BEDÖMARUTLÅTANDE FÖR UTBILDNING PÅ FORSKARNIVÅ INOM GEOVETENSKAPER (inriktning geografi/geologi/naturgeografi) VID NATURVETENSKAPLIGA FAKULTETEN

2019-01-08

Report of 3rd Cycle Assessment Panel

Department of Earth Science

Panel members	
Name	Institution
Gerald Mills Chair	School of Geography, UCD, Ireland.
Peter Engesgaard	Department of Geosciences and Natural Resource Management, University of Copenhagen, Denmark.
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On Wednesday 21st November the panel met with members of the Department of Earth Science (DES) in a series of scheduled meetings between 8:30 and 15:00. These meetings were followed by a brief feedback session.

Time	Item
08:30-09:30	The Department leadership
10:15-11:15	Doctoral students
11:15-12:00	Administrative staff
13:00-14:00	Supervisors and Examiners
14.00-15:00	External stakeholders and/or alumni
15:45-16:30	Feedback to faculty management and department management/equivalent

In the following, the panel summarises the results of these interviews and concludes with a set of recommendations. In the Appendix there is a summary of the documents provided in preparation for this review.

The review panel met with more than 20 people over the course of the day. The exchanges were frank and honest and demonstrated a good deal of self-reflection on behalf of the academic and administrative staff.

It is clear that the PhD programme is successful in terms of current student numbers and progress and that this has been a direct consequence of the DES's support system. All students expressed satisfaction with their study programmes while offering constructive criticism of the support systems

Of particular relevance is the Policy for Quality Assurance and Continuous Quality Improvement of Education (QAQI), which stipulates that the Panel should review if the provided education meets a set of criteria related to learning outcomes and the acquisition of relevant skills. For the PhD programme, the key criteria are access to an active research environment and the potential to collaborate with (inter)national scholars. The Panel should also comment on any perceived weaknesses and offer advice on addressing these.

With regard to the specific criterial outlined in the QAQI (see Appendix):

- The main learning outcomes of the PhD programme are associated with the skills necessary to complete and successfully defend a thesis. The progress of students through the system is evidence that the PhD learning outcomes are being achieved. In the Department's strategy documents there was concern expressed about the number of entering PhD students. The policy of co-funding PhD positions appears to have been successful in this regard. Each PhD student has guaranteed funding for four years via through external funding and department/faculty support.

- At the PhD level, the acquisition of skills is highly individual as it is based on what is required to complete the research project. The individual study plan (ISP) agreed with the supervisor/examiner and Department allows considerable flexibility in the training. The ability to take courses at other universities (in Sweden and elsewhere) and to take undergraduate and Master's courses as needed provides a wide scope for individualized training.

- For most PhD students, the majority of the courses are provided outside of the Dept. Based on the syllabi of Dept. courses the content and form of teaching does rest on good scientific and proven experience. Moreover, the teachers have up-to-date and adequate competence as regards their subjects, as most courses draw upon the specialist knowledge of the academics.

- The ISPs provided show that course selection is designed to fit the needs of individual students. However, it was clear from the discussions with PhD student that they thought the courses on offer in the Dept. were somewhat limited and that finding appropriate courses in a timely manner was often problematic. While students can select from courses (workshops) that are available at other universities at home and abroad, finding appropriate courses requires constant vigilance as many of the courses become available at short notice. This makes it difficult to plan for the year ahead, in the student's view. Moreover, even courses within their university at the PhD level often have a short 'shelf-life'.

- The PhD students do have an influence in planning, implementing and monitoring study courses in the Dept. However given the limited resources of the Dept., the restrictions on some course offerings (e.g. a suitable statistics course was mentioned by several) and the specific needs of students, providing suitable courses that meets the needs of many is difficult. Many of the Dept courses are primarily taken by students of other programmes. The review panel wondered whether it is possible to increase the regularly scheduled Dept. courses for PhD students in the programme. The courses are all evaluated albeit using inconsistent approaches. As the courses are not given consistently, the evaluation process is probably not suited to the needs of students.

- The study and learning environment is accessible and purpose-oriented for all doctoral students. From discussions with students entering the programme the main issues is clarity of information. Much of the knowledge of the system is not centralized and students learn from other students. Part of the problem seems to be due to the fact that students start at different times of the year and may not be 'initiated' formally into the system. Some of the issues could be addressed by ensuring that the information on the website is available to students before entering the programme and providing a guidebook – this information would include employment information. There seems to be a particular issue with regard to opportunities to teach which is not managed centrally.

- There is continuous monitoring and development of study courses and programmes. This is clear in the strategy statement recently created for the Dept. It is notable that the co-funding approach has arrested the decline in incoming graduate students, although it has not increased the number of international students.

The review panel agrees that the student are part of an active research environment. It is clear that efforts are made to ensure that students learn off each other and are connected into wider international networks via coursework opportunities and attendance at conferences. The PhD council allows students to be represented in discussions on Dept. affairs, including the support systems and course offerings at PhD level. The management of the ISP system seems to be especially strong, especially with the deployment of an examiner to act as an independent arbiter in support of the student and supervisors. The role of the geo-seminars seems to be especially valuable in building an *esprit-de-corps* among researchers and developing a supportive research culture.

Over the course of the meetings some issues were raised that should be addressed. These include the following:

1. **Information:** Students need a single source of reliable information on the PhD program that includes regulations and support structures. Such a handbook may already exist but it is clear that students are learning about the program through conversations with other students. This was apparent in some of the documentation we received which indicated that they had become aware of relevant information during this review process. It may be that the variations in the timing of entry into the system contributes to some of this confusion. Much of this could be overcome by making the website clearer and harmonizing information that may be in diverse places and identifying a knowledgeable person who can answer questions.

2. **Recruitment:** The PhD programme is successful in terms of current student numbers and this appears to be a direct consequence of DES's intervention to co-fund (50%) PHD students. While this as boosted the number of students it does not address the School's desire to establish a research strategy for the programme, which is still oriented to a 'follow-the-money approach. Also, the DES should consider alternative approaches if funding support does not permit 50% co-funding in the future. It might be useful to consider how the teaching supports could be integrated with the funding models.

3. **Courses:** There is a difference in opinion on the availability of courses and the opportunities to avail of these. For the students they feel that there are a limited number of courses available and that many opportunities present themselves at short notice so that they are unaware until it is too late or cannot organise financing in time to avail of it. They understand that the issue is much larger than the Dept. but feel that there should be effort to make the process of getting appropriate courses and credits easier. It was suggested that if the students had access to some of the funds themselves, they might be able to react more quickly when course opportunities became available. On a related issue, the syllabi provided to the review group do not meet the university regulations in terms of content (e.g. meeting times) and evaluations (which should be published for students benefit).

4. **Teaching:** From the students point of view there needs to be more clarity on teaching opportunities within the Dept. that is seen as driven largely by the needs of the supervisor. It would be good to align the teaching needs of the Dept. with the interests of the students in getting teaching experience. The flexibility of varying the teaching contribution up to a maximum of 20% of time was seen as a valuable tool for managing career development.

5. **ISP:** The organisation of a student's progress through the ISP is excellent. The role of the Examiner as an independent assessor of progress and of the readiness to submit is good for both the supervisor and the student. Some of the current students felt that the process for approval of ISPs was too cumbersome and prevented it from being update as needed. It is suggested that career planning (post-submission) be included as part of ISP. The role of the geo-seminars in the education of students is seen as excellent.

6. **Alumni**: The creation of an alumni database would be an extremely valuable source of information for the Dept and for current PhD students. The external stakeholder group was relatively limited in its representation so that it was difficult for the review group to get a sense of the potential.

Summary

The Panel's assessment of the PhD programme of the DES is very positive and we think that the programme meets all the fundamental criteria by providing a stimulating research environment that provides the necessary skills and training for students to succeed. The management of the student learning experience is very strong via the ISP process that includes the roles of supervisors and examiners. We have summarised the recommendations of the panel in the table below and provided a three level priority indicator (must, should and could) as suggested by the DES in the review.

Recommendations	Priority
Standardise the Departmental course syllabi to be in compliance with university standards. Standardise the course evaluations and publish the results.	Must
Develop an alumni database that shows the variety of careers that students take following graduation	Must
Improve the system for allocation of teaching opportunities to take into account the student development.	Must
Develop career planning as part of the ISP and seek to develop networks that link alumni and PhD students in the programme	Could
Consider providing technical and administrative support for thesis submission.	Should
Consider simplifying the ISP approval process to allow it to be modified as needed.	Should
Support students in terms of identifying relevant courses outside of the university and consider allocating funds to allow students to select courses at short notice when the opportunity arises.	Should
Improve information available to students before and at point of entry to PhD programme.	Must
Consider how to provide a consistent set of Dept. courses to support graduate training.	Could

Appendix

In preparation for the day, the panel received extensive documentation from the Dept. that included:

1. The policy for quality assurance and continuous quality improvement of education.
2. The syllabus for the Third-Cycle Progamme in the Natural Sciences.
3. The rules and regulations for Third-Cycle studies: Faculty of Science
4. The guidelines for PhD students in the Dept. of Earth Sciences (DES)
5. Report of the Strategic task force in the DES
6. A series of syllabi for courses offered by the DES and course evaluations (see below)
7. Comments of documents available from two current PhD students
8. A set of individual study plans (ISPs)

The role of the panel was to review whether the provided education meets the following criteria:

- *Achieved study results matching intended learning outcomes and the qualitative targets of the Higher Education Ordinance.*
- *Teaching being focused on student acquisition of knowledge/skills.*
- *The content and form of teaching resting on good scientific and/or artistic bases and proven experience.*
- *Teachers having up-to-date and adequate competence as regards their subjects, higher education pedagogics and subject didactics, and that said teachers being in proportion to the scope and content of study courses and programmes.*
- *Study courses and programmes being relevant to the needs of the students/doctoral students and society.*
- *Students/doctoral students having influence in planning, implementing and monitoring study courses and programmes.*
- *There being a study and learning environment that is accessible and purpose-oriented for all students/doctoral students.*
- *There being continuous monitoring and development of study courses and programmes.*

For doctoral education, it is particularly important that the doctoral students have access to an active research environment with sufficient subject depth, subject width and scope. It is also important to take into account the possibility for doctoral students to collaborate with researchers both nationally and internationally and with the surrounding community.

The panel should also report any perceived weaknesses that cannot be clearly referred to any of the criteria. The faculty/department may also communicate with the panel if any of the criteria, parts of them or other criteria and aspects are of particular interest.

Title	Credits	Evaluation
Oceanographic models (OC6310)	2x7.5	
Biochemistry – rhizosphere and soil processes	3	Y (15)
Modelling strategies	2	
Greenhouse gasses – biochemistry and measurement techniques in ecosystems and landscapes	5	
Land use greenhouse gas emissions – IPCC guidelines, UNFCCC reporting, global and EU policy	3	Y (10)
Pollution and Land Management (PALM course series): 1. Delta environments	3-5	Y online (n)
Stable Isotope tools in Earth System Sciences	5	Y (4)
Late Holocene climate variability	5	
Automate your GIS – Scripting in Python	5	
Earth System Science	5	
Geo-seminar course	3-6	Y
Late Holocene climate variability	5	Y
Arctic in a changing climate (missing)		Y

Table 1. Courses provided by the Department. The table shows the titles of the courses, their associated credits and whether the student evaluations were included.