NOKUTs tilsynsrapporter

Maritime Operations

Western Norway University of Applied Sciences, joint degree with Hochschule Emden/Leer

February 2017

NOKUT

NOKUT (Norwegian Agency for Quality Assurance in Education) is the controlling authority for educational activity at all Norwegian higher educational institutions. This is achieved, among other, through accreditation of new study programs. Institutions that provide higher education have different authorization to create new study programs. If an institution want to create a provision outside of its field of authorization, it must apply to NOKUT for accreditation.

Institution:	Western Norway University of Applied Sciences, joint degree with Hochschule Emden/Leer
Name of Educational Provision:	Maritime Operations
Degree/Credits	Master/120 ECTS
Mode of Delivery	Session based full-time study
Expert Committee:	Professor Pentti Kujala Professor Bjørn Egil Asbjørnslett
Date:	09.02.2017
Case Number:	16/01035

Introduction

The external quality assurance performed by NOKUT consists of evaluating the institution's quality assurance systems, accreditation of new provisions and revision of accredited provisions. Universities and university colleges have different self-accrediting powers. For an institution without self-accrediting powers to establish a provision in a certain cycle an application must be made to NOKUT.

Hereby NOKUT presents the accreditation report of master's degree in Maritime Operations at Western Norway University of Applied Sciences, joint degree with Hochschule Emden/Leer. The expert evaluation in this report is part of the accreditation process following the institution's application for accreditation of submitted before the application deadline on 15. September 2016. This report clearly indicates the extensive evaluation performed to ensure the educational quality of the planned educational provision.

The master's degree in Maritime Operations at Western Norway University of Applied Sciences, joint degree with Hochschule Emden/Leer fulfils the conditions for accreditation in the Regulation concerning NOKUT's supervision and control of the quality in Norwegian higher education.

Øystein Lund
Director of the Department of Quality Assurance

Content

1 Information regarding the applicant institution

At the time of the application, *Stord/Haugesund University College* (HSH) had around 3200 students, and consisted of two campuses: Stord and Haugesund. As a University College, Stord/Haugesund University College does not have power of self-accreditation for educational provisions in the second and third cycle. The institution's quality assurance system was evaluated and approved in 2015. The following educational provisions at the institution have obtained accreditation from NOKUT (all are master's degrees):

- IKT i læring, 2006
- Klinisk helse- og omsorgsvitenskap 2010
- Praktisk-estetiske fag og lærerprosesser, 2012
- Fire safety, 2015

Stord/Haugesund University College is also one of the providers of a joint PhD-program in Nautical operations, together with the University College of Southeast Norway, UiT - The Arctic University of Norway and NTNU - Norwegian University of Science and Technology. An accredited PhD will normally give the power of self-accreditation of master degrees within the same field. However, in the case of joint degrees, this is only the case for a joint degree with the same participants.

As of 1. January 2017 Stord/Haugesund University College merged with *Bergen University College* and *Sogn og Fjordane University Colleg*e to become *Western Norway University of Applied Sciences (HVL).* This report is written before the merger, and all references to the applicant are to Stord/Haugesund University College.

In the original application the name of the study program was *International Ship Technology, Maritime Operations and Management.* In line with the advice from the expert committee the name was changed to *Maritime Operations*, see chapter 6. The expert assessment in chapter 3 comments on and refers to the original name.

2 Description of procedures

NOKUT makes an administrative assessment to ensure that all basic conditions for accreditation are fulfilled as expressed in the Regulation concerning NOKUT's supervision and control of the quality in Norwegian higher education. (Hereafter referred to as the Quality Assurance Regulation on Higher Education.) For applications that have been approved administratively, NOKUT appoints external experts for the evaluation of the application. The external experts have declared that they are legally competent to perform an independent evaluation, and carry out their assignment in accordance with the mandate for expert assessment passed by NOKUT's board, and in accordance with the requirements for educational quality as determined by the Quality Assurance Regulation on Higher Education.

Following their assessment, the expert committee shall conclude either with a yes or no as to whether the quality of the educational provision complies with the requirements in the Quality Assurance Regulation on Higher Education. NOKUT also requests that the expert committee advise on further improvements of the educational provision. All criteria must be satisfactorily met before NOKUT accredits an educational provision.

If the conclusion reached by the expert committee is negative, the report is sent to the applicant institution, which is then given three weeks to comment. Thereafter NOKUT decides whether the comments should be sent to the committee for additional consideration. The committee is given two weeks to submit the revised assessment. The director general then reaches a final decision about accreditation.

3 Expert assessment

This chapter is the expert committee's assessment. The term "we" refers to the expert committee as such.

3.1 Summary of the report

The programme is well structured and organized. The regions of both Stord/Haugesund and Emden/Leer have active maritime industry that needs candidates for further development. However, we do not see that the content of the study programme supports a master level study within maritime technology or maritime management. Instead, we consider this master program to be a specialisation in maritime operations, with technology and management as support. The name, structure, and overall learning outcome should be adjusted to reflect this. Detailed suggestions are given in the relevant sections.

3.2 Basic prerequisites for accreditation (§ 7-1)

3.2.1 Requirements assessed by NOKUT

§ 7-1 (1) The following requirements laid down in the Universities and Colleges Act shall be assessed for accreditation:

a) Internal regulations and governance
b) Appeals committee
c) Learning environment committee
d) Education plan
e) Diplomas and Diploma Supplement
f) Quality assurance system.

Assessment

For accredited university colleges like HSH, NOKUT presupposes that the institution has implemented the requirements laid down in the Universities and Colleges Act, and NOKUT does not

assess this through the accreditation process. The quality control system at HSH was approved by NOKUT in 2015. NOKUT and the experts have only assessed the Diplomas and Diploma supplement.

e) Diplomas & Diploma Supplement

The diploma and Diploma Supplement are sufficient for the formal requirements but will have to be altered in line with the requested changes in the program.

The learning outcome in the Diploma and the Diploma supplement should be updated in accordance with revised learning outcomes – see below.

For 2.2 the main field(s) of study should only be: Maritime operations

In 5.1 it should be specified that the program is sufficient for a third cycle degree in nautical operations (not for third cycle degree in maritime technology).

Conclusion

No, the criterion is not fulfilled.

The applicant must:

- Define that the main field of study is: Maritime Operations
- Revise the learning outcomes.
- Specify that the study program is sufficient for the third cycle degree program in nautical operations, as given by the MARKOM2020 collaboration.

3.2.2 Requirements in applicable regulations and curricula

§ 7-1 (2) Requirements of applicable regulations and curricula set by the Ministry of Education and Research must be satisfied.

Assessment

The study program is in the application described as a master study of 120 ECTS according to § 3 in 'Forskrift om krav til mastergrad', including an individual master thesis of 30 ECTS according to §6 in 'Forskrift om krav til mastergrad'. The acceptance criteria is completed and passed bachelor degree of 180 ECTS in mechanical engineering, nautical science, maritime studies, or similar.

Given that the official language of the programme is English, and that the courses are taught in English, they have set language admission criteria for acceptance to the programme that we think will secure the ability to use English as the working language of the study programme.

Conclusion

Yes, the criterion is fulfilled.

3.2.3 Recruitment of students

§ 7-1 (3) The recruitment of students to the program should be large enough to enable the institution to establish and maintain a satisfactory learning environment and a stable program.

Assessment

The institutions offer undergraduate level studies that are relevant for this master study. HSH has according to the numbers stated in the application, graduated around 30 candidates annually from their bachelor level programmes in maritime and nautical studies (170 since 2011), while HEL has graduated around 50 candidates annually in the last seven years. In addition, HEL has close relations to the University of Applied Science in Bremen, which offers bachelor level study programmes in nautical sciences and ship management. None of these suppliers of relevant bachelor level study programmes offer any similar master level study programme. Furthermore, the study programme will also seek to recruit from HSH's bachelor level programme in mechanical engineering. Finally, candidates from other relevant bachelor level study programmes in Norway, Germany or internationally can also apply for this master study programme.

As such, the basis for recruitment of candidates to this master study can be regarded to be large enough. However, to attract enough candidates the study must be marketed well, and the result can only be seen in future number of applicants.

Conclusion

Yes, the criterion is fulfilled.

3.2.4 Agreements regarding professional training

§ 7-1 (4) For programs including professional training, there must be adequate agreements regulating material issues of importance to the students.

Assessment

Not relevant.

3.3 Plan for the program (§ 7-2)

3.3.1 Program name

§ 7-2 (1) The program must have an appropriate title.

Assessment

The proposed name is: Master in International Ship Technology, Maritime Operations and Management.

The use of the term ’international’ in the title is irrelevant. The maritime context is in itself international and as such there is no need to emphasise this in the title. Also, the proposed study is bilateral, not international.

The name in itself does also present a comprehensive scope with respect to what the candidates of the programme shall cover. The candidates of the study programme shall become master level candidates in ship technology, and in maritime operations and in management. We think that such a combination of a comprehensive width in subjects, and a required depth in subject understanding is hard to achieve. In the application it is stated that the aim is to offer a study programme where the candidates acquire advanced knowledge about ship technology, maritime operations, and management. Given that most (all) subjects start on close to introductory levels, without requirements for previous knowledge, we think that the programme do not deliver knowledge that can support the comprehensive subject width stated in the proposed name of the study programme.

As we see it, the main focus of the proposed study programme is in ‘operations’, as reflected in the third semester that divides into ‘Sustainable Maritime Operations’ or ‘Offshore and Subsea Operations’. A study programme in operations do also need to address technology and management, but then as support for operations. We do not see that the content of the study programme support a master level study within maritime technology or maritime management. Hence, we propose that the name only should cover ‘maritime operations’. This is also relevant for the study programme being an enabler to proceed towards a third cycle PhD programme in nautical operations.

Conclusion

No, the criterion is not fulfilled.

The applicant must:

- Change the name to reflect the true content and specialisation of the program.

3.3.2 Overall learning outcome

§ 7-2 (2) The program must be described with reference to learning outcomes, cf. National Qualification Framework for Lifelong Learning. The overall learning outcome for each program, defined in knowledge, skills and general competence, shall be described.

Assessment

The application presents the learning outcomes of the study programme as required in knowledge, skills and general competence. The learning outcomes are also set in relation to each course in the study programme, and how each course support specific learning outcomes within the knowledge, skills and general competence categories. The learning outcomes use terms and concepts like 'advanced', 'specialized', thorough', 'scholarly theories', 'the academic field of …', which when they are placed in the described context of a 'variety of disciplines' and 'framework of design topics' becomes hard to agree with. As such, we think that the learning outcome promise more than what the study programme is able to deliver.

A study into advanced topics in maritime technology requires that specific topics are addressed in depth, and this will require a series of courses that build upon each other within chosen disciplines. We cannot see that this study programme achieves that within maritime technology. As we see the study programme, the intention of the programme is to address maritime operations, including a wide and basic approach to maritime technology and management topics to support knowledge development and skills within maritime operation. This is also documented in the study programme, through the two specialization options within maritime operations in the third semester.

As we see it, approaches to management theories are in this case used as support for knowledge and skills development for maritime operations. General competence for master level studies are well achieved through the focus on theories of science and research in the first semester of the study programme.

Beyond insight into research design, we cannot see that design theory is specifically covered in the study programme as a theoretical discipline.

Below we have given specific comments to the individual learning outcomes, in accordance with the general comments given above. The comments from the expert committee are in red.

Overall learning outcome:

Knowledge:

The candidate:

1. has advanced knowledge in the academic field of a variety of maritime disciplines, giving an interdisciplinary overview of the maritime environment It is very hard to acquire advanced knowledge in a variety of fields within a two year study. We can neither see that this is supported by the content of the study program. However, an advanced level of knowledge within maritime operations may be achieved. This item must be updated accordingly

2. has specialized insight in offshore technology and its processes It is more appropriate to say '… in offshore operations', and this is only true for those students that follow the profile 'Offshore and Subsea Operations', so this item must be updated accordingly
3. can apply knowledge to new areas in the framework of design topics within the areas of maritime engineering and operations How is design topics defined here? The applicant should explain in further detail what is meant by design topics here.
4. has thorough knowledge of theories and methods in the field of maritime operations and technology e.g. the operation of vessels and maritime constructions as well as their safety- and risk assessment based on international research findings The term 'technology' must be taken out, as it can not be supported that they will have thorough knowledge of theory and methods of … technology. How do you define 'maritime constructions' in this programme? What content support a focus on 'maritime constructions'? These must be clarified in further detail. How can thorough knowledge be supported with respect to 'safety and risk assessment'? This should be clarified in further extent.
5. can analyse academic problems related to the maritime field on the basis of history, tradition, distinctive characters and the place in society of the maritime industry This can be supported through the courses 'Philosophy of Science, Research Design and Methods' and 'Scientific Approach of Complex Problems'.
6. has thorough knowledge of the scholarly theories about environmental friendly systems and can discuss these in an operational, technical and management view The use of the terms 'thorough' and 'scholarly theories' are a bit misleading. If one looks at the learning outcome for the specific courses underlying this, the knowledge is more or less only of the level of 'know', and 'understand'. The only reference to 'deep knowledge' is given related to 'nautical operations'. This must be updated so that the learning outcome of the courses and the overall outcome fits together.
7. can apply his/her knowledge about the clues of safe and environmental maritime operations to the academic field of maritime technology, operation and management We do not agree with the use of the terms 'technology' and 'management'. The focus must be on 'operations'.

Skills:

The candidate:

1. can analyse existing theories, methods and interpretations e.g. system analysis, cost benefit analysis, optimisation and risk assessment, in the field of the maritime industry We think it is more appropriate to use only 'methods and interpretations', and not 'theories'. The term should be 'maritime operations', not 'maritime industry'. This should be updated.
2. can deal critically with various sources of information both in the maritime and related fields and use them to structure and formulate scholarly arguments relevant for the maritime industry OK, but the applicant must use 'maritime operations' instead of 'maritime industry'.
3. can use relevant methods for research and scholarly development to point out the sustainability of technological developments as well as analyse and develop environmentally friendly and resource efficient solutions in technological systems, products and processes: To address the sustainability of different maritime solutions is difficult, especially when this is coupled with insight in methods from industrial ecology, economics, demography, anthropology, as well as technology and operations. We are not

sure whether this is achievable as it is stated here or through the study programme. This requires much more than 'methods for research and scholarly development'.

4. can carry out an independent, limited research or development project under supervision and in accordance with applicable norms for research ethics OK
5. can analyze existing ~~theories,~~ methods and interpretations in the maritime field and work independently on practical and theoretical problems relevant for ~~the field.~~ maritime operations. This must updated as indicated above.

General competence:

The candidate:

1. can apply his/her knowledge and skills in new areas in order to carry out advanced assignments and projects The applicant should change the term 'advanced', for instance with wording use above like 'research' or 'development'.
2. can communicate extensive independent work and masters language and terminology of the maritime sector, incl. rules, legislation and classification as well as knowledge of maritime technology and innovation What is 'masters language and terminology', is that nautical science?. This should be clarified in further detail.

3. can contribute to new thinking and innovation processes within the maritime filed and independently initiate and implement academic and interdisciplinary collaboration OK
4. can analyze relevant academic, professional and research ethical problems related to the maritime field OK
5. can assume responsibility for own academic development and specialization that can finalize in a doctor course The term 'doctor course' must be better defined – is it a PhD program?
6. can communicate about academic issues, analyses and conclusions related to the maritime field with both specialists or the general public The applicant must use 'maritime operations' instead of 'maritime field'.

Conclusion

No, the criterion is not fulfilled.

The applicant must:

- Revise the overall learning outcome to reflect the true content of the program and the courses.

3.3.3 Content and structure of program

§ 7-2 (3) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:

a) Content and structure of the program.

Assessment

The assessment is based upon our understanding that this is a master program in 'maritime operations', and should be named and communicated as such.

The programme is structured into four parts, including the Master Thesis that is the fourth and final part. The first part of the programme is taught at HSH, and is given in the first semester. This part covers approaches to science and scientific research, an integrative introduction to human-technology-organization and cultural awareness, and ship stability. The second part (semester) is taught at HEL, giving a blend of courses that address (complex) contextual problems, finance and cost accounting, ship propulsion systems, quality and risk assessment, and an applied approach to basic tools in operations research.

The structure of the program is good. Both the progress, the division of subjects among the partners, and the final specialization in the third semester before the Master thesis gives a good structure.

The content of the program requires some comments. This will be given on the course level, again the red text is the opinion of the expert committee and black letters indicate the original part in the application:

- Philosophy of Science, Research Design and Methods
  - OK. This seems to be both a relevant and good course as part of a Master program, and is also given early in the program which is good so that the student can acknowledge and apply appropriate research approaches in their project works.
- Maritime HTO (Human- Technology- Organization) and Cultural Understanding
  - OK. This is an important subject and course in a Master program in maritime operations. It is also good to see that it is given early in the program, as this is a subject that brings in approaches and viewpoints that requires time to mature when seen in relation to more specific subjects later in the program.
- Advanced Ship Stability
  - This is NOT 'advanced'. It should be named 'Ship Stability' or 'Basic Ship Stability' or similar.
- Business Administration and Management
  - A proper name for this should include the terms 'cost', 'accounting', 'financial', but NOT 'management'.
- Quality and Risk Management
  - OK.
- Scientific Approach of Complex Problems
  - The course seems to be relevant for the study program. However, it is hard to see what the specific scope and content of the course is. This must be specified.
- Ship Technology
  - The topic of the course falls within ship technology, but we think it is a mismatch between name and content and that it is more appropriate to specify that it is mostly related to 'ship propulsion systems' and measures related to such systems.
- Tools of Operational Research and Simulation

- OK, but the formally correct wording should be e.g. ‘Applied approach to tools of Operations Research’ or ‘Applied approach to tools of Optimization and Simulation’.

Profile: Sustainable Maritime Operations (30 ECTS)

- Technical Aspects of Safe and Environmental Shipping
  - This can be a good course. As it is related to the specific student’s maritime project, the content has to be specifically addressing each student’s maritime project problem. This makes it hard to assess as it is described too comprehensively as for everything to be covered. What might help to illustrate real contents of the course can be to give some examples of the course in relation to specific maritime projects. This should be added.
- Operational Aspects of Safe and Environmental Shipping
  - OK
- Managerial Aspects of Safe and Environmental Shipping
  - The title is misleading. This should be updated.
  - This is about project planning and control in shipbuilding and shipyard management.
- Maritime Project
  - Related to ongoing research, and as such a good way to introduce the master students to research based knowledge development and learning.
  - Together with the related courses, the maritime project becomes close to the scope of a Master thesis. This requires good planning. We like to see how such planning is done, to achieve good progress and results for the students. This should be added.

Profile: Offshore and Subsea Operations (30 ECTS)

- Subsea Technology and Operations, incl. Hydraulic Systems
  - The content and learning outcomes described refer mostly to ‘systems’. Hence, we suggest that the course title is changed to something like ‘Subsea Systems and Operations’. We do not see any reason for specifying ‘hydraulic systems’. These should be updated.
- Marine Operations in the Ocean Space
  - This is a course related to sea-keeping, and should be named accordingly. Sea-keeping is an important field of knowledge in offshore operations and should be easily seen from the program’s structure. A tentative name could be: ‘Introduction to sea-keeping’. This must be modified
- Ship Operation- and Maintenance Systems
  - OK

Conclusion

No, the criterion is not fulfilled.

The applicant must:

- Address the comments given on course level above.

3.3.4 Work and teaching methods

§ 7-2 (4) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:
b) Work and teaching methods.

Assessment

The application state that the work and teaching methods of the study programme comprises seminars, lectures and tutorials, individual work on assignments – independently and in groups, practical and software assisted assignments, industry excursions, exercises – including simulation and laboratory work, and interactive discussions. This is also reflected in the individual course descriptions.

In general the work and teaching methods are as expected for the content of the courses, and the structure of the program. We believe the work and teaching methods, and the use of different methods, will strengthen the study programme. It is also good to see that there is described a clear link between the work and teaching methods and the defined learning outcomes.

The only part where we should like to see a more detailed description, is related to the combination between the maritime project and the three related courses in the third semester in the Sustainable Maritime Operations profile.

Conclusion

Yes, the criterion is fulfilled.

The applicant should:

- Give a better description of the relationship between the maritime project and the related courses in third semester for the Sustainable Maritime Operations profile.

3.3.5 Examination and other types of evaluation

§ 7-2 (5) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:
c) Examination and other types of evaluation

Assessment

The examination and evaluation formats of the study programme comprise written and oral exams, presentations, term paper, portfolio, and project thesis and master thesis. The description of the logic behind and the scope of each assessment method is well made, and also related to the learning outcomes.

In general, the examination and evaluation formats seem to fit the content of the courses as the courses are described and the content of the courses. However, we have one comment. The exception that we see is related to the course 'Marine Operations in the Ocean Space' which has an oral exam. Our belief is that a written exam will be a better assessment method for a course primarily related to sea-keeping.

Conclusion

Yes, the criterion is fulfilled.

The applicant should:

- Change to written examination in the course named 'Marine Operations in the Ocean Space'.

3.3.6 Relevance of program

§ 7-2 (6) The program must have a clear academic relevance for employment and/or further studies.

Assessment

The regions of both HSH and HEL have active maritime industry that need candidates for further development. It is also a strength for the regions to have an education programme that creates a relevant opportunity for further education for their employees.

The study programme can also give a relevant background for specific studies on third cycle level (PhD). However, we do not agree that the study programme can communicate and defend to give opportunities for third cycle studies within maritime technology or maritime management. It is our understanding that communicating that the study programme give such background will be misleading potential candidates seeking such opportunities.

However, the study programme can be relevant for studies on third cycle level within nautical operations as described in the application.

Conclusion

No, the criterion is not fulfilled.

The applicant must:

- State the program's focus on maritime operations.
- Define that the programme is relevant for application to a third cycle level study within nautical operations.

- State that the study programme might not qualify for a third cycle level study in maritime technology or maritime management.

3.3.7 Links to research, academic- and artistic development

§ 7-2 (7) The program must have satisfactory links to research and academic and/or artistic development work, adapted to its level, scope and other characteristics.

Assessment

The program, as described, have reasonable and sufficient link to research and development. This goes for both the structure of the program and the staff in the program. However, what is reasonable and sufficient can always be debated. We see a good width and depth in the research covered by the faculty that is described as related to the study program. The width can be seen from the list of publication topics and faculty research subjects, while the depth have to be acknowledged from the publication channels. What we cannot secure, is how this will be brought to the students acknowledgement, as we do not know the extent to which the width and depth of the faculty will be used. This is especially relevant for supervision and guidance, as we there only have the list of faculty that will be available for supervision, and the width and depth is to a large part dependent on this part of the faculty list.

Specifically, we would have liked to see more active researcher participation in the course part of the programme, and not only in supervision roles as is the case for a large part of the faculty as presented in the application. Bringing faculty into teaching is maybe the best opportunity for exchange of knowledge from faculty to students. Then, a broader group of faculty can bring research results and inspiration to students in earlier phases of the study, and not only in the supervision part of project and master thesis work.

Conclusion

Yes, the criterion is fulfilled.

The applicant should:

- Involve a larger share of faculty in teaching, and not only in supervision. This would be an opportunity to improve the links to research and academic development significantly.

3.3.8 Student exchange and internationalization

§ 7-2 (8) The program must have student exchange and internationalization agreements, adapted to its level, scope and other characteristics.

Assessment

Student exchange and internationalization can be said to be an integral part of the bi-lateral construction of this study programme. Agreements for exchange and internationalization is in place.

Both with respect to the bilateral structure of the program, and in addition with further agreements for student exchange. Formal agreements about student exchange is established between HSH and Gdynia Maritime Univeristy, Poland, and HEL and Novia University of Applied Sciences, Finland, and the Latvian Maritime Academy.

We also want to state that based upon the already bilateral structure of the program, students should make careful consideration if they want to have another exchange period at a third academic institution. The reason for this is that the objective and learning outcome of the study program is already based upon two collaborating academic institutions where the third semester is a sort of specialization term for the study program, and an exchange period in the third semester could disturb this.

The funding requirements for the required exchange period should be specified.

Conclusion

Yes, the criterion is fulfilled.

The applicant should:

- Better specify and explain the funding requirements for the exchange period.

3.3.9

§ 7-2 (9) The institution must have facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program.

Assessment

The description of the infrastructure given in the application is expected to cover the requirements of the study program. The infrastructure described cover administrative services, software and ICT facilities and support, library, teaching and research facilities, and laboratories. As both HSH and HEL already have relevant studies on bachelor level, the infrastructure requirements is well known and also presented in a good way. However, the applicant explains that they will be using the simulators belonging to the SimSea centre. They need to provide documentation of the agreement with SimSea.

Conclusion

No, the criterion is not fulfilled.

The applicant must:

- Document the agreement to use the SimSea simulators.

3.4 Academic environment associated with the program (§ 7-3)

3.4.1 The composition, size and competence of the academic environment

§ 7-3 (1) The composition, size and collective competence of the relevant academic environment must be adapted to the program as described by the program description and also adequate for conducting relevant research and academic or artistic development work.

Assessment

A comprehensive list of staff from HSH and HEL associated with the study programme is presented in the application. The composition as presented can be grouped into position, specialisation, institution, as well as whether they are teaching, giving guidance or both. The number of staff is 13 full time and 4 part time at HSH, and 8 full time and one part time at HEL. This is summarized in the table below.

Overall, the staff associated with the study programme seems to be adequate with respect to composition, size and competence. And, based upon the full participation of the faculty in the study program as presented in the application covering both lecturing and supervising faculty, also adequate for conducting research and academic development work.

Some comments should be given to the presented composition of the academic environment. The specializations are all covered, and there are no one only teaching without giving guidance/ supervision. However, a large number of the staff at HSH is only giving guidance. For the full-time staff at HSH 8 of 13 (62%) is only related to guidance, and 3 of 4 (75%) of the part-time staff at HSH. All staff in the technology category at HSH is linked to guidance only. Based upon the list of staff that contributes academically to teaching and guidance, provided from HSH in November 2016, we see that 0,9 FTEs (Full Time Equivalents) contributes to teaching and 1,6 FTEs contributes to guidance – given that we can assume that all will use 0,1 FTE for guidance when covering both teaching and guidance. For HEL we can estimate that they have approximately 0,6 FTEs each for teaching and guidance, just above 1,2 FTEs in total. Hence, it is 0,9 plus 0,6 FTEs, in total 1,5 FTEs that shall cover the teaching per year for the study programme.

We see the use of guidance only staff as a difficult category to assess, as they can either be strong contributors to the study programme or have such loose coupling to the programme that they in reality should not be counted as staff in the programme. The only way to assess this is future check of staff activity as supervisors in master thesis work.

Table 1. Composition, size and competence of academic environment.

	Specialization				Position		Teaching & Guidance		
	Technology	Technology/ operation	Operation	Management	Professor	Associate professor	Teaching	Guidance	Teaching & Guidance
HSH Full Time	5	2		6	6	7		8	5

HSH Part Time	2	1		1	3	1		3	1
HEL Full Time		4	2	2	8			1	7
HEL Part Time		1			1				1

Conclusion

No, the criterion is not fulfilled.

The applicant must:

- Document the staff resources for teaching, and also guidance if relevant, per specific course.

3.4.2 The academic environment's external participation

§ 7-3 (2) The academic environment must actively participate in national and international collaborations and networks relevant for the program.

Assessment

The academic environment as listed and described in the application, has active collaboration nationally and internationally. This is also supported by the bi-lateral structure of the program.

Nationally in Norway, the MARKOM2020 project is the main platform for collaboration as it also administer the joint PhD in nautical operations. The academic environment participates also actively in several research projects, that establish relevant collaborations and networks for the programme.

International networks and participation is mostly confirmed based upon existing research projects. It would have been relevant to see international network participation within nautical sciences and maritime operations, as a parallel to MARKOM2020.

The use of adjunct professors do also contribute to bringing external influence into the study programme, both national and international, although they cannot be counted as a measure of the academic environment's external participation.

Conclusion

Yes, the criterion is fulfilled.

The applicant should:

- Develop participation in an international professional network within nautical science and maritime operations as a parallel to MARKOM2020.

3.4.3 Academic staff and employment

§ 7-3 (3) At least 50 per cent of the academic FTEs allotted to the program must be staff with their primary employment at the institution. Of these, teachers with competence at the level of at least associate professor must be represented among those who teach the core elements of the program.

For the different cycles, the following additional requirements apply:

a) For first cycle programs, at least 20 per cent of the collective academic environment must have competence at the level of at least associate professor.

b) For second cycle programs, at least 10 per cent of the collective academic environment must be professors or docents, and an additional 40 per cent with competence at the level of at least associate professor.

Assessment

As presented in Table 1 above, there is a comprehensive list of staff related to the study programme. Based upon the provided information we can conclude the following:

- more than 50 percent of the academic full-time employees allotted to the study programme have their primary employment at the institution. This is fulfilled both for HSH and HEL.
- Teachers with competence of at least associate professor level are represented at both HSH and HEL.
- More than 20 per cent of the collective academic environment have competence at the level of at least associate professor: By the time the programme is planned to start, all staff will be full professor or associate professor.
- For second cycle programs, at least 10 per cent of the collective academic environment must be professors or docents, and an additional 40 per cent with competence at the level of at least associate professor: Both for teaching and guidance, more than 10 percent will be on professor level, and in addition more than 40 percent will be at least on associate professor level. This is fulfilled. Note however, that for HSH, one professor is on leave, and is planned to return in spring 2017. Fulfilling the requirement is dependent on this competence being in place.

Conclusion

Yes, the criterion is fulfilled.

3.4.4 The academic environment's research and development work

§ 7-3 (4) The academic environment must be actively engaged in research, academic and/or artistic development work.

For the different cycles, the following additional requirements apply:

a) For first cycle programs, the academic environment must have documented results at a level that is satisfactory in relation to the content and level of the program.

b) For second cycle programs, the academic environment must have documented results at a high international level of quality, with satisfactory academic breadth.

Assessment

The academic environment is actively publishing research results through high quality publication channels, hence a high level of international quality is documented. Examples of publication channels used and that cover a satisfactory and relevant academic breadth are: Scandinavian Journal of Management; International Journal of Leadership Studies; Non-Linear Studies; Applied Mathematics and Computation; Journal of Entrepreneurship, Management and Innovation; Lecture Notes in Computer Science; International Journal of Marine Navigation and Safety of Sea Transportation; Accounting, Organizations and Society; Riskwork Essays on the Organizational Life of Risk Management; Advances in Intelligent Systems Research; International Journal of Advanced Research in Artificial Intelligence; Advances in Intelligent Systems Research; Lecture Notes in Electrical Engineering; Safety Science; Journal of Occupational and Organizational Psychology; OMEGA; Transportation Research – Part A; Fire Safety Journal.

The breadth of the research is satisfactory, but also to a large degree based upon professors with a guidance role in the study programme.

Conclusion

Yes, the criterion is fulfilled.

3.4.5 Supervision of professional training

§ 7-3 (5) For programs with supervised professional training, the academic environment and external mentors must have appropriate experience in the field of practice.

Assessment

Not relevant.

3.5 Supplementary provisions for joint degrees

3.6

§ 7-4 (1) It must be clearly defined which parts of the programme are the responsibility of each cooperating institution.

Assessment

The intake of students is organized jointly by the selection committee of the joint degree. The structure of the programme is divided into three parts. The first year is a common part for all students, where

the first term is given by HSH and the second term is given by HEL. The second part, given in the third term, is a specialisation focus and the students have to choose one of two specialisation areas. HSH is responsible for and organizes the 'Offshore and subsea operations' specialisation while HEL is responsible for and organizes the 'Sustainable maritime operations' specialisation. The third and final part is the master thesis, where the students based upon choice of specialisation conducts their master thesis under supervision from either HSH or HEL.

§ 7-4 (2) There must be satisfactory procedures in place for the development of and quality assurance of the programme as a whole.

Assessment

Section four of the application, together with the cooperation agreement in appendix eight describes the formal cooperation procedures for the joint development and delivery of a unified study programme. As we can see, the formal procedures that are in place are satisfactory when it comes to quality assurance of programme development and programme delivery as such. However, what could be improved is a procedure that quality assures the study programme against its objectives and the demand for candidates in the respective regions in Norway and Germany. This could be secured by having representatives from industry and other external stakeholders in relevant boards to the study programme.

Conclusion

No, the criterion is not fulfilled.

The applicant must:

- Bring representatives from external stakeholders into the governing boards of the programme.

§ 7-4 (3) The constituent parts of the programme must make up a whole, as seen in relation to the programme's level and learning outcomes

Assessment

The programme is well structured and organized, hence enabling the constituent parts of the programme to become a unified whole that should be able to meet the programme's level and learning outcomes in maritime operation.

Conclusion

Yes, the criterion is fulfilled.

4 Conclusion

Based on the written application with attached documentation, the expert committee concludes the following:

The committee does not recommend accreditation of the master in Ship Technology, Maritime Operations and Management at Stord/Haugesund University College and Hochschule Emden/Leer.

The expert assessment states which demands the institution is required to meet in order to achieve accreditation. In addition, the committee has provided advice for the further development of this study program.

The following requirements are not satisfied:

- §7-1 (1) Requirements laid down in the Universities and Colleges Act must be satisfied.
- § 7-2 (1) The program must have an appropriate name.
- § 7-2 (2) The program must be described with reference to learning outcomes, cf. National Qualification Framework for Lifelong Learning. The overall learning outcome for each program, defined in knowledge, skills and general competence, shall be described.
- § 7-2 (3) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved: Content and structure of the program.
- § 7-2 (6) The program must have a clear academic relevance for employment and/or further studies.
- § 7-2 (9) The institution must have facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program.

- § 7-3 (1) The composition, size and collective competence of the relevant academic environment must be adapted to the program as described by the program description and also adequate for conducting relevant research and academic or artistic development work.

Supplementary provisions for the accreditation of a program or parts of a program that are constituent parts of a joint degree:

- § 7-4 (2) There must be satisfactory procedures in place for the development of and quality assurance of the program as a whole.

The following requirements must be satisfied in order to achieve accreditation:

- Define that the main field of study is: Maritime Operations
- Revise the learning outcomes.
- Specify that the study program is sufficient for the third cycle degree program in nautical operations, as given by the MARKOM2020 collaboration.
- Change the name to reflect the true content and specialisation of the program.
- Revise the overall learning outcome to reflect the true content of the program and the courses.
- Address the comments given on course level in section 3.3.3.
- State the program's focus on maritime operations.
- Define that the programme is relevant for application to a third cycle level study within nautical operations.
- State that the study programme might not qualify for a third cycle level study in maritime technology or maritime management.
- Document the agreement to use the SimSea simulators.
- Document the staff resources for teaching, and also guidance if relevant, per specific course.
- Bring representatives from external stakeholders into the governing boards of the programme.

The committee offers the following advice to develop the study program further.

- Give a better description of the relationship between the maritime project and the related courses in third semester for the Sustainable Maritime Operations profile.
- Change to written examination in the course named 'Marine Operations in the Ocean Space'.
- Involve a larger share of faculty in teaching, and not only in supervision. This would be an opportunity to improve the links to research and academic development significantly.
- Develop participation in an international professional network within nautical science and maritime operations as a parallel to MARKOM2020.

5 Response from applicant

The response from the applicant was received on 30. January 2017.

Response to the draft of accreditation report

The institutions' responses to the requirements <u>that must be satisfied</u> in order to achieve accreditation are:

3.2.1 Requirement assessed by NOKUT

The Diploma and Diploma Supplement are to the requested changes in the program. *The learning outcome is updated in accordance with revised learning outcome* for both Diploma and Diploma Supplement. For 2.2 the main field of study is changed to *Maritime Operations*. In 5.1 it's specified that the program is sufficient for a third cycle degree in nautical operations. We also marked changes related to the new name of our institution (HVL). The updated Diploma and Diploma Supplement is given in Appendix 1, new/revised text is marked with red.

3.3.1 Program name

The program name is in *Section 2.1. Name of the programme* changed to "Maritime Operations", as suggested by the Committee. All sections describing the name and content of the programme are revised accordingly. Revised section *2.1 Name of the programme* is to be found in Appendix 2. New/revised text is marked with red. Note that other sections affected by this change have also been updated accordingly.

3.3.2 Overall learning outcome

The overall learning outcome of the study program is revised to reflect the content of the program (Maritime Operations). The revised learning outcomes are in accordance with The Norwegian Qualifications Framework for Lifelong Learning (NQF) and the Committee's comments and suggestions. The updated overall learning outcome from the application is attached in Appendix 3a and the overall learning outcome from the Programme description is attached in Appendix 3b. New/revised text is marked with red.

3.3.3 Content and structure of program

All comments as given on course level are addressed in accordance with the Committee's suggestions and requirements. Section 2.3 is updated accordingly, and is to be found in Appendix 4a. The programme description is also updated on course level as per Committee's requirements and changes are found in Appendix 4b, which include the relevant excerpt of the Programme description. Revised/new text is marked with red.

3.3.6 Relevance of program

The relevance of the program is adjusted in accordance with the Committee's instructions. Revised section 2.6 is attached in Appendix 5. New/revised text is marked with red.

3.3.9 Infrastructure

Appendix 6 shows the agreement with SimSea for use of simulators. This agreement has been in force and functional for some years already.

3.4.1 The composition, size and competence of the academic environment

For each course there is one specific person with the academic responsibility. But there are often several people involved in the course as lecturers (for different subjects); supervisors (calculation exercises; compulsory work and so on) and examiners. The person with the academic responsibility usually teaches in the course, is responsible for compliance with the quality system (feedback from the students; examination results and so on) and the administration of the course, including coordinating other resources involved in the course (for teaching and guidance).

The term guidance or supervision is used both within courses and in connection with the master thesis. Guidance or supervision is an activity included in the teaching related to for example questions from students, calculation workshops, compulsory work, portfolio work or preparation to exams.

Overview of who is contributing with teaching or guidance or both for each course is found in Appendix 7.

3.5 § 7-4 (2) There must be satisfactory procedures in place for the development of and quality assurance of the programme as a whole.

According to the Committee's comments, we have brought in two external board members, one from each region (Stord/Haugesund and Emden/Leer). Agreements with the two external board members are found in Appendix 8.

The institutions' responses to the requirements <u>that should be satisfied</u> are:

3.3.4 Work and teaching methods

Give a better description of the relationship between the maritime project and the related courses in third semester for the Sustainable Maritime Operations profile.

In the module description of the "Maritime Project" some examples of possible topics with their related fields are given with suggestions of the courses the student has to attend of the three theory modules. The courses are clustered in the three modules. The content and name of the course is underlined and highlighted in the respective module description. For further details please see the module description. We will only give out a view topics to keep the resources possible for the lectures. Therefore the items in the topics for each student is changing hence each one will get his own Maritime Project. (e.g.: the task to design a sailing system is the same for all but the ship size, resistance and speed is changing for each project. By this the lectures will be the same.)

3.3.5 Examination and other types of evaluation

Change to written examination in the course named 'Marine Operations in the Ocean Space'.

The exam form in the course "Introduction Sea-keeping" (previously named "Marine Operations in the Ocean Space") is changed in accordance with the Committee's recommendation.

3.3.7 Links to research, academic-and artistic development

Involve a larger share of faculty in teaching, and not only in supervision. This would be an opportunity to improve the links to research and academic development significantly.

As a result of the merger to the new institution Western Norway University of Applied Sciences (HVL), new staff members from other campuses can be relevant for contributing in the courses (including guidance). For example within the profile *Offshore and Subsea operations* and especially the courses "Subsea Technology and Operations" and "Ship Operation and Maintenance Systems" we will have a larger staff because our new institution offers a master in underwater technology (campus Bergen) and we therefore in addition will be able to use resources connected with this master's programme (within the same faculty).

3.3.8 Student exchange and internationalization

Better specify and explain the funding requirements for the exchange period

Each year the International Office applies for funding for student mobility within Erasmus+. The number of scholarships is revised every year. For the year 2017/2018 the application takes into account funding also for students in this master program.

3.4.2 The academic environment's external participation

Develop participation in an international professional network within nautical science and maritime operations as a parallel to MARKOM2020.

This is currently an ongoing process related to the PhD-program in nautical operations, and we expect this master's programme to be included and benefit from such participation. We are also building a network between HVL, HEL and maritime companies (Norwegian and German) with a planned workshop within decommissioning of offshore wind parks relevant to the field and the developing of new courses within green shipping.

6 Additional assessment

The expert committee has assessed the comments from the institution with attachments. This is the committees additional assessment:

7.1.1. Diplomas and Diploma Supplement

§ 7-1 (1) The following requirements laid down in the Universities and Colleges Act shall be assessed for accreditation:

a) Internal regulations and governance
b) Appeals committee
c) Learning environment committee
d) Education plan
e) Diplomas and Diploma Supplement
f) Quality assurance system.

The applicant must:

- Define that the main field of study is: Maritime Operations
- Revise the learning outcomes.
- Specify that the study program is sufficient for the third cycle degree program in nautical operations, as given by the MARKOM2020 collaboration.

Assessment

The applicant has revised the Diplomas and Diploma Supplement so that the comments made have been fulfilled.

Conclusion

Yes, the criterion is fulfilled.

7.1.2 Program name

§ 7-2 (1) The program must have an appropriate title.

The applicant must:

- Change the name to reflect the true content and specialisation of the program.

Assessment

The applicant has changed the name of the program, so that it now reflects the true content and specialisation of the program.

Conclusion

Yes, the criterion is fulfilled.

7.1.3 Overall learning outcome

§ 7-2 (2) The program must be described with reference to learning outcomes, cf. National Qualification Framework for Lifelong Learning. The overall learning outcome for each program, defined in knowledge, skills and general competence, shall be described.

The applicant must:

- Revise the overall learning outcome to reflect the true content of the program and the courses.

Assessment

The overall learning outcome has been revised so that it now better reflects the true content of the program and the courses.

Conclusion

Yes, the criterion is fulfilled.

7.1.4 Content and structure of program

§ 7-2 (3) The following conditions shall correspond with and be adapted to the description of the learning outcome so that the learning outcome is achieved:

a) Content and structure of the program.

The applicant must:

- Address the comments given on course level in section 3.3.3.

Assessment

The applicant has made revisions in the content and structure of the program that fulfil the comments given on course level.

Conclusion

Yes, the criterion is fulfilled.

7-1 5 Relevance of program

§ 7-2 (6) The program must have a clear academic relevance for employment and/or further studies.

The applicant must:

- State the program's focus on maritime operations.
- Define that the programme is relevant for application to a third cycle level study within nautical operations.
- State that the study programme might not qualify for a third cycle level study in maritime technology or maritime management.

Assessment

The applicant has made revisions to better communicate the program's focus on maritime operations, including specifying management and technology as supporting subjects. Also, nautical operations is specified as a third cycle area of study.

Conclusion

Yes, the criterion is fulfilled.

7-1 5 Infrastructure

§ 7-2 (9) The institution must have facilities, library services, administrative and technical services, ICT resources and working conditions for the students, which are adapted to the program.

The applicant must:

- Document the agreement to use the SimSea simulators.

Assessment

The agreement with SimSea simulators have been documented.

Conclusion

Yes, the criterion is fulfilled.

7-1 5 The composition, size and competence of the academic environment

§ 7-3 (1) The composition, size and collective competence of the relevant academic environment must be adapted to the program as described by the program description and also adequate for conducting relevant research and academic or artistic development work.

The applicant must:

- Document the staff resources for teaching, and also guidance if relevant, per specific course.

Assessment

The staff resources for teaching and guidance per specific course has been documented.

Conclusion

Yes, the criterion is fulfilled.

7-1 5 Supplementary provisions for joint degrees

§ 7-4 (2) There must be satisfactory procedures in place for the development of and quality assurance of the programme as a whole.

The applicant must:

- Bring representatives from external stakeholders into the governing boards of the programme.

Assessment

The applicant has documented that they have brought external stakeholders into the governing boards of the program.

Conclusion

Yes, the criterion is fulfilled.

Conclusion

Based on the written application with attached documentation, the expert committee concludes the following:

The committee does recommend accreditation of the master in Maritime Operations at Stord/Haugesund University College and Hochschule Emden/Leer.

7 Decision

The master's program in maritime Operations - Joint degree fulfils all criteria for accreditation as detailed in Regulations concerning supervision of the educational quality in higher education (Academic Supervision Regulations) of 28. February 2013.

The master's program in Maritime Operations - Joint Degree is accredited.

8 Presentation of the expert committee

Professor Bjørn Egil Asbjørnslett, NTNU

Asbjørnslett is professor of Marine System Design and Logistics at Department of Marine Technology (IMT), NTNU. Professor Asbjørnslett is also group leader for the Marine Systems research group, and responsible for the study specialization Marine System Design and Logistics, and temporarily for Marine Resources and Aquaculture. The research group Marine Systems covers four areas; Marine System Design and Logistics, Safety and Asset Management, Marine Engineering, and Marine Resources and Aquaculture. In 2016/2017, there are about 50 master students (year 5) connected to the research group. The group takes part in the Centre of Excellence (CoE) AMOS, as well as centers for researcher led innovation (SFI); SFI Smart Maritime (energy efficient maritime transport) and SFI Exposed (exposed aquaculture).

Professor Asbjørnslett has been a member of audit committees organized by NOKUT for five undergraduate programs in nautical and technical marine operations.

Professor Pentti Kujala, Aalto University, Finland

Kujala is Doctor of technology, Helsinki University of Technology, Faculty of Mechanical Engineering (1994). He is an experienced scientist and lecturer. He also has a technical background from the field as Project manager Kvaerner Masa-Yards and Aker Finnyards/Aker Yards. From 2006 he is Professor of Safety of marine traffic and winter navigation safety, Helsinki University of Technology

He is the Head of the Mechanical Engineering study program in Aalto University, 2014-2015 and has participated in the coordination of the planning of a new master program for Applied Mechanics for Aalto University 2013-2015. He teaches all levels within subjects such as ship vibrations, winter navigation, vehicle engineering and safety of marine traffic. He currently supervises seven PhD students and has previously supervised 50 master students and PhD-students.

9 Documentation

16/01035-1 Høgskolen Stord/Haugesund - Søknad om akkreditering av master i Ship Technology, Maritime Operations and Management (fellesgrad)

16/01035-10 Tilsvar på utkast til rapport - Høgskolen Stord/Haugesund - Akkreditering av master i Ship Technology, Maritime Operations and Management (fellesgrad)