the opportunity to take a sabbatical semester in order to improve their international experience as well as their industrial competence.

5.3. Student support

During the Reviewers' interview with the (FTOM) students they confirmed that they get active personal support by the lecturers. This includes the preparation of teaching material made available in the library, and the willingness of most of the lecturers to help even outside working hours, and the Reviewers assume that this is the same for FTO students. However, the dialogue with the students as well as the information presented in the self-evaluation report also made it clear that international activities including student exchange obviously get a low priority in this Master Degree study programme. One of the students spontaneously remarked: "It would be great to have foreign lecturers!" This has apparently happened only once in the past, from a visiting professor.

Students explained to the Reviewers in relation to the fee level that "they don't know what will happen next year". They do not have reliable information from the (university) administration from one year to the next.

Social support is very important to ensure favourable study conditions. The Marine Engineering Department of the Maritime Institute does have the possibility to fund students in proportion to the number of state financed grants. However, the grant fund has been gradually reduced during the last years, and, according to the self-evaluation report, no grants have been awarded since 2009. It could be discussed how the student intake could be increased and stabilised, considering the capacity of the staff and other resources available. As the number of enrolled students has also declined, the Maritime Institute should find ways in cooperation with its social partners to increase the grant fund for students again.

For the FTO programme there should be a follow-up on how the impact of student living costs, and limited scholarship opportunities, affect the admission of students. It is also not proved how and to what extent the introduction of part-time studies could ensure a stable and maybe growing student intake.

5.4. Student achievement assessment

The ten point scale for the student's achievement assessment and the applied accumulative assessment system provide a good basis for an assessment. The students are informed about the final project criteria, and these are useful and comprehensible. However, the Reviewers recommend a follow-up on the strengthening of the methodology and structure of the final dissertation.

Students appear to get comprehensive feedback in regular meetings with lecturers in each semester. The results of examinations are publicly announced on the notice board. Good achievements of students have been recognised in the past, e.g. the Marine Institute has awarded grants to students with excellent results.

The final dissertation assessment is based on the outcomes of the project including the relevance of the topic of the subject, ground-breaking ideas, compatibility of results and conclusions. The assessment of the Master Degree dissertation is focused on the presentation of the main subjects of the dissertation, also involving the performance of the student during the defence.

Based on the description in the self-evaluation report, the specific assessment procedure for the final dissertation is difficult to understand. The self-evaluation report indicates that the responsibility lies with the State Examination Commission (SEC) (page 25), although from discussion with the staff it was indicated that the defence is assessed by 2 persons, one of which can be external. The Commission, which is responsible for the assessment of both the final dissertation and the defence, is approved by the Rector of the University. The Commission

consists of 5 to 7 established scientists who are professionals, specialists of high professional level, and lecturers of the Klaipeda University. The personal composition of the Commission should ensure an objective assessment of the final dissertation. Representatives from the social partners (employers) are invited to participate in the Commission. The structure of the Masters dissertation appeared to vary between dissertations, suggesting that it was perhaps not clearly specified to the students, and the assessment criteria were not specifically identified in an accompanying marking scheme; the Reviewers had no information on how marks were awarded for component parts of the projects and dissertations.

The Reviewers were unable to comment on any system for assessment and recognition of achievements acquired in non-formal and self-education, because there was no evidence of this either in the self-evaluation report or from the meetings undertaken. It would appear that this is a topic which would benefit from direction at a national level; it has become important in many other European countries over the last 10 years.

5.5. Graduates placement

The potential demand for educated graduates is based on regional development trends.

The majority of the graduates interviewed by the Reviewers got a job in the shipbuilding industry after finishing their FTO or FTOM programme studies. Although some of the graduates explained that they primarily finished the MSc. programme for themselves, all of them confirmed the usefulness of the degree. The main value was that “they learned how to learn with greater depth”. The interviews with social partners also confirmed the statement presented in the self-evaluation report (on p.25) that *“the Master Degree study programme assures good theoretical and practical preparation of graduates”*.

Comments:

The study process and student assessment of the MSc programme in Fleet Technical Operations at KU meets the established minimum requirements, but it is lacking in evidence for any higher rating and therefore needs improvement. The Reviewers would like to see improvements to the admission procedures, clarity in terms of fees, increased social support, and international support (ERASMUS, languages) for the students, and strengthening of the methodology and structure of the final dissertation.

The Masters dissertations are generally of good quality.

Recommendations:

More students must be admitted to the FTO programme if it is to meet its aims and objectives. The Programme Team should follow-up on how variations and uncertainty on fees, the impact of student living costs, and limited scholarship opportunities affect the admission of students.

The Maritime Institute should encourage staff to help students to get more work experience in local industry e.g. by work-based projects for the students. This would be a ‘win-win-win’ situation – students get experience, staff gets more industry contact and external projects, and the industry is offered more experienced graduate employees.

The Maritime Institute should strongly encourage and enhance the international mobility and exchange of students and teaching staff. More students and staff from outside Lithuania should be encouraged to visit and participate in the study programme as well.

The structure for the final paper of the Masters dissertation should be strengthened and assessment criteria should be made more specific. There should be more discussion and reflections in the final project report in relation to the applied models and methodology, and about the findings and conclusions.

6. Programme management

6.1. Programme administration

The programme management description in the self-evaluation report is rather general, and, except for specific figures, the text is identical for the FTO and FTOM programmes. The presentation of the practical organisation / management structure shows that there is less transparency regarding the roles and responsibilities for example of the Academic Board of the Maritime Institute, the study programme coordinator, the supervisor for students' final theses, and the "Examination Commission" or "Dissertation Defence Committee". The jurisdiction of each executive level is diffuse. Because there were no students for the Reviewers to meet with, the programme management could not be reviewed as anything more than meeting the established minimum requirements.

There is a separate study programme coordinator for FTO and FTOM respectively. The coordinator of the Master Degree study programme is appointed by the Senate of KU, by the Rector's order.

There is no specific committee at the Department or study programme level with the task to implement, assess, review and develop the study programmes; for instance such a committee could be headed by the programme coordinator and include representatives of academic staff, employers and maritime associations, and students.

The Reviewers recommend that closer relationships with the study programme of Naval Architecture and Marine Engineering at the Maritime Faculty of KU should be pursued.

6.2. Internal quality assurance

The programme quality evaluation was suitable only to get a broad overview on the study programme and the programme management with no student input. The Maritime Institute said it carries out surveys of the graduates regularly (the latest one was done in October 2009) in order to hear their views and suggestions about improvement of the study programme. The involvement of graduates and employers into this process is said to have been very helpful.

As also mentioned in Section 6.1, the coordinator (= "supervisor") of the Master Degree study programme is appointed, as described in the self-evaluation report, "*by the Senate provision by the Rector's order*".

There is obviously potential to improve the programme quality. For example, students (from the FTOM programme) criticized the absence of feedback on their suggestions of how to improve the study programme, and they would like to have feedback in meetings with lecturers and through the module evaluation processes.

The self-evaluation report indicates that good and efficient contact is established with the industry and potential employers of the graduates. This also ensures regular feedback to the study programme. Discussion with graduates suggested that so far there appears to be no formal feedback discussion arrangement relating to the study programme between staff and graduates. Within the last year the exchange of information between staff and employers has improved. However, both graduates and employers (social partners) recommended that the contact and exchange of information with the teaching staff should be more regular and formalised (ref. also the statements of the self-evaluation reports presented in Section 1.1).

The external stakeholders (graduates and employers) have repeatedly expressed their willingness, too, to bring in their practical experience and competence into the further progress of study programmes of the Maritime Institute. External stakeholders and employers told the Reviewers about their good experience regarding cooperation with some academic staff. They provide lecturers with current engineering tasks which appear in their companies, societies and public institutions. Often these tasks provide the basis for student projects or Master Degree

dissertations. The social partners are fulfilling a commensurate contribution to the advanced training of lecturers, as well as to the education and practical training of students.

Comments:

The programme management meets the established minimum requirements, but it is lacking in evidence for any higher rating and therefore needs improvement. In particular the Reviewers would like to see more student admissions to the programme, clarity in the programme management and the university management relating to the programme, and more formal engagement with stakeholders, all of which will help to improve the relevance, value, and quality of the FTO programme. The Reviewers found a great willingness among employers as well as graduates to be more involved in design and implementation of the study programmes.

Recommendations:

Develop a clearer programme management and clarify the university management relating to the programme. The programme management structure should be made more clear and transparent, including a specification of responsibilities and an effective involvement of internal and external stakeholders in a more formal way.

Take action to improve student feedback procedures and practice.

Pursue and enhance the cooperation, and facilitate more formal engagement with stakeholders, all of which will help to improve the relevance, value, and quality of the FTOM programme.

III. RECOMMENDATIONS

Programme aims and learning outcomes:

1. The implementation of Learning Outcomes in the FTO programme should be clarified and developed to a more comprehensive standard.
2. The FTOM and FTO programmes should be reviewed for merging into one MSc programme with two specialist branches. The FTO branch should then be upgraded to 2 years and 80 national credits.
3. The strategic vision of the FTO programme, and the aims and needs of the FTO and FTOM study programmes, should be clearly articulated and reflected in the programme description. The aims and objectives of the programme should be reviewed, in order to clarify the similarities, differences and complementarities in the scope and content of the FTO and FTOM programmes. The FTO programme should be directed towards future challenges e.g. related to emission reduction and energy efficient propulsion techniques. This could also attract a larger annual student intake and ensure better employment opportunities for future graduates.
4. Coherency between the programme learning outcomes and the module learning outcomes should be developed and improved by the Programme Management Team. Communication, in written and verbal form, should be specifically included in 'Transferable competences' (D).

Curriculum design:

5. The curriculum design should be reviewed and improved. The full-time FTO programme looks like a subset of the full-time FTOM programme with regard to the modules of each study programme. Therefore the need for two study programmes with a high degree of shared content within the Maritime Institute should be re-considered with a view to developing one programme in e.g. "Maritime Transport Organisation" including ship propulsion techniques and with two major pathways: Management and Technology. In this

way, the attendance of adequate lectures by students from different Master Degree study programmes could be improved, and the demand for the courses could be improved as well.

6. The integration of FTO and FTOM as a specialisation branch in the KU study programme on Naval Architecture and Marine Engineering should be considered. An extended Master Degree study programme on “Naval Architecture and Marine Engineering” with different pathways, including the specialisations represented by the FTO and FTOM programmes, would then ensure the same level as the content of comparable Master Degree study programmes of leading international universities.

Staff:

7. More emphasis is required on staff development in the areas of research track record and achievement, international mobility, and English language capability.
8. The Maritime Institute should be encouraged to include more young lecturers and researchers (male and female) in the permanent staff, in order to obtain a more sustainable age and competence profile.

Facilities and learning resources:

9. The library resources and opening times should continue to be developed to enhance the learning support for the students.
10. Links between research facilities and resources and the delivery of the MSc programme should be made more clearly evident.

Study process and student assessment:

11. More students must be admitted to the FTO programme if it is to meet its aims and objectives. The Programme Team should follow-up on how variations and uncertainty on fees, the impact of student living costs, and limited scholarship opportunities affect the admission of students.
12. The Maritime Institute should encourage staff to help students to get more work experience in local industry e.g. by work-based projects for the students. This would be a ‘win-win-win’ situation – students get experience, staff gets more industry contact and external projects, and the industry is offered more experienced graduate employees.
13. The Maritime Institute should strongly encourage and enhance the international mobility and exchange of students and teaching staff. More students and staff from outside Lithuania should be encouraged to visit and participate in the study programme as well.
14. The structure for the final paper of the Masters dissertation should be strengthened and assessment criteria should be made more specific. There should be more discussion and reflections in the final project report in relation to the applied models and methodology, and about the findings and conclusions.

Programme management:

15. Develop a clearer programme management and clarify the university management relating to the programme. The programme management structure should be made more clear and transparent, including a specification of responsibilities and an effective involvement of internal and external stakeholders in a more formal way.
16. Take action to improve student feedback procedures and practice.
17. Pursue and enhance the cooperation, and facilitate more formal engagement with stakeholders, all of which will help to improve the relevance, value, and quality of the FTOM programme.

IV. GENERAL ASSESSMENT

The study programme *Fleet Technical Operation* (state code – 62403T101) is given positive evaluation.

Table. *Study programme assessment in points by evaluation areas.*

No.	Evaluation area	Actual score
1	Programme aims and learning outcomes	2
2	Curriculum design	2
3	Staff	3
4	Facilities and learning resources	3
5	Study process and student assessment (student admission, student support, student achievement assessment)	2
6	Programme management (programme administration, internal quality assurance)	2
	Total:	14

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

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

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

4 (very good) - the area is exceptionally good

Grupės vadovas:

Team leader:

Prof. Andrew Day

Grupės nariai:

Team members:

Assoc. Prof. Jørgen Kristiansen

Prof. Mathias Paschen

Prof. Andrzej Reński

Dr. Vaidas Liesionis