

## Report of the Expert Panel on the REACCREDITATION

of the University Postgraduate (Doctoral) Programme

Applied Geosciences, Mining and Petroleum Engineering

Faculty of Mining, Geology and Petroleum Engineering



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#### INTRODUCTION

The Expert Panel appointed by the Agency for Science and Higher Education (ASHE) created this Report on the Re-accreditation of the University Postgraduate (Doctoral) Programme Applied Geosciences, Mining and Petroleum Engineering on the basis of the Self-Evaluation Report of the Programme, other documentation submitted and a visit to the Faculty of Mining, Geology and Petroleum Engineering, University of Zagreb.

The Agency for Science and Higher Education (ASHE), a public body listed in EQAR (European Quality Assurance Register for Higher Education) and a full member of ENQA (European Association for Quality Assurance in Higher Education), re-accredits higher education institutions (hereinafter: HEIs) and their study programmes in line with the Act on Quality Assurance in Science and Higher Education (Official Gazette 45/09) and the Ordinance on the Content of a Licence and Conditions for Issuing a Licence for Performing Higher Education Activity, Carrying out a Study Programme and Re-Accreditation of Higher Education Institutions (OG 24/10). In this procedure parts of activities of higher education institutions and university postgraduate study programmes are re-accredited.

Expert Panel is appointed by the Agency's Accreditation Council, an independent expert body, to carry out independent evaluation of post-graduate university study programmes.

The Report contains the following elements:

- Short description of the study programme,
- The recommendation of the Expert Panel to the Agency's Accreditation Council,
- Recommendations for institutional improvement and measures to be implemented in the following period (and checked within a follow-up procedure),
- A brief analysis of the institutional advantages and disadvantages,
- A list of good practices found at the institution,
- Conclusions on compliance with the prescribed conditions of delivery of a study programme,
- Conclusions on compliance with the criteria for quality assessment.

#### Members of the Expert Panel:

- Mark Davies, Professor, Faculty of Health Sciences and Wellbeing, Sunderland University, United Kingdom of Great Britain and Northern Ireland, president of the expert panel
- Matthias Senge, Chair of Organic Chemistry, Trinity College Dublin, Ireland
- R. J. Pieters, Chair of Chemical Biology of Multivalent Systems, Utrecht University, Netherlands
- Fabian Cerda, Max Planck Institute of Biochemistry, Germany

- Marianne Holmer, Professor, Head of Department of Biology, Syddansk Universitet, Denmark
- Isabel Sa Nogueira, Associate Professor, Head of Laboratory, Faculdade de Ciências e Tecnologia Universidade Nova de Lisboa, Portugal
- Inger Elisabeth Maren, Department of Biological Sciences, University of Bergen, Norway
- Peter Bennett, Reader in Biodiversity and Evolutionary Ecology, University of Kent, United Kingdom of Great Britain and Northern Ireland
- Domagoj Vugić, doctoral student, Institut Curie, France
- Maalte Braack, Director of Mathematical Seminar, Christian-Albrechts-Universität, Kiel, Germany
- Barbara Drinovec Drnovšek, Professor, Fakulteta za matematiko in fiziko, Univerza v Ljubljani, Slovenia
- Sebastian Eterovic, doctoral student, Mathematical Institute, University of Oxford, United Kingdom of Great Britain and Northern Ireland
- Donald Bruce Dingwell, Department for Earth and Environmental Sciences Chair of Mineralogy and Petrology, Ludwig-Maximilians-Universität München, Germany
- Giovanni B. Andreozzi, Coordinator of the Ph.D. programme in Earth Sciences, Sapienza Universita di Roma, Italia
- Ponfa Roy Bitrus, doctoral student, Department of Geology and Petroleum Geology, University of Aberdeen, United Kingdom of Great Britain and Northern Ireland
- Anders Omstedt, Professor Emeritus, Department of Marine Sciences, The Faculty of Science, University of Gothenburg, Sweden
- Rafael Laso Perez, doctoral student, Max Planck Institute for Marine Microbiology, Germany
- Kai-Olaf Hinrichsen, Professor, Technische Universitat Munchen, Germany
- Alexandra Pinto, Associate Professor, Director of PhD programe in Chemical and Biological Engineering, Universidade de Porto, Portugal
- Mohamed Hussien, doctoral student, Faculty of Chemistry and Pharmacy, L. M. Universitat Munchen, Germany
- Mikael Rinne, Associate Professor, Aalto University, Finland

The higher education institution was visited by the following Expert Panel members:

- Mikael Rinne, Aalto University, Finland
- Donald Bruce Dingwell, Department for Earth and Environmental Sciences Chair of Mineralogy and Petrology, Ludwig-Maximilians-Universität München, Germany
- Giovanni B. Andreozzi, Sapienza Universita di Roma, Italia
- Ponfa Roy Bitrus, Department of Geology and Petroleum Geology, University of Aberdeen, United Kingdom of Great Britain and Northern Ireland, PhD candidate

In the analysis of the documentation, site visit and writing of the report the Panel was supported by:

- Marina Matešić, coordinator, ASHE,
- Filip Vukuša, assistant coordinator, ASHE.

During the visit to the Institution the Expert Panel held meetings with the representatives of the following groups:

- Management,
- Study programme coordinators,
- Doctoral candidates,
- Teachers and supervisors,
- External stakeholders,
- Alumni.

The Expert Panel also had a tour of the library and laboratories.

#### SHORT DESCRIPTION OF THE STUDY PROGRAMME

Name of the study programme contained in the licence: Applied Geosciences, Mining and Petroleum Engineering

**Institution delivering the programme:** University of Zagreb

**Institution providing the programme:** Faculty of Mining, Geology and Petroleum

Engineering, University of Zagreb

Place of delivery: Zagreb

Scientific area and field: Natural Sciences - Geology; Technical Sciences - Mining,

Petroleum and Geological Engineering

Number of doctoral candidates (all, status on September 30, 2017): 51

Number of HEI funded doctoral candidates: 34 Number of self-funded doctoral candidates: 6

Number of employer-funded doctoral candidates: 11

Number of inactive doctoral candidates: 15

Number of teachers: 62

Number of officially appointed supervisors: 19

Number of study advisors: 29

Number of doctoral candidates to whom a supervisor was officially appointed: 12 Ratio of doctoral candidates and their officially appointed supervisors: 12/19 = 0.632

Ratio of total number of doctoral candidates and the total number of available supervisors: 51/62 = 0.823

Ratio of doctoral candidates that successfully defended their thesis in the last five years (2012/13 - 2016/17 academic years) and their supervisors: 44/41 = 1,07

Taught / research ratio: 30 / 150 ECTS

#### **Learning outcomes of the study programme:**

*LO1:* To apply advanced mathematical, statistical, geophysical, chemical or information principles in research, development of ideas, methods, technological solutions or processes related to the science field of mining, petroleum and geological engineering and the scientific field of geology.

*LO2:* Mining branch: to demonstrate systematic understanding and use of scientific and research skills and methods in mining and geo-technics applicable in research, exploitation, and processing of primary and secondary.

*LO3:* Geological Engineering branch: to demonstrate systematic understanding and use of scientific and research skills and methods in geological engineering applicable in hydrogeology or engineering geology

*LO4:* Geology field: to demonstrate systematic understanding and use of scientific and research skills and methods in geology applicable in research of mineral raw materials deposits (hydrocarbons or solid raw materials).

LO5: Petroleum Engineering: to demonstrate systematic understanding and use of scientific and research techniques and methods in petroleum engineering applicable to exploration,

development and exploitation of hydrocarbon or geothermal water reservoirs, as well as in related energy or environmental protection fields.

*LO6:* To demonstrate the ability to collect and process relevant data for scientific research related to the field of mining, petroleum, and geological engineering and the scientific field of geology.

*LO7:* To critically analyse, evaluate and implement the synthesis of new and complex ideas from the area where scientific research is conducted in order to develop the dissertation.

*LO8:* To present, communicate and explain the results of scientific research to colleagues, scientists and the wider community.

*LO9:* To publish original results of the conducted scientific research in the category of original scientific work in international publications covered by the Web of Science Core Collection (WoSCC) bibliographic-citation database.

*LO10:* To develop generic skills required to bring and create judgments on topics that include scientific and ethical responsibility.

*LO11:* Promote the development of new techniques, ideas and approaches based on the experience gained during their own scientific-research work while preparing the dissertation.

# RECOMMENDATION BY THE EXPERT PANEL TO THE ASHE'S ACCREDITATION COUNCIL

Upon the completion of the re-accreditation procedure and the examination of the materials submitted (Self-Evaluation Report etc.), the visit to the higher education institution and interviews with HEI members in accordance with the visit protocol, the Expert Panel renders its opinion in which it recommends to the Accreditation Council of the Agency the following:

- issue a confirmation on compliance for performing parts of activities (renew the licence) and label it as 'high quality'

The programme is run by highly competent proactive staff that provided exemplary supporting documentation for their doctoral programme and actively re-evaluates and improves the programme. Admission policy includes a screening process aimed at securing that the best and the most prepared candidates are admitted. The programme encourages candidates to write their theses as a compilation of papers ("Scandinavian model") instead of writing monographs and writing the theses in English (candidates that are recipients of the HEI tuition scholarships are contractually obligated to write their theses as a compilation of papers). Candidates receive strong institutional support, the staff is engaged in international projects and actively encourages candidates for mobility.

# RECOMMENDATIONS FOR THE IMPROVEMENT OF THE STUDY PROGRAMME

- 1. Reduce the amount of time required, on average, for completion of doctoral studies.
- 2. Produce theses in English and establish an international thesis review process.
- 3. Encourage candidates to mature in the expertise of project management and funding acquisition especially at EU level.
- 4. Establish reliable and useful communication channels to external stakeholders.
- 5. Encourage and increase the number of courses delivered by external/foreign experts.
- 6. The presentation of the program and its participants (management, lecturers, candidates and activities), in the web-based media should be expanded and made more interactive.
- 7. Candidates should be encouraged to not only focus on internal publication but aim to publish in international peer-reviewed journals.

#### ADVANTAGES OF THE STUDY PROGRAMME

- 1. The number of doctoral candidates per supervisor is on good level.
- 2. The programme is supportive for candidates and encourages them for mobility.

- 3. It is possible to carry out the programme and defend in English.
- 4. The self-evaluation report is well prepared, and the site visit proved the good communication skills in English of both the supervisors and candidates.
- 5. The library and laboratories in the faculty were equipped to good standards with active and on-going projects.

#### DISADVANTAGES OF THE STUDY PROGRAMME

- 1. Long study times.
- 2. Low number of foreign students.
- 3. All candidates not aware about process to proceed with a complaint or to give feedback to improve the programme.
- 4. The panel is under the impression, following consultation with the candidates that some courses are not relevant to their research.
- 5. The website should be more informative, as the overriding source of program info.

#### **EXAMPLES OF GOOD PRACTICE**

- 1. Students are encouraged to go for a thesis consisting of journal papers instead of monographs (the "Scandinavian" model).
- 2. The internal publication of papers is a good practice.
- 3. The academic staff is positively minded to re-evaluate current praxis and absorb new ideas.
- 4. The supervisors are involved with EU projects and this can help expose the candidates to international research environment.
- 5. Attempts to increase the flexibility for the candidate to choose suitable courses for her/his syllabus.
- 6. An effective selection process (evaluation of research topic before enrolment) of candidates to be enrolled into the programme is adopted.
- 7. The requirement of English language to be spoken and written at a sufficient level for candidates and staff.

# COMPLIANCE WITH THE PRESCRIBED CONDITIONS FOR THE DELIVERY OF A STUDY PROGRAMME

Minimal legal conditions:	YES/NO
	notes
1. Higher education institution (HEI) is listed in the Register of Scientific	
Organisations in the scientific area of the programme, and has a positive	
reaccreditation decision on performing higher education activities and	
scientific activity.	
2. HEI delivers programmes in the two cycles leading to the doctoral	YES
programme, i.e., first two cycles in the same area and field/fields (for	
interdisciplinary programmes), and employs a sufficient number of teachers	
as defined by Article 6 of the Ordinance on the Content of a Licence and	
Conditions for Issuing a Licence for Performing Higher Education Activity,	
Carrying out a Study Programme and Re-Accreditation of Higher Education	
Institutions (OG 24/10).	
HEI employs a sufficient number of researchers, as defined by Article 7 of the	YES
the Ordinance on Conditions for Issuing Licence for Scientific Activity,	
Conditions for Re-Accreditation of Scientific Organisations and Content of	
Licence (OG 83/2010).	
3. At least 50% of teaching as expressed in norm-hours is delivered by	YES
teachers employed at the HEI (full-time, elected into scientific-teaching titles).	
4. Student: teacher ratio at the HEI is below 30:1.	
5. HEI ensures that doctoral theses are public.	
* All 35 theses defended since (including) 2013 are shown on the DABAR r	
( <a href="https://repozitorij.rgn.unizg.hr/">https://repozitorij.rgn.unizg.hr/</a> ). The difference between the number of	
theses given in the description of the study programme on page 6 (44 theses) is	
defended in the second half of 2012 (a part of 2012/2013 academic year).	
defended dissertations since 2013, 27 are readily available for download on ope	
4 are temporarily unavailable (with a two year limited access period after w	-
will be on open access) while 4 are unavailable and require author and/or r administrator permission for download (two theses defended in 2015 and two	
6. HEI launches the procedure of revoking the academic title if it is	YES
determined that it has been attained contrary to the conditions stipulated for	113
its attainment, by severe violation of the studying rules or based on a doctoral	
thesis (dissertation) that has proved to be a plagiarism or a forgery according	
to provisions of the statute or other enactments.	
Additional/ recommended conditions of the ASHE Accreditation Council	YES/NO
for passing a positive opinion	
1. HEI (or HEIs in joint programmes) has at least five teachers appointed to	notes YES

scientific-teaching titles in the field, or fields relevant for the programme	
involved in its delivery.	
2. In the most recent reaccreditation, HEI had the standard Scientific and YE	ES
Professional Activity marked as at least "partly implemented" (3).	
3. The doctoral programme is aligned with the HEI's research strategy.	ES
4. The candidate: supervisor ratio at the HEI is not above 3:1.	ES
5. All supervisors meet the following conditions:	
	YES
position and/or has at least two years of postdoctoral research experience;	
b) active researcher in the scientific area of the programme, as evidenced by	YES
publications, participation in scientific conferences and/or projects in the	
past five years (table 2, Supervisors and candidates);	
	YES
candidate (or submission of the proposal);	
d) ensures the conditions (and funding) necessary to implement the	YES
candidate's research (in line with the draft research plan) as a research	
project leader, co-leader, participant, collaborator or in other ways;	
e) trained for the role before assuming it (through workshops, co-	YES*
supervisions etc.);	
	YES
* If there is no prior experience.	
6. All teachers meet the following conditions:	
a) holds a scientific or a scientific-teaching position;	YES
b) active researcher, recognized in the field relevant for the course (table 1, <b>b)</b>	YES
Teachers).	
7. The supervisor normally does not participate in the assessment YE	ES
committees.	
8. The programme ensures that all candidates spend at least three years YE	ES
doing independent research (while studying, individually, within or outside	
courses), which includes writing the thesis, publishing, participating in	
international conferences, field work, attending courses relevant for research	
etc.	
9. For joint programmes and doctoral schools (at the university level): n/	'a
cooperation between HEIs is based on adequate contracts; joint programmes	
are delivered in cooperation with accredited HEIs; the HEI delivers the	
programme within a doctoral school in line with the regulations and ensures	
good coordination aimed at supporting the candidates;	
at least 80% of courses are delivered by teachers employed at HEIs within the	
consortium.	

## **QUALITY ASSESSMENT**

4 DECOMPOSE TEACHERS	
1. RESOURCES: TEACHERS, SUPERVISORS, RESEARCH CAPACITIES AND INFRASTRUCTURE	
1.1. HEI is distinguished by its scientific/ artistic achievements in the discipline in which the doctoral study programme is delivered.	High level of quality  The doctoral programme: Applied Geosciences, Mining and Petroleum Engineering is distinguished by its scientific achievements in its discipline.  The lecturers are qualified to deliver at acceptable standards on a national and international level.
1.2. The number and workload of teachers involved in the study programme ensure quality doctoral education.	Improvements are necessary  The number and competencies of staff is on sufficient level. According to documents, the teacher workload indicates high number of courses. Based on the site visit, efforts are made to reduce number of courses. The programme and the department should continue re-evaluating taught components in a way to reduce the teaching workload.
1.3. The teachers are highly qualified researchers who actively engage with the topics they teach, providing a quality doctoral programme.	High level of quality  Based on the site visit and the provided documentation, the panel found teachers to be competent and engaged with the topics they teach.
1.4. The number of supervisors and their qualifications provide for quality in producing the doctoral thesis.	High level of quality  According to the Self-assessment report, the ratio of supervisors/doctoral candidates is 0.8. There seems to be a more than sufficient number of potential supervisors. Furthermore, discussions with supervisors during the site visit support the documentation stating that the number of doctoral students per supervisor is on very good level.
1.5. The HEI has developed methods of assessing the qualifications and competencies of teachers and supervisors.	High level of quality  Supervisor and assistant supervisors work is frequently monitored by the Faculty Council.  Methods of assessing the qualifications and competencies of teachers and supervisors appear to be on sufficient level and results in teachers with

		sufficient competency.
		High level of quality
1.6.	The HEI has access to high-quality resources for research, as required by the programme discipline.	The available funding for laboratories and equipment appears to be scarce, however the resources appear to be reasonably used.  The visit to some of department's laboratories and to the library supported this observation. Comments from external stakeholders were received, that the standard of laboratories etc. should be increased to represent the edge of research.  The panel encourages supervisors and candidates to improve co-operation with the stakeholders and to apply for external funding of research infrastructure.
2.	INTERNAL QUALITY ASSURANCE OF THE PROGRAMME	
2.1.	The HEI has established and accepted effective procedures for proposing, approving and delivering doctoral education. The procedures include identification of scientific/ artistic, cultural, social and economic needs.	High level of quality  The panel found that the argumentation for launching the programme is sufficiently explained and very well documented in the SER.
2.2.	The programme is aligned with the HEI research mission and vision, i.e. research strategy.	High level of quality  Available documentation provides sufficient evidence that the programme is in line with the relevant strategic documents (Development Strategy of the
	research strategy.	Faculty of Mining, Geology and Petroleum Engineering and Scientific Research Strategy of the Faculty for the period 2017-2021).
		High level of quality
2.3.	The HEI systematically monitors the success of the programmes through periodic reviews, and implements improvements.	The HEI provided satisfactory evidence on improvements of the programme performance monitoring procedures. Production of research papers published in top international journals by both supervisors and candidates may be increased in number and this could be useful to all, in order to ensure an outstanding position for attracting funds based on competitive calls.  As an example of good practice, feedback from employers on the need and type of scientific research was acquired with help of Croatian Association of

		Graduated students of the Faculty.  The panel strongly encourages this practice and would support even further interaction in this regard.
2.4.	HEI continuously monitors supervisors' performance and has mechanisms for evaluating supervisors, and, if necessary, changing them and mediating between the supervisors and the candidates.	High level of quality  The panel registered PhD candidates' satisfaction with their supervisors during the site visit, and this is corroborated with the available documentation stating that the supervisors received marks in range 4,67-4,85 (out of 5) during the standard periodic monitoring provided by the HEI.  Candidates have a right to change their supervisors and mentors once. The panel strongly encourages the HEI to better communicate on how to put this procedure into reality at the beginning of the PhD course, as covered under 3.9.
2.5.	HEI assures academic integrity and freedom.	High level of quality  Appropriate evidence is provided that academic integrity is indeed fulfilled. As an addition to the ethical code at the University level, HEI established its own procedure for revoking the PhD title in case of breach of ethical norms or plagiarism (Regulations on Doctoral Studies at the Faculty, 2017). The ethical aspects of scientific research are also covered during the course "Methodology of Scientific Research" and supervisors are responsible to take into account and warn candidates about ethical issues.
2.6.	The process of developing and defending the thesis proposal is transparent and objective, and includes a public presentation.	High level of quality  The panel found the process of developing and defending the thesis proposal to be fully transparent and objective.
2.7.	Thesis assessment results from a scientifically sound assessment of an independent committee.	High level of quality  The Regulations on Doctoral Studies at the Faculty state that committees for assessment and defence of doctoral dissertation must have at least one member that is not an employee of the Faculty. The candidate's supervisor cannot be a part of either of the two committees. So far, five assessment committees and four defence committees included an international member.  The panel commends the practice of including international members in the evaluation committees,

and strongly encourages its expansion. Improvements are necessary 2.8. The HEI publishes all necessary All the needed information is available at basic level for information on the study programme, applicants and candidates. admissions, delivery and conditions The presentation of the program, its activities and its for progression and completion, in participants (both teachers and doctoral candidates), in accessible outlets and media. the web-based media should be expanded and fully provided in English. High level of quality 2.9. Funds collected for the needs of doctoral education are distributed The documentation provides sufficient evidence that transparently and in a way that the funds are distributed transparently. The panel ensures sustainability and further particularly appreciates that, according to Dean's development of doctoral education Decision on Tuition Fee Distribution per Candidate, a a (ensures that candidates' research is part of resources "returns" to the candidate and his carried out and supported, so that supervisor/advisor for covering material costs of doctoral education can be completed dissertation elaboration (10% of the tuition fee) and successfully). research expenses (20% of the tuition fee). High level of quality The panel found the criteria by which tuitions fees are determined to be transparent. The self-evaluation 2.10. Tuition fees are determined on the report clearly states the method by which tuition fees basis of transparent criteria (and real are determined and how they are distributed. Along with the 30% of the tuition fees explained in 2.9, an costs of studying). additional 27% of the tuition fees is used for covering the material costs of the programme, i.e. organisation of workshops, costs of foreign lecturers, organisation of workshops, etc. 3. SUPPORT TO **DOCTORAL CANDIDATES AND THEIR PROGRESSION** High level of quality The doctoral programme in the Faculty of Mining, 3.1. The HEI establishes admission quotas Geology and Petroleum Engineering conducts with respect to its teaching and admission on a two year basis with an intake of about 40 students in total across the programme. supervision capacities. HEI takes into consideration the available lecturers, supervisors and mentors, their current workload and expertise before allocations are made to students. This is commendable and their efforts are clearly visible within the faculty.

A committee (Head of doctoral study, deputy head of doctoral study and module head) handles the interview of candidates on research topic and suitability after which the necessary considerations are made. However, candidates are already pre-evaluated throughout the call for applications (5 month period), before the interview is conducted, which guarantees an almost 100% success rate, post-interview.

#### High level of quality

3.2. The HEI establishes admission quotas on the basis of scientific/ artistic, cultural, social, economic and other

needs.

Admissions into the doctoral programme in most part is provided in collaboration with the needs of research and government institutes, INA, and also the faculty. Enrolment is based on allocation and availability of funding from these sources who fund research students to embark on projects that are either aligned or in collaboration with the funding organisation, departmental projects or personal research interest. This ensures the enrolment quota is three quarter funded and the rest self-funded.

Doctoral candidates are in most cases employed parttime in the department, or in funded institute. This can also be a draw back as contract for funding ties the candidates to the organisation or faculty for a period of up to 6 years which can greatly delay the completion of doctoral studies, 6-8 years.

The panel strongly encourages HEI to get feedback from alumni and other stakeholders (employers, representatives of the industry) in order to ensure better communication channels between industry and faculty/department and ensure projects and research interests are aligned with their needs as this can greatly enhance capacity for collaboration.

3.3. The HEI establishes the admission quotas taking into account the funding available to the candidates, that is, on the basis of the absorption potentials of research projects or other sources of funding.

#### High level of quality

The funding for candidates in this aspect is good, considering the current economic climate in Croatia. Most PhD candidates have tuition fees and research fees covered.

However, there is the case were PhD candidates who are granted tuition scholarship are no longer eligible to apply for city funds. This means they still need to source research funds as they progress, and these financial restrictions can potentially limit their academic

performance as those candidates might be forced to take on additional work obligations. There is always room for improvements in the area of funding and this can greatly enhance admissions, extending to international candidates. High level of quality 3.4. The HEI should pay attention to the number of candidates admitted as to The number of candidates admitted is clearly in line provide each with an advisor (a with the admission quota and set out obligations. potential supervisor). From the point of There has been a drop in the number of students admission to the end of doctoral admitted each year but this is presumed to be associated with the economic situation. education, efforts are invested so that Students enrolled to the program are supported each candidate has a sustainable through the course of their studies, and are encouraged research plan and is able to complete to take on Erasmus and international courses to doctoral research successfully. broaden their horizon, especially in areas where the University has no expertise. Improvements are necessary Admission into the doctoral programme is conducted after a call is made to the general public, with the process lasting for 5 months. Pre-screening is done for applicants to make sure qualified and motivated students are admitted. This is a commendable proactive process by the department. The HEI has also taken steps to ensure international 3.5. The HEI ensures that interested, students are considered in their admission process by talented and highly motivated offering the doctoral programme in English. However, candidates are recruited this still hasn't improved the number of international students applying to the programme. internationally. Improvements can be made in the visibility of lecturers and activities in the website to increase traction, covered by criterion 2.8. Online marketing would be an advantage and should be an option to help increase traffic to the activities and research capabilities available in the department. Furthermore, the panel recommends programme to be more actively advertised in available international outlets in order to attract international PhD candidates. High level of quality 3.6. The selection process is public and based on choosing the best applicants. The selection of candidates follows set out guidelines and processes that ensure that applicants selected are the best and well suited to embark on doctoral

		programme. As said earlier, the call for application is open to the public with the application and pre-qualification process lasting for 5 months.
		High level of quality
3.7.	The HEI ensures that the selection procedure is transparent and in line with published criteria, and that there is a transparent complaints procedure.	The selection of doctoral candidates is fully documented and reported publicly.  The faculty have not had any objections so far in the admission process and selection of candidates.  However, during the site visit the panel was under the impression that students are not fully informed on the procedure to file in complains. This should be clearly communicated with students, as noted in 3.9.
		High level of quality
3.8.	There is a possibility to recognize applicants' and candidates' prior learning.	The selection process recognises candidates with high GPA's, previous academic track records, masters, and publications. All of that is followed with an interview for shortlisted candidates.  In cases where recognition of prior learning is required, a Commision composed of members of the Postgraduate Study Committee is formed to evaluate prior achievements and award (recognize) ECTS points. So far the process is good and should be maintained.
		Improvements are necessary
3.9.	Candidates' rights and obligations are defined in relevant HEI regulations and a contract on studying that provides for a high level of supervisory and institutional support to the candidates.	The rights and obligations of the candidates are defined in the ordinance on doctoral study programme at the faculty and university level. The candidates are made aware of their rights and obligations at the start of the admission process which is pointed out by the allocated advisors.  The students on gaining admission into the faculty are made aware of their obligations and sign contract agreements with the departments and funding institutes.  Students are evaluated in the form of reports and feedback about their supervisors and vice versa on a yearly basis.  Supervisors support students and the Scandinavian system of thesis is implemented in this department, which ensures a good enough quality in research.  Support in the form of funds to attend events and conferences is provided by the faculty. This is a great

	feat and effort by the faculty.  One area that can be improved is the awareness of an official complaint system to be properly instituted at the departmental and faculty level as well. A clear cut complaint procedure is not readily found online, this should be amended.
3.10. There are institutional support mechanisms for candidates' successful progression.	Institutional support in this faculty is impressive considering the lack of funds or reduced government support. Candidates are supported through departmental grants to attend conferences and events through the year.  Students are also encouraged to partake in the Erasmus programme to help broaden their educational experience.  Educational support is also provided in the area of internal publication in the university handbook and manuals. This will help sharpen the writing and scientific skills of the candidates.  This area can be greatly improved by students aiming to publish in international peer reviewed journals.
4. PROGRAMME AND OUTCOMES	
4.1. The content and quality of the doctoral programme are aligned with internationally recognized standards.	Improvements are necessary  While the content and quality of this doctoral programme are for the most part in line with expected and recognized standards, the main issue is the time for completion of the doctoral studies that is up to 6-8 years.  This needs to be shortened to be competitive in the international context.
4.2. Programme learning outcomes, as well as the learning outcomes of modules and subject units, are aligned with the level 8.2 of the CroQF. They clearly describe the competencies the candidates will develop during the doctoral programme, including the ethical requirements of doing research.	High level of quality  The learning outcomes and the competences they provide are clearly communicated and appropriate for a doctoral level study programme. As stated earlier, a high level of ethical standards is upheld at the HEI and the panel is satisfied that there is a clear link between the stated learning outcomes and what the programme delivers.  As the next step, the panel recommends for the spectrum of course offerings to be widened in order to enable greater individualism of course participation.

		High level of quality
4.3.	Programme learning outcomes are logically and clearly connected with teaching contents, as well as the contents included in supervision and research.	The individual courses are structured to deliver intended learning outcomes across the faculty. The contents appear to be logically connected to the outcomes. The curriculum development must nevertheless constantly be adjusted for the optimisation of fields of employment of the graduates.
		High level of quality
4.4.	The doctoral programme ensures the achievement of learning outcomes and competencies aligned with the level 8.2 of the CroQF.	The panel is satisfied that the programme does deliver the stated outcomes and that the outcomes are aligned with what is to be expected from a doctoral programme. A greater emphasis on the Scandinavian dissertation model may be an area for development. The transition to this possibility seems to be taking hold very slowly within the programme.
		High level of quality
4.5.	Teaching methods (and ECTS, if applicable) are appropriate for level 8.2 of the CroQF and assure achievement of clearly defined learning outcomes.	The qualification achieved and learning outcomes are compliant with and the quality of teachers and teaching is at acceptable standards.  Nevertheless the teaching responsibles must constantly be revising their methods to maintain internationally competitive standards.
		Improvements are necessary
4.6.	The programme enables acquisition of general (transferable) skills.	While the programme enables the acquisition of transferable skills, a greater emphasis should be placed on the imparting of independent funding skills.  The possibility of engaging in independent research careers should be maintained at an adequate level via the training of the curriculum participants.  The panel also encourages the HEI to hold more specialised courses through industry collaboration and participation in order to support the needs of the candidates.
4.7.	Teaching content is adapted to the	Improvements are necessary
	needs of current and future research and candidates' training (individual course plans, generic skills etc.).	Enhanced exchange and communication between external stakeholders and doctoral students should be encouraged.  It is recommended to formalise a regular engagement with, encounters between the potential stakeholders

	and the student body.
4.8. The programme ensures quality through international connections and teacher and candidate mobility.	High level of quality  As stated earlier, the programme is internationally-minded and it does provide support and encourage both candidate and teacher mobility through various means.  Nevertheless, international participation in thesis assessment committees could be increased and the doctoral theses could be increasingly written in English. The possibilities to do this should be clearly presented to the students including the value of such for initiating on a research career.

## \* NOTE: RECOMMENDATIONS OF THE EXPERT PANEL TO THE ASHE'S ACCREDITATION COUNCIL AND QUALITY LABEL

The role of the Expert Panel in the re-accreditation of doctoral study programmes is manifold. The Expert Panel or part of the Expert Panel visiting a higher education institution drafts a report on the basis of a self-evaluation report, the accompanying relevant documentation, and a site visit to HEI. The draft report is adopted by all members of the Cluster Expert Panel, while the president of the Cluster Expert Panel is responsible for coordinating the assessment levels.

The report contains an assessment on whether a doctoral study programme delivered at a higher education institution complies with the prescribed laws and by-laws, as well as any additional/recommended requirements defined by the Agency's Accreditation Council, and whether a higher education institution can obtain a positive, i.e. satisfactory quality assessment according to the criteria set out in this document. Moreover, the Expert Panel must make recommendations for quality improvement.

Based on the assessment of all these elements, the Expert Panel may propose to the Accreditation Council of the Agency to issue either a confirmation on compliance, a letter of expectation for the period up to three (3) years in which period the higher education institution should eliminate the identified deficiencies, or to deny the license.

If the Expert Panel has assessed that a doctoral study programme delivered by a higher education institution does not meet legal and other requirements or that the quality of a study programme is not ensured (i.e. that HEI does not meet additional requirements or recommendations made by the Accreditation Council, or has a very poor quality assessment), they should propose to the Accreditation Council to deny the license.

If the Expert Panel considers that the relevant laws and bylaws have been met by a higher education institution, but that certain elements mentioned above do not meet the quality requirements, while they consider that the identified shortcomings can be corrected within a time frame of three years, they should issue a letter of expectation.

If the Expert Panel considers that all legal and additional/recommended requirements have been met and the quality assessment is satisfactory, i.e. that a study programme fulfils the learning outcomes appropriately defined for that level and scientific area, they may propose the issuance of a certificate and have a HEI commit to quality improvement and reporting to the Agency during the follow-up period.

Finally, if the Expert Panel has, in accordance with the criteria mentioned above, proposed issuing the certificate of compliance and assessed that, in addition to meeting the minimum quality requirements – i.e. the qualification framework level - for a study programme, the programme should be identified as a doctoral programme of a 'high level of quality', the Expert Panel may propose to the Agency's Accreditation Council that such a doctoral study programme be awarded the 'high quality label'. Thus the Agency, with the consent of the

Accreditation Council, grants a higher education institution the right to use the label for their academic and promotional purposes.

The 'high quality label' cannot be proposed or awarded to a programme or a higher education institution that does not comply with the requirements laid down by the laws and bylaws mentioned in this document, and any additional requirements recommended by the Accreditation Council. Moreover, the quality assessment awarded to a study programme should reflect a high level of quality inasmuch that at least half of the sub-criteria in each of the quality assessment criteria are assessed as being of high quality. The Accreditation Council of the Agency issues a final opinion on the label awarded. The content and form of the quality labels shall be prescribed by the Agency in a relevant general act.

The Accreditation Council of the Agency discusses the final report with all recommendations and suggestions, and issues their opinion on the report. Based on a prior opinion of the Accreditation Council, the Agency issues an Accreditation Recommendation to the minister responsible for science and higher education, and upon receipt of the minister's final decision on the outcome of the procedure, awards the 'high quality label" to a higher education institution.