



**Report
of the Expert Panel
on the REACCREDITATION
of the University Postgraduate (Doctoral) Programme
Geology
Faculty of Science, University of Zagreb**

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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 Geology on the basis of the Self-Evaluation Report of the Programme, other documentation submitted and a visit to the Faculty of Science, 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 Università 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 Universität München, Germany
- Alexandra Pinto, Associate Professor, Director of PhD programme in Chemical and Biological Engineering, Universidade de Porto, Portugal
- Mohamed Hussien, doctoral student, Faculty of Chemistry and Pharmacy, L. M. Universität München, Germany
- Mikael Rinne, Associate Professor, Aalto University, Finland.

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

- 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 Università 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.

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 Andrija Mohorovičić's memorial rooms.

SHORT DESCRIPTION OF THE STUDY PROGRAMME

Name of the study programme contained in the licence: Geology

Institution delivering the programme: Faculty of Science, University of Zagreb

Institution providing the programme: Faculty of Science, University of Zagreb

Place of delivery: Zagreb

Scientific area and field: Natural sciences, Geology

Number of doctoral candidates (all): 24

Number of HEI funded doctoral candidates: 1

Number of self-funded doctoral candidates: 11

Number of employer-funded doctoral candidates (associates at the Department of Geology and/or its collaborating institutions): 12

Number of inactive doctoral candidates: 12

Number of teachers: 25

Number of supervisors (all): 23 (taken from Table 2 of the Appendix)

Number of officially appointed supervisors: 6

Number of study advisors: 10

Number of doctoral candidates to whom a supervisor was officially appointed: 6

Number of doctoral candidates to whom a study adviser was appointed: 18

Ratio of doctoral candidates and their officially appointed supervisors: 6:6= 1:1 (<3:1)

Learning outcomes of the study programme:

LO 1. KNOWLEDGE AND REASONING

1.1. To recognize and interpret existing contemporary geological knowledge

1.2. To evaluate new scientific discoveries in particular geology branches

1.3. Knowledge and understanding of contemporary methods of field and laboratory research and scientific work

LO 2. COMPREHENDED SKILLS

2.1. Gathering information by searching scientific and professional literature with critical reading and discovery of bias

2.2. To analyse and make their own conclusions based on quantitative research data comparing with previous knowledge in the field of research

2.3. To conduct complex experiments and procedures in the research

LO 3. PSYCHOMOTORIC SKILLS

3.1. To evaluate, adapt and perform more complex sampling procedures in field work

3.2. To perform complex laboratory procedures and master the modern instruments, tools and materials available to us

3.3. The ability to develop new models for the interpretation of one's own research

LO 4. SOCIAL SKILLS

- 4.1. Writing skills and reporting (speaking skills and listening skills, and ability to display data and results to professional and unprofessional audience)
- 4.2. The skill of expressing personal professional and ethical authority
- 4.3. Willingness to face new challenges in the economy (and society)

LO 5. INDEPENDENCE

- 5.1. To design their own research, to select research methodology (planning and conducting independent scientific work: drafting of scientific research/projects, research organization, timely detection of potential problems, determination of the necessary resources)
- 5.2. To participate in the work of the research team and to adapt to the demands of the working environment with individuals and groups of different orientation and different cultural and ethnical backgrounds
- 5.3. To independently monitor the development of new knowledge in the field of geology with a critical review of their reach and possible application

LO 6. RESPONSIBILITY

- 6.1. The readiness to take ethical and social responsibility for the success of research
- 6.2. The practice of legally prescribed ethical principles in the implementation and publication of scientific and research work
- 6.3. The use of acceptable forms of communication and cooperation

Taught / research ratio: up to 56 / 124 ECTS (**up to 45% in courses**)

Taught component: up to 56 ECTS; 36 mandatory ECTS obtained through passing mandatory courses and selected basic and elective courses during the 2nd and the 3rd year + up to 20 optional ECTS obtained by taking additional courses.

Research component: up to at most 50 ECTS credits through publication of research papers either as authors or as co-authors, up to at most 50 ECTS credits through extracurricular activities (attendance at congresses, in the teaching process, study stays and research at international research laboratories, workshops, etc.), 25 ECTS credits for three publicly held seminars (Seminar I, II and III), 50 ECTS credits for preparation of the doctoral thesis. Total: 124-144, depending on the chosen amount of optional additional taught courses.

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 letter of expectation** for a period of three (3) years in which period the higher education institution should make the necessary improvements.

RECOMMENDATIONS FOR THE IMPROVEMENT OF THE STUDY PROGRAMME

1. Strongly reduce the ECTS contributions of structured courses to enable an earlier and deeper immersion in the doctoral research project.
2. Prioritize the organization and funding of conference and short course participation of doctoral students.
3. Build better bridges to other sectors of employment (private/public, national/international).
4. Establish a faster timeline for the selection and defence of the doctoral research topic, achieving the definition of the thesis topic and work plan in the 2nd half of the first year.
5. Redouble efforts for the obtainment of external competitive sources of research funding by supervisors including doctoral position support.
6. Revise and strengthen the selection criteria for admission of doctoral students (letters of motivation, interviews).
7. The presentation of the Doctoral program in the form of a web presence as well as other media should be greatly strengthened. It should be more informative, inviting and web-interactive.

ADVANTAGES OF THE STUDY PROGRAMME

1. A large range and offering of structured teaching in the form of courses.
2. A close proximity and availability of supervisors to doctoral students.
3. Sufficient time for the doctoral students to mature in finding their final research topics.
4. A declared intention to amalgamate all parts of the Department in a single unified new research building.
5. Sufficient room for expansion of accepting more doctoral students in the coming years and a reasonable supervisor/doctoral student ratio.

DISADVANTAGES OF THE STUDY PROGRAMME

1. Potential overloading of structured teaching leading to overly delayed declaration of research topic and immersion in research training.
2. Deficit of short course offerings provided by external experts.
3. Insufficient funding for doctoral mobility and participation in scientific conferences.
4. Lack of incentive for doctoral students to conclude their doctoral studies within 3-4 years.
5. Insufficient adoption of the "Scandinavian" thesis modality.
6. Weak links to other societal sectors relevant to earth sciences expertise.

EXAMPLES OF GOOD PRACTICE

1. Yearly doctoral student progress reports.
2. Modality of “Scandinavian” thesis completion and English-language thesis submission.
3. Exclusion of the supervisor(s) from the thesis examination committee.
4. Multiple sourcing of doctoral student support.
5. Excellent gender balance.

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.	YES
2. HEI delivers programmes in the two cycles leading to the doctoral 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).	YES
3. HEI employs a sufficient number of researchers, as defined by Article 7 of the Ordinance on Conditions for Issuing Licence for Scientific Activity, Conditions for Re-Accreditation of Scientific Organisations and Content of Licence (OG 83/2010).	YES
4. At least 50% of teaching as expressed in norm-hours is delivered by teachers employed at the HEI (full-time, elected into scientific-teaching titles).	YES
5. Student: teacher ratio at the HEI is below 30:1.	YES
6. HEI ensures that doctoral theses are public.	NO*
<p>* Neither DABAR nor PMF repository contain all of the theses. DABAR: There are 5 theses defended in 2017 and 3 defended in 2014/15 (out of 28). PMF repository contains only those theses defended by 2016. No more than 5 are open access, publically available. According to SER, “preparations for the project of posting digital forms of doctoral theses at the Geology Department website are currently in progress.”</p>	
7. HEI launches the procedure of revoking the academic title if it is determined that it has been attained contrary to the conditions stipulated for 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.	YES
Additional/ recommended conditions of the ASHE Accreditation Council for passing a positive opinion	YES/NO notes
1. HEI (or HEIs in joint programmes) has at least five teachers appointed to scientific-teaching titles in the field, or fields relevant for the programme involved in its delivery.	YES

2. In the most recent reaccreditation, HEI had the standard Scientific and Professional Activity marked as at least "partly implemented" (3).	YES
3. The doctoral programme is aligned with the HEI's research strategy.	YES
4. The candidate : supervisor ratio at the HEI is not above 3:1.	YES
5. All supervisors meet the following conditions: a) PhD, elected into a scientific title, holds a scientific or a scientific-teaching 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 publications, participation in scientific conferences and/or projects in the past five years (table 2, Supervisors and candidates); c) confirms feasibility of the draft research plan upon admission of the candidate (or submission of the proposal); d) ensures the conditions (and funding) necessary to implement the 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-supervisions etc.); f) received a positive opinion of the HEI on previous supervisory work.	a) YES b) YES c) YES d) YES e) NO* f) YES
* For now, there is only a possibility of new supervisors gaining experience through co-supervision with more experienced colleagues. The planned activities in the forthcoming period to develop workshops for gaining supervision knowledge and skills for supervisors with mandatory attendance should improve the situation.	
6. All teachers meet the following conditions: a) holds a scientific or a scientific-teaching position; b) active researcher, recognized in the field relevant for the course (table 1, Teachers).	a) YES b) YES
7. The supervisor normally does not participate in the assessment committees.	YES
8. The programme ensures that all candidates spend at least three years 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.	NO* .
*Doctoral students spend a very large fraction of their time taking structured courses to fill up their ECTS points. Thus they spend less time on their research projects until late in their project schedules. More directed short courses could sharpen the profile of the offerings in terms of research relevance.	

QUALITY ASSESSMENT

1. RESOURCES: SUPERVISORS, CAPACITIES AND INFRASTRUCTURE	TEACHERS, RESEARCH
1.1. HEI is distinguished by its scientific/ artistic achievements in the discipline in which the doctoral study programme is delivered.	<p>Improvements are necessary</p> <p>Less than half of research papers appear to be published in international top-ranked journals.</p> <p>The Panel has identified that, to be distinguished scientifically and recognized internationally, the doctoral programme will have to incorporate the use of English language more and publish in international journals.</p>
1.2. The number and workload of teachers involved in the study programme ensure quality doctoral education.	<p>High level of quality</p> <p>The Programme is delivered in large part (ca. 80%) by internal faculty members, with experts from collaborating institutions covering the remaining 20%. The individual publication performance of the members should be strengthened.</p>
1.3. The teachers are highly qualified researchers who actively engage with the topics they teach, providing a quality doctoral programme.	<p>High level of quality</p> <p>The staff are comprised of skilled and active researchers.</p> <p>There is still room for improvement in the intensity of published research activity in international journals, as addressed in 1.1.</p>
1.4. The number of supervisors and their qualifications provide for quality in producing the doctoral thesis.	<p>High level of quality</p> <p>The number of supervisors is sufficient.</p> <p>The Panel has observed that, although the supervisors are qualified and have academic papers in local and international journals, they will have to ensure that their students aim to achieve international status and not restrict their academic achievements to the national journals.</p> <p>The Panel believes that there is still room for improvement in the intensity of published research activity in international journals, as this will have a direct impact on the quality of students that will graduate from the Department.</p>
1.5. The HEI has developed methods of assessing the qualifications and competencies of teachers and supervisors.	<p>Improvements are necessary</p> <p>Quantitative data about the level of the candidates' satisfaction with the specific aspects of the supervisors' performance are collected through the analysis of annual reports about candidate progress (university form DR.SC.04).</p> <p>The supervisors are also subject to quality evaluation, by</p>

	<p>periodic filling of the form DR.SC.05 whereby their activities are also monitored and improved. In case of negative evaluation (it happened once or twice), supervisors may be substituted.</p> <p>However, no clear cut procedure or details in these cases was submitted to the panel.</p>
<p>1.6. The HEI has access to high-quality resources for research, as required by the programme discipline.</p>	<p>Improvements are necessary</p> <p>Access to existing research infrastructure/equipment appears to be good.</p> <p>However, it is not clear to what extent the students can easily access all of the research literature in their fields.</p> <p>The Panel notes that the expansion strategy and building a new suitable building for the Department that was discussed during the site visit should include full renewal and expansion of the equipment basis of the Department.</p>
<p>2. INTERNAL QUALITY ASSURANCE OF THE PROGRAMME</p>	
<p>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.</p>	<p>High level of quality</p> <p>SER and other documentation provide sufficient evidence that the programme was launched in line with regulations and with consideration of scientific, social and economic needs and national strategic research priorities: research and exploitation of natural resources, environment protection, cultural heritage protection, health care, agriculture, education and general knowledge improvement.</p>
<p>2.2. The programme is aligned with the HEI research mission and vision, i.e. research strategy.</p>	<p>High level of quality</p> <p>After reviewing the documentation and conducting the site visit, the Panel is of the opinion that the Programme is in line with strategic goals set out by both the Faculty and the University.</p> <p>Programme content and research project development by candidates are satisfactory. The supervisors are subject to quality evaluation by periodic filling of the form DR.SC.05, whereby their activities are also monitored and improved.</p>
<p>2.3. The HEI systematically monitors the success of the programmes through periodic reviews, and implements improvements.</p>	<p>High level of quality</p> <p>There are several levels of monitoring the success of the Programme in place, periodic meetings with the heads of all programmes of the Faculty of Science that aim to coordinate and harmonize the studies, as well as separate departmental yearly reports on research and teaching activities.</p> <p>There is also monitoring of candidates' annual achievements, and yearly self-evaluations of the</p>

	<p>Programme in place and anonymous random student polls (that include invitation for suggestions of improvement of the programme) are conducted. The Panel encourages the HEI to strengthen and improve incentives for and monitoring of research productivity of the supervisors.</p>
<p>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.</p>	<p>Improvements are necessary The supervisors are subject to periodic quality evaluation whereby their activities are also monitored and improved. In case of negative evaluation (it happened once or twice), supervisors may be substituted. While the success rate is high compared to other doctoral programmes, it is still far from being completely satisfactory and in line with international standards. No details on a clear-cut procedure in cases of negative evaluation of the supervisor were given, this should be amended.</p>
<p>2.5. HEI assures academic integrity and freedom.</p>	<p>High level of quality The Panel found the level of academic integrity upheld at the HEI to be satisfactory. The main document is the Code of Ethics at the University level that candidates and supervisors are required to abide by, and there is an Ethics Committee at the Faculty level in charge of these questions. Candidates are required to sign declarations of originality for scientific papers and the PhD thesis. PhD theses are publicly available after the defence.</p>
<p>2.6. The process of developing and defending the thesis proposal is transparent and objective, and includes a public presentation.</p>	<p>High level of quality The Panel found the process of developing and defending the thesis proposal to be good. Along with the thesis title, plan of research, explanation of originality of the topic and information on supervisor(s) the proposal includes candidate's CV, list of published works and an estimate of research cost, if necessary. The defence of the proposal is public and takes place in front of a committee that includes an external member (not an employee of the Faculty, in some cases an international expert). The supervisor is not allowed to be a member of the thesis proposal defence committee.</p>
<p>2.7. Thesis assessment results from a scientifically sound assessment of an independent committee.</p>	<p>High level of quality The requirement for submitting the thesis for evaluation is that the candidate has published an article in an international scientific peer-reviewed journal as the principal author, or the article has been accepted for publishing. The committee for evaluation consists of three or five</p>

	<p>members, excluding the candidate's supervisor(s), and at least one of the members must be external to the HEI (i.e. not an employee of the Faculty of Science). Candidates can submit the thesis in English, in which case at least one member of the committee must be an internationally recognized expert in the field the thesis covers.</p> <p>The Panel, though appreciating the procedure adopted, encourage the preliminary examination of the doctoral thesis from external reviewers before defence.</p>
<p>2.8. The HEI publishes all necessary information on the study programme, admissions, delivery and conditions for progression and completion, in accessible outlets and media.</p>	<p>High level of quality</p> <p>The Department of Geology website contains a doctoral study section with many links to webpages available in English that are fully comprehensive of all the necessary information. The PhD candidates directly confirmed they have all the necessary information.</p> <p>Doctoral Programme in Geology is open to international participation, even if there are no foreign students at the moment.</p>
<p>2.9. Funds collected for the needs of doctoral education are distributed transparently and in a way that ensures sustainability and further development of doctoral education (ensures that candidates' research is carried out and supported, so that doctoral education can be completed successfully).</p>	<p>High level of quality</p> <p>Documentation received from the HEI convinced the Panel of transparency in distributing the funds acquired from tuition fees.</p> <p>Of the funds obtained from tuition fees, 68.6% is distributed between the Geology Department development fund and the resources for improvement of activities of the Geology Department (34.3% each). These funds are subsequently spent on teaching supplies, computing equipment, maintenance of equipment used for teaching and research, acquisitions of literature and employee training.</p> <p>External funds from research projects are sometimes available to support PhD candidates' research, mobility and expedite the thesis completion.</p>
<p>2.10. Tuition fees are determined on the basis of transparent criteria (and real costs of studying).</p>	<p>High level of quality</p> <p>Tuition fees were recently lowered from HRK 60,000 (HRK 20,000 a year) to 30,000 (HRK 12,000 for the first year and HRK 10,000 and 8,000 for the second and third year). The Faculty seems conscious and aware of the economic situation in the country and takes it under consideration when determining tuition fees.</p> <p>Self-funded candidates can reduce their tuition by up to 50% by participation in teaching or professional activities at the Faculty.</p> <p>Tuition fees cover the teaching expenses, fees for external</p>

	staff and committee members, etc. while the research is funded from the resources of the project in scope of which the candidate prepares his/her PhD thesis.
3. SUPPORT TO DOCTORAL CANDIDATES AND THEIR PROGRESSION	
3.1. The HEI establishes admission quotas with respect to its teaching and supervision capacities.	<p>High level of quality</p> <p>The Department of Geology programme provides for a good quality admission policy.</p> <p>The number of available supervisors and their teaching workload is taken into account. The available supervisors currently outnumber the students admitted on a yearly basis. The number of enrolled students on a yearly basis is 10 with a minimum requirement of a GPA of 3.5 accompanied with a letter of recommendation for acceptance. The success rate is high, as only very few applications are made in total to the department.</p> <p>Supervisors are qualified on the basis of their qualification as they are all Professors and Doctors. Allocation of supervisors to students is done after meetings are held between the student and advisor/coordinator to determine supervisor who will be best suited to their research proposal.</p> <p>The number of candidates supervised by teachers as a whole does not exceed 3; the current ratio of students to teacher is ca. 1:1. The teaching workload of some supervisors exceeds the legal thresholds.</p> <p>The coordinators also ensure that the obligations of supervisors and co-supervisors, candidates and research teams are clearly set out and defined in the laws and bylaws of the Faculty to which the students sign an agreement and are made aware of that.</p>
3.2. The HEI establishes admission quotas on the basis of scientific/ artistic, cultural, social, economic and other needs.	<p>High level of quality</p> <p>The Department of Geology collaborates with institutions such as the Croatian Geological Survey, Croatian Natural History Museum, Croatian Academy of Science and Arts, Croatian Conservation Institute and INA and, for the most part, candidates admitted into the programme are funded and or work with these institutions. The candidate's research is in line with the needs of the institutes and admission quotas are considerably given to them on account of research capability, need and funding.</p> <p>The admission quota of 10 students per year doesn't seem to be fully actualized as students taken are far less.</p>

	Supervisors are involved and engage with research students in external EU Universities.
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.	<p>High level of quality</p> <p>Admission quotas are considered on the basis of available funding from research institutions and organizations previously made available to candidates.</p> <p>Waiver fees or exemptions are granted to students already working within the Department or Faculty, and self-funded students who work part-time or full time (externally) to afford fees and other expenses.</p> <p>Part-time teaching schemes are made available to support students who are partially or self-funded.</p>
3.4. The HEI should pay attention to the number of candidates admitted as to provide each with an advisor (a potential supervisor). From the point of admission to the end of doctoral education, efforts are invested so that each candidate has a sustainable research plan and is able to complete doctoral research successfully.	<p>Improvements are necessary</p> <p>The number of candidates admitted each year is of manageable size. Each candidate at the start of the admission process is appointed an advisor by the council. The advisor is responsible for introducing the candidates to the structure of the programme and obligations of the candidates and faculty.</p> <p>On completion of the process and agreement between the candidate and the advisor on research project, a supervisor is appointed.</p> <p>Supervisor is available to students and provides support to ensure research aims and objectives are achieved to ensure successful completion of programme.</p>
3.5. The HEI ensures that interested, talented and highly motivated candidates are recruited internationally.	<p>Improvements are necessary</p> <p>Admissions are made following a public call for applications to the doctoral study programmes. The same level of consideration granted to nationals is also given to EU applicants.</p> <p>The teachers expressed interest to accept international students.</p> <p>However, applications are not made by applicants from other EU countries or internationals. This boils down to one of the following issues:</p> <ul style="list-style-type: none"> - Language barriers - Quality of research programme provided - Available funding for research projects.
3.6. The selection process is public and based on choosing the best applicants.	<p>Improvements are necessary</p> <p>The selection criteria are adequately set out by the Department and faculty of doctoral programmes. They include: the average grade of candidate, previous academic performance, and recommendations from present and previous work or study coordinators amongst others.</p>

	<p>These are formulated to ensure the right candidate is selected for the doctoral programmes.</p> <p>However, it seems that they are not strictly adhered to due to the low number of applications made by applicants. The percentage of candidates enrolled to the number of those that applied seems to be at over 90%.</p> <p>The Panel also notes that there seem to be no specific actions implemented to specifically select and eventually choose the candidates (e.g., preliminary analysis of project proposal, letter of motivation, interview, etc.).</p>
<p>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.</p>	<p>High level of quality</p> <p>Candidates with high GPA's of 4.0 are considered first, as well as candidates with a minimum of 3.5 GPA, accompanied with letters of recommendation.</p> <p>The selection of candidate is carried out by a three member committee from the Geology Department. The application and decision process in the Department is structured and provides candidates with the opportunity to follow and partake in the process, by the allocation of advisors. So far, no complaints have been officially made or documented with regards to the admission process.</p> <p>The Department allows for formal complaints to be made through coordinators and the council.</p>
<p>3.8. There is a possibility to recognize applicants' and candidates' prior learning.</p>	<p>High level of quality</p> <p>Candidates' prior achievements are recognized such as the publication of papers, and other activities such as attending conferences and events, all of which can add up to the award of ECTS points by the council. The achievement and accumulation of set out ECTS points determines the enrolment and progression of student.</p>
<p>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.</p>	<p>High level of quality</p> <p>The rights and obligations of the candidates are defined in the ordinance on doctoral study programme at the HEI 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.</p> <p>In summary, the candidates are to report their work and progression to the council on a yearly basis. They have a right to change supervisor, although this rarely or never happens. Candidates are aware of the possibility to publish papers as part of their thesis, but this is not always implemented.</p> <p>Candidates sign a contract of agreement at the end which also includes payment of fees.</p>

	<p>Scientific and research support is always made available to the candidates by the supervisors. Formal and informal meetings are permitted to encourage working relationship between candidates and supervisors.</p> <p>Feedback is constantly given with regards to research work as a good student – supervisor working relationship is established.</p> <p>There are issues with funds as the Department does have a huge financial pot, however, fees can be waived to support candidates. The institution could be more proactive in searching for external funding grants to increase support provided to students.</p> <p>Funds for external conferences and events are not available to students on a Departmental or Faculty level except a provision is made by the research institute or company to the funded or partly funded student.</p>
<p>3.10. There are institutional support mechanisms for candidates' successful progression.</p>	<p>Improvements are necessary</p> <p>There is limited institutional support, in the form of contributions to research development and mobility for doctoral students. Examples are the three scheduled seminars, the annual reporting system and the ECTS point system.</p> <p>The Panel recommends that HEI put further emphasis on international scientific meeting participation and prioritization of support for these.</p>
<p>4. PROGRAMME AND OUTCOMES</p>	
<p>4.1. The content and quality of the doctoral programme are aligned with internationally recognized standards.</p>	<p>Improvements are necessary</p> <p>The structure and format of the course of studies deviate quite substantially from the international norm.</p> <p>In the past five years few doctoral theses were written in English and very few were compiled as a sum of papers (i.e., according to the “Scandinavian model”).</p> <p>The high ECTS structured course contributions may detract from the research intensity and experience to be expected from a doctoral student upon graduation.</p>
<p>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.</p>	<p>Improvements are necessary</p> <p>It is difficult for the Panel to judge whether the existence of large parts of the curriculum in the form of doctoral structured courses are essential or not. The impression gained from the doctoral students is that there is no duplication from Masters level courses but the necessity of forming further training in the format is not entirely convincing.</p> <p>There is a clearly expressed desire for more highly</p>

	specialized training in the form of externally administered short courses and the panel advises the HEI to address this.
4.3. Programme learning outcomes are logically and clearly connected with teaching contents, as well as the contents included in supervision and research.	High level of quality In general, a consistent picture of the interrelationship between learning outcomes and course contents is communicated in the SER and the accompanying documentation.
4.4. The doctoral programme ensures the achievement of learning outcomes and competencies aligned with the level 8.2 of the CroQF.	High level of quality Sufficient evidence was presented for the fulfilment of the achievement of learning outcomes at the appropriate levels.
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.	Improvements are necessary While teaching methods are at an acceptable level, an overemphasis on the structured course training versus the research project training is perceptible. The Panel suggests introduction of more specialized short course training opportunities that would strengthen the structured course offerings.
4.6. The programme enables acquisition of general (transferable) skills.	Improvements are necessary In general yes, but the high end, late stage research training should be strengthened by dedicating more time to the actual conduction of the research project and its management. HEI is encouraged to address this.
4.7. Teaching content is adapted to the needs of current and future research and candidates' training (individual course plans, generic skills etc.).	Improvements are necessary The teaching content is flexible and can be adapted to doctoral students needed. However, the compulsory nature of the taught component of ECTS requirements may mean that doctoral candidates may end up taking more courses than are relevant just to fulfil the required norm.
4.8. The programme ensures quality through international connections and teacher and candidate mobility.	Improvements are necessary The PhD candidates participation to international conferences is low, partly due to scarcity of specific funds for mobility. A much greater emphasis on international mobility of the doctoral students and a simple facilitation of this would greatly valorise the doctoral experience for the candidates. The Panel observed a remarkable lack of familiarity with several standard elements of the international opportunities and programs widespread in Europe.

*** 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.