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External review

Department of Geology and Geo-Environment

National and Kapodistrian University of Athens

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Prepared for

The Hellenic Quality Assurance Agency (HQAA) for Higher Education

by

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1 Introduction

The material included in this report is a compilation of information gathered by the external review team during a three day visit to the National and Kapodistrian University of Athens (NKUA), Department (Τμημα) of Geology and Geo-Environment (DGGE) and of information contained in the self-study report carried out by the Internal Evaluation Committee (OMEA) of the Department. The documentation submitted to the committee prior to the site visit was: (i) Internal Assessment Report (OMEA); (ii) Undergraduate study programs- student handbook (for each one of the last 3 academic years); (iii) Graduate program handbooks for two of the programs (Museum Studies, and Oceanography). The Committee also reviewed on-line information available in the Department's web site and a collection of documents made available by the Department that included samples of recent undergraduate theses and reprints of publications by faculty.

During our visit we had the opportunity to meet with most faculty, technical, research and administrative staff as well as a large number of graduate and undergraduate students of the Department. In addition, we were able to visit all the research and administration areas, laboratories and teaching facilities as well as the museums associated with the Department.

Furthermore, the members of the review panel had the opportunity to learn more from the faculty and students about the past, current and pending legislation regarding the organization of the Hellenic Higher Education system and the potential implications on the activities of the Department.

The Hellenic Quality Assurance Agency (HQAA) for Higher Education provided the committee with a template for the report identifying in detail the main points that should be covered in it. However, the committee members felt that it will be more effective to present their findings in a structure consisting of the following main sections: (i) An overview of the Department (ii) an outline of the program strengths; (iii) areas for improvement, and finally (iv) some recommendations. Each of the above mentioned sections includes subsections regarding (a) Curriculum; (b) Teaching; (c) Research; and (d) Services.

This report focuses on the key strengths and weaknesses identified; however because of the diversity of the Department not all comments presented apply uniformly across the whole Department.

The review committee would like to thank the faculty and staff of the Department as well as the Hellenic Quality Assurance Agency (HQAA) for Higher Education for their hospitality during our stay and for facilitating the interviews with all members related to the review process.

2 Overview

2.1 Department Overview

The DGGE at NKUA is a dynamic organization with a large history in geological studies dating back to 1830's. The department covers a broad spectrum of the Geosciences and currently consists of 55 tenured/tenure-track faculty (20 Professors, 13 Associate Professors, 16 Assistant Professors and 6 Lecturers; see page 10 of Internal Assessment Report). The DGGE faculty is distributed into the following six Divisions (Τομεις): (i) Mineralogy and Petrology; (ii) Historical Geology and Paleontology; (iii)

Geography and Climatology; (iv) Geophysics and Geothermics; (v) Dynamic, Tectonic and Applied Geology; and (vi) Economic Geology and Geochemistry. The distribution of faculty and staff per division is listed in Table 1. Furthermore, it should be noted that Divisions contain Laboratories and Museums, the creation of which was established with relevant state legislation. There are also two laboratories that do not belong within a Division but are administered directly by the Department.

TABLE 1. Table showing faculty and staff per Division and duties within the Department. (Data compiled from departmental presentation to the committee at site visit on 5/15/2012 and the Student Handbook 2011-12).

Division*	***Academic (DEP)***				***Support***				**TOTAL (acad/support)**
	Profs	***Assoc. Profs***	***Assist. Profs***	***Lect.***	***EEDIP[1]***	***ETEP[2]***	***Admin. Staff***	***Support Staff[3]***	
Mineralogy & Petrology[4]	3	0	5	1	1	1	0	5	**16 (9/7)**
Historical Geology & Paleontology[4]	5	3	2	2	2	0	3	8	**25 (12/13)**
Geography & Climatology	3	3	3	1	-	-	1	2	**13 (10/3)**
Geophysics & Geothermics	2	3	2	1	1	0	1	6	**16 (8/8)**
Economic Geology & Geochemistry	4	2	1	1	1	1	1	2	**13 (8/5)**
Dynamic, Tectonic & Applied Geology	3	2	3	-	-	1	3	11	**23 (8/15)**
Secretariat & Independent Units	**-**	**-**	**-**	**-**	**-**	**-**	**6**	**3**	**9(-/9)**
TOTAL	**20**	**13**	**16**	**6**	**5**	**3**	**15**	**37**	**115 (55/60)**

* Research laboratories are associated with each division.

[1] EEDIP (Research & Teaching Staff)

[2] ETEP (Specialized Technical Staff)

[3] ΙΔΑΧ (under indefinite contract classified as administrative staff although the qualifications for a number of them indicate research staff)

[4] A museum is also supported by this division

2.2 Undergraduate Program

A single BSc in Geology and Geo-Environment with a 4 year attendance including a research project is offered at the undergraduate level. The annual number of newly admitted students is approximately 120 and it is determined by the State of Greece; however the total undergraduate student population exceeds 1,700 students, since a significant number of students fail to complete their studies within the normal 4 year cycle. The active student population graduates within 6 years on average.

According to the 2011-12 Student Handbook (page, 75) the undergraduate program requires 40 courses of which 32 are core (mandatory) , 8 electives (optional) from a pool of 52 courses, and an undergraduate thesis (διπλωματικη). A 2-4 month internship is optional and encouraged, pending availability. This is a new program of studies, running for the first year, with a significant reduction of optional subjects in relation to the previous curriculum.

2.3 Graduate Program

The graduate program consists of two multi-institutional programs (with TEI Serres and TEI Athens, respectively) one multi-departmental program (with the Departments of Biology, Chemistry, and Physics within NKUA), and one departmental program with five emphasis areas: (1) Applied Environmental Geology, (2) Stratigraphy-Paleontology, (3) Geography and Environment, (4) Dynamic Geology and Tectonics, Hydrogeology, and (5) Geophysics – Seismology.

2.3.1 MSc Programs

The MSc program duration is 2 years consisting of 4 semester periods. For the majority of the programs, the first 3 semesters is a combination of core and elective courses (varying by program from 11 to 19) while the last (4th) semester is dedicated to thesis preparation (for details per program see Table 2 below). During the academic year 2010-11 a total of 277 MSc students were enrolled.

TABLE 2. MSc Program requirements and student admission information.

MSc Program	# of Courses	MSc Thesis	# MSc Students admitted per yr.
Departmental	11 – 12	4th Semester	30
Oceanography & Marine Environment Management	14 – 19	4th Semester	20
Prevention & Management of Natural Disasters	13	3rd & 4th Semester	20
Museum Studies	12	4th Semester	18

Admission is after application of the candidate, and the selection is done by a committee of faculty participating in the appropriate MSc graduate program. The admission requirements and criteria are published. Typically, the MSc Thesis subject is determined during the 2nd year of studies.

2.3.2 PhD Programs

For enrollment into the PhD program, successful completion of an appropriate MS degree is required. The PhD is solely research oriented (i.e., no courses), and in academic year 2011-12 there were 209 PhD candidates. The average duration of PhD studies of 2011-12 academic period graduates was 7 years.

2.4 Teaching

Teaching of most courses in Geology includes formal lectures, laboratory exercises and fieldwork. The teaching approach of the Department is to provide the students with both a broad and in-depth presentation of all aspects of Geological Sciences.

Lectures are usually delivered by a team of instructors that present subjects of their specialty. Laboratories are commonly divided in several sections in order to accommodate space and equipment limitations requiring multiple instructors and large time commitment for both faculty and students.

Fieldwork, an essential component of Geological Sciences education, is an integral part of the teaching strategy of the DGGE and two weeks per semester are dedicated to fieldwork.

Attendance to lectures is not mandatory whereas laboratory participation is required and enforced. For lectures, student assessment is commonly done by a final comprehensive examination (written or oral). Student assessment in laboratories sometimes is spread throughout the semester while most commonly is performed at the end of the semester.

There are three examination periods every year (at the end of each semester, January and June, and before the start of the Fall semester in September).

For each course a brief description of content and teaching personnel are listed in the Student Handbook.

2.5 Research

Research activities carried out by the members of the DGGE are broad in scope and include fundamental and applied research as well as contractual activities. The source of the funds for research, although very limited, is mainly the EU, State funds, Internal University funds and regional and local authorities and municipalities.

Research productivity may be assessed on the basis of the publication of several books and book chapters, papers in peer reviewed international and national journals, and participation and publications in various conferences and associated proceedings. The peer reviewed publications by faculty members over the last 5 years (2007 – 2011) varied from 63 to 80 per year with an average of 73 papers annually. Additional peer reviewed publications by members of the department without faculty participation have contributed an additional 3 to 6 papers per year with an average of 4 papers per year. Impact in the international literature (H-factor) by faculty members is as follows: 11% have H-factor in the range of 10 to 14, 28% from 5 to 9, 50% from 1 to 4, and 11% has H-factor of 0 (see Fig. 1). Overall 39% of the faculty have impact factors greater than 4 while the impact factor of the remaining 61% of the faculty is equal or less than 4.

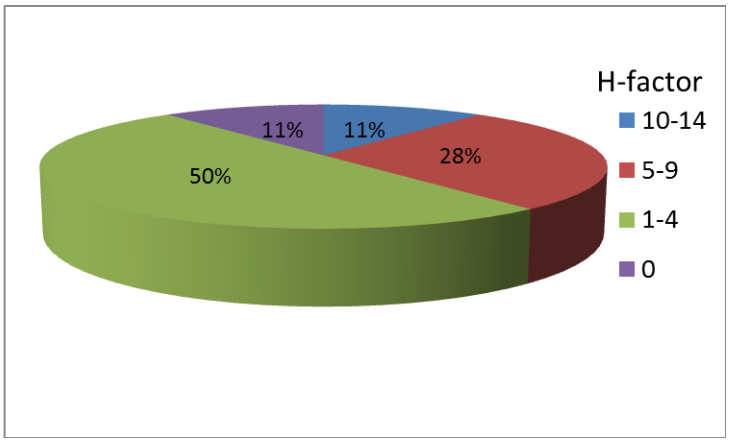

Figure 1. Faculty research productivity as exhibited by publications in the international peer reeview literature and its impact using the H-Factor.

2.6 Outreach Activities

The department is operating two museums, (i) the Mineralogy and Petrology Museum, and (ii) the Paleontology and Geology Museum. Both museums have old and rare collections of international and national significance. The museums are providing an important service to education of students and the general public with special focus on school children. Thousands of visitors see the museum exhibits annually. In addition, the museums provide opportunities for practical training of museum curators from other programs in Greece. A number of local museums have been established in various key paleontological sites throughout Greece (i.e., Pikermi, Tilos etc.) through the activities of DGGE staff.

2.7 Leadership structure

The overall departmental leadership is in the hands of an elected Director, whereas individual divisions, laboratories and museums are led by division elected senior professorial level faculty member.

3 Program Strengths

3.1 Overview

The Department is large in faculty members, support staff (see Table 1) and total student population when compared with other Departments of Geology both within Europe and North America. It encompasses a diverse number of specialties from within the discipline, something rare and not easily found elsewhere in the world.

Despite its size, the department is run well and the Director is viewed as approachable and supportive by students and staff alike.

The geological setting of the country of Greece provides a natural laboratory for the training of Geologists and as such this department is taking advantage of this natural laboratory through the organization of a number of field trips, despite budgetary shortages. It is worth noting that a number of foreign universities and other organizations (e.g. oil companies) organize field trips to Greece signifying the unique geological heritage of the country.

The museums of Mineralogy & Petrology and Paleontology & Geology are very important assets of the Department. They provide extremely valuable research, educational and outreach services that contribute to both specialized and public education. Furthermore, they often provide a conduit for interaction with other disciplines (i.e., museum curators) from other departments and universities within Greece and abroad.

The department has adequate office space and it possesses its own classrooms with the majority of them being equipped with the appropriate audio / visual infrastructure for lectures and seminars. Although not equally distributed, there are Divisions with adequate space for graduate students.

Similarly, microscope and computer facilities are up-to-date in some divisions / laboratories and out-of-date in others. In both cases the facilities are not adequate for the large number of students being trained.

3.2 Undergraduate Program

One of the most striking strengths of the DGGE is the well rounded and comprehensive undergraduate curriculum that enables the production of Geologists with a superior theoretical and practical background able to compete, if interested, in the worldwide market.

The committee encountered enthusiastic faculty and staff that exhibit a genuine commitment to the educational mission and the well-being of their students although this might not be always obvious to the student body. This is particularly obvious on the efforts placed on practical and field training.

The recent introduction of the faculty undergraduate advisor (tutor) who is responsible for the guidance of a group of students is a very positive initiative and it appears to be appreciated by the students.

The use of the internet (i.e., E-class) for the dissemination of class material (i.e., syllabus, notes etc.) is very helpful to the students and allows efficient distribution of information to the students and improved communication.

Implementation of student course evaluation is a positive development that contributes to improvement of teaching effectiveness.

3.3 Graduate Program

The graduate programs offered by the Department appear to be well attended. They have clear admission criteria. The creation of multi-disciplinary graduate programs such as that on Prevention & Management of Natural Disasters and the Museum Studies are commendable efforts and should be encouraged. It was noted that some graduate programs do charge students tuition fees while others do not. This might seem a bit arbitrary to the outsider and a consistent tuition policy might be required. Such a policy should include a justification for the need of tuition.

3.4 Research

The Department has been participating in international and national research activities that span the whole spectrum of fundamental to applied research.

Within the School of Science at NKUA the DGGE ranks highly in terms of research funding, number of publications and PhD student generation.

A wide range of highly skilled support staff is available within the Department willing and capable to contribute to the research activities of the unit.

Although highly variable across the Department, there are appreciable international collaborations with other institutions and a number of faculty have distinctions from the Academy of Athens, a prestigious Greek scientific organization.

The faculty contributes to the dissemination of their research results in the peer review literature at both international and national publications as well as through their participation in relevant conferences.

The participation of the Department in the Greek seismic network in collaboration with other research organizations and universities is a commendable collaborative effort benefiting the Greek society as a whole and providing research material of international significance.

The addition of environmental studies in the curriculum in recent years has had an important impact on student training, improving their skills basis and potential for employment. It has also encouraged new collaborations for staff and brought international participation in the form of guest lecturers.

3.5 Outreach

As mentioned earlier, the museums of Mineralogy & Petrology and Paleontology & Geology provide extremely important outreach services (open to the public even on Sundays) that contribute to both specialized and public education. Furthermore, they provide the conduit for interaction with other disciplines (i.e., museum curators) from other departments and universities within Greece and abroad.

Similar significant outreach activities occur in the area of Natural Hazards and in particular Earthquake education through the education of school-children on earthquakes using a “shake table” at the Seismopolis (Earthquake-city) Center. Similar outreach activities are provided by the Museums of the Department as presented earlier.

3.6 Services

The Department has developed a good and informative web-page in both Greek and English that provides information about the programs offered, the faculty and their research activities.

The administrative student services at the Department level (Γραμματεια) are located in a new, well equipped office space and most services are delivered electronically.

4 Areas for Improvement

Despite the positive aspects of the DGGE Department at NKUA, there are a number of areas identified that could make the Department even better and potentially increase its visibility and take the research productivity at a higher level. These are outlined below.

4.1 General

The existence of the state endorsed/defined structure of divisions (Τομεις) within the Department creates some artificial boundaries that impede efficiency, collaboration and research productivity.

There is a lack of clearly defined tenure and promotion criteria and a widespread perception of non-objective implementation. Furthermore, there is no structured mechanism of support for junior faculty to consult on a regular basis and guide them through their academic development, thus creating another perception of vulnerability. It was understood that there is an annual reporting of activities by the faculty, but it appears that there is no formal feedback on performance and progress toward tenure and promotion.

The government-imposed time lag between election to a faculty position and actual start of employment may be extremely long (3-4 years) and discouraging for young faculty at the prime of their productivity.

The issue of "subject area" (γνωστικο αντικειμενο) is an archaic concept that is not compatible with the modern ideas of cross-disciplinary research and quite often is abused. In addition, it can be deterrent in allowing faculty to re-align their research direction to new emerging areas with potential more research and funding opportunities.

The full professors expressed a concern for the lack of incentives for continuing and/or increasing their productivity.

Large number of over-qualified personnel (i.e., ΙΔΑΧ), originally employed under externally funded research programs and subsequently "trapped" in clerical positions, which was the mechanism employed by the NKUA for their retention, is resulting in low morale and job satisfaction of (primarily young) scientists potentially at the most creative stage of their careers.

There is no formal mechanism of support of the analytical facilities, many of which are well past their serviceable years, and surviving only through the hard work and dedication of staff. Even so, key facilities may undergo catastrophic failure, due to their age. Should that happen, there is no mechanism in place for their replacement.

4.2 Undergraduate Program

There is no Departmental control on the number of students admitted each year, therefore there is not a match between infrastructure student capacity (i.e., lab space and equipment) and student number. The mismatch between number of students and instructional facilities is affecting the efficiency and quality of instruction.

The current admission standards allow for students with weak quantitative skills to be admitted into the program which affects some of the more quantitative sub-disciplines. This problem is exaggerated by the limited number of general education courses (Math, Physics, Chemistry) in the current curriculum.

The course load appears to be too heavy for a four year program. This contributes to extending the graduation time to six years on average (for active students) and the creation of a large number of "stagnating" students. In addition, this contributes to limiting discussion and other instructional activities that promote critical thinking and comprehension and encouraging non-critical memorization for the sole purpose of passing exams. Many students feel this knowledge becomes redundant very soon.

Some course content overlap appears to exist in a number of courses, especially when delivered by faculty from different divisions.

The course sequence during the first year of study is not optimal as it requires courses with general content (i.e., Introduction to Geology) to follow more specialized courses.

The structure of the curriculum which in some cases lacks appropriate prerequisite courses, and the program of studies which does not require completion of prerequisite courses, allow unqualified students to attend higher level courses and consequently to perform poorly.

There is a perception amongst the students that there is lack of clearly defined student obligations and expectations as well as grading procedures. This lack of clarity results in mistrust between students and instructional personnel. Furthermore, the use of multiple instructors per course is not favored by the students as they find difficult to adjust to the different styles of instruction and the varying requirements expected by each instructor. There is also a general concern by the students regarding the implementation of oral examinations.

The current system does not allow for transfer of credit from coursework completed at other national and international equivalent institutions inhibiting student mobility.

The amount of fieldwork delivered is perceived as insufficient by both staff and students and the latter feel that more opportunities to use local to the campus sites could be taken. Budgetary constraints have limited field training of students and it has required out-of-pocket expenses for both students and instructional personnel.

The quality of reading material is variable; there are no incentives for staff to update and modernize their teaching material.

4.3 Graduate Program

In contrast to the informative undergraduate studies section of the student handbook, the information available on the Departmental graduate program is inadequate. We note that this is not the case for the Oceanography and the Museum studies graduate programs.

There is a perception amongst some of the graduate students (varying by division) that there is not a clear definition of their duties and that sometimes they are obliged to carry out duties beyond the scope of wider area of graduate education.

Many students feel there is a content overlap between graduate and undergraduate courses that affects mainly students that have graduated from the same or similar Departments / Divisions.

Late matching of graduate student and advisor, which typically occurs at the 2nd year after admission does not allow sufficient time for research topic selection, adequate preparation for it, data collection and analysis, potentially leading to a delayed graduation time. This problem is exaggerated by the disconnect between admission procedure and availability of research funding.

Lack of consistent institutional funding and externally funded research leads to limited research facilities for graduate students and inadequately funded graduate research projects. Many graduate students are self-supported and provide their own funding for fieldwork and research. It was noted that this varies by Division within the Department.

It appears that the graduate student community is isolated from the international research scene and that there is a lack of independence and student initiative to pursue opportunities abroad.

Fieldwork training is limited due to financial shortage.

Utilization of inter-library loan services through the University library is not always free of charge.

4.4 Research

Research activity is severely limited due to lack of consistent and adequate funding at the National and Institutional level.

Although a large number of personnel (ΙΔΑΧ) with good skills for research are available within the Department, they are engaged in duties not relevant to their skills mainly due to contract requirements imposed by the State of Greece.

Similarities in research facilities without adequate coordination were identified between divisions. Access to facilities between divisions and externally are not facilitated and harmonized; this may compromise research for some staff.

There is no mechanism in the institution for the creation of a cost-reimbursement service center to support instrumentation maintenance.

Lack of coordinated research efforts and planning across divisions within the Department was noted. This results in inefficient use of research resources, both instrumentation and personnel.

Lack of State provision of research funding for the highest quality curiosity driven research compromises staff ability to reach international research standards.

4.5 Services

There is a lack of clarity on the method used by the Institution (NKUA) for the return of the indirect cost (overhead) expenditure generated through externally funded research projects.

Procurement and Technical Services provided by the Institution (often defined by State Legislation) are not always efficient and cost-effective impacting the productivity and function of the Department.

There is a lack of obvious and standardized institutional health and safety policy and appropriate infrastructure to deal with hazardous material.

Facilities for access by disabled people (e.g., only one ramp available, elevators locked after working hours etc) are inadequate.

5 Recommendations

The external evaluation committee has a number of recommendations to make that can be categorized in terms of actions that can be carried out within the Department (DGGE), the Institution (NKUA) and the State of Greece. A structure similar to that in chapter 4 (Areas for Improvement) is followed in this section.

5.1 General

The Institutes of Higher Education in Greece need to be given sufficient autonomy from State-imposed cumbersome legislation and more control over academic (e.g., "subject area" γνωστικο αντικειμενο) and research affairs; this will release many person-hours currently spent on unnecessary bureaucracy and red-tape. *[Action by the State]*

The external committee is aware of the new higher education legislation the implementation of which will eliminate the existing fragmentation of the department created by the current structure of divisions (Τομεις); this is anticipated to also eliminate the artificial boundaries between research groups. However, the faculty is concerned by the proposed elimination of the Departmental (Τμημα) structure within the School of Sciences. The external committee emphasizes the unique role of Greece as a natural geological laboratory and would advise against any actions that may weaken the role of this Department *[Action by the State]*

Areas of future faculty hires should not be limited to the subject area (γνωστικο αντικειμενο) of the retiring faculty. A critical examination of current research trends and emerging disciplines/technologies should be performed and hires should be made in the appropriate areas. Such a strategy will assist in keeping the Department current and able to attract funding and increase its research accomplishments. [Action by the State, Institute and Department]

There is a need for clearly defined criteria regarding research productivity to be used for appointment of a faculty. These should include a minimum number of international, peer reviewed publications at recognized journals appearing in the most common indices. In addition, evidence of independent research should be clearly demonstrated by the candidate. *[Action by the State, Institution and Department]*

Election and appointment to a faculty position should be occurring at the same time to avoid time lags between election and beginning of employment. *[Action by the State]*

There is a need for an annual evaluation based on well pre-defined tenure and promotion criteria. A process of annual feedback on performance will be helpful in providing guidance and transparency to junior and mid-rank faculty. This will eliminate any perception of vulnerability. Evaluation of research productivity should not be limited to "subject area" (γνωστικο αντικειμενο) and cross-disciplinary research should be encouraged. *[Action by the State, Institution and Department]*

Performance incentives for full professors should be established and regular evaluation (e.g., 5-6 years) should be performed. For extraordinary performance on research and /or teaching rewards should be established, while for cases of clear lack of performance remediation action plan should be devised and implemented. *[Action by the State, Institution and Department]*

Any personnel of the University with the appropriate qualifications (i.e., PhD) for teaching and/or research should be allowed to participate in teaching and/or research activities autonomously, if it is needed, as long as this does not interfere with their official duties. This will alleviate concerns expressed by ΙΔΑΧ personnel and other staff. *[Action by the State, Institution and Department]*

Return of the indirect cost (overhead) expenditure generated through externally funded research projects should be proportional to the revenue generated. *[Action by the Institution]*

5.2 Undergraduate Program

It is the committee's view that the State should allow the department to determine the number of newly admitted students and honor their request. The number of admitted students should be based on proper justification. Sufficient teaching infrastructure and personnel should be guaranteed for efficient and effective completion of the instructional mission of the department. *[Action by the State and Department]*

The program of studies should be re-examined in order to assess the apparent heavy course load of the undergraduate program and help reduce time to graduation. Aspects to be considered are: (i) eliminate course overlap through combination of courses or other appropriate means; (ii) favor knowledge of the fundamental principles that emphasizes critical thinking and comprehension; (iii) consider moving highly specialized topics to the graduate (MS) program; (iv) consider restructuring the work required to produce an undergraduate thesis with the possibility of substituting it with additional coursework. *[Action by the Department]*

The re-examination of the program of study should also consider the most optimal course sequence during the first year and establish prerequisite requirements for all courses to facilitate the efficiency of both teaching and learning. This should be done sensitively and carefully so as not to penalize students who are obliged to hold a job or have other personal/family commitments, but to ensure optimum learning structure and success rate for the students. *[Action by the Department]*

Geology is a natural science that requires good background in chemistry, physics and mathematics, therefore students with proper background should be admitted to the program and sufficient knowledge in those areas should be required. This can also be achieved by increasing the number of general education courses in the first year of studies and eliminate repetition of specialized subject areas in subsequent years. *[Action by the State and Department]*

In order to alleviate the perception amongst the students that there are not clearly defined student obligations and expectations, it is recommended that for each course a **written** detailed syllabus be distributed during the first week of the semester. The syllabus should include the course outline and the grading scheme. *[Action by the Department]*

Establish a system for allowing transfer of credit from coursework completed at other accredited national and international institutions promoting student mobility. *[Action by the State, Institution and Department]*

5.3 Graduate Program

The information available on the Departmental graduate program handbook of studies should be expanded in a consistent manner to the graduate catalogs of the Oceanography and the Museum studies programs. *[Action by the Department]*

Incoming graduate students should be matched with a graduate advisor during the first semester. This will allow timely advising of the graduate student. *[Action by the Department]*

Admission of graduate students should be determined by active research and availability of funding instead of pre-determined numbers. *[Action by the Department]*

The department should encourage independence of graduate students to pursue funding available for travel to conferences, participate in student competitions and "semester study abroad" programs. *[Action by the Department]*

A system allowing for transfer of graduate credit from coursework completed at other accredited national and international institutions promoting graduate student mobility. *[Action by the State, Institution and Department]*

Admission to PhD should be independent of completion of an MSc degree, to enable research at graduate level in topics not available through the MSc courses. *[Action by the State]*

5.4 Research

Establishment of a national research funding agency that sets research priorities (e.g. National Science Foundation, USA; Science Foundation of Ireland, Research Councils in the UK, SFG etc.) and funds research activities after competition of proposals is highly recommended. *[Action by the State]*

Better utilization of ΙΔΑΧ personnel with appropriate skills for increasing research productivity. *[Action by the State, Institution and Department]*

Establish coordinated efforts and planning across divisions within the Department for more efficient use of facilities and support personnel for increased research productivity. *[Action by the Department]*

Facilitate and promote sharing of analytical facilities internally and externally for DGEE; establish a national facilities register and criteria for access to facilities in order to maximize use of existing infrastructure; establish a scheme for instrument replacement beyond their depreciation time. *[Action by the State, Institution and Department]*

Faculty should be encouraged to increase their contributions to international peer review journals with high impact factors. *[Action by the Department]*

5.5 Services

The institution should establish a clear and transparent method for the return of a significant portion of the indirect cost (overhead) expenditure generated through externally funded research projects. The department should consider passing a part of the return to the principal investigators. *[Action by the Institution and Department]*

6 Comments on the Internal Report

We would like to make some comments on the contents of the internal evaluation report that was provided to us prior to the site visit. The internal evaluation report is detailed and provides a thorough account on the philosophy, organization and activities of the department. It is clear that a lot of time and effort was put in collecting and compiling all relevant information regarding the activities of the Department, something greatly appreciated by the external committee members.

The report portrays a Department with a wider than usual range of interests in the area of Geosciences and attempts to portray that each Division covers equally a large number of areas. However it is not clear from the report which areas of research constitute the main strengths of the department.

Areas of study of limited scope have been presented with the same weight as significant research efforts. For instance the report does not provide a clear separation between broad, fundamental scientific research programs and more local in scope technical investigations. Also for each research program the duration, role of the investigator, level of funding should be indicated.

It will be very informative if in the list of publications provided in the report the student (undergraduate and graduates) names are highlighted. This will provide an excellent illustration of the link between teaching and research.

7 Concluding Remarks

Overall the external evaluation committee was impressed by the breadth and depth of the research, educational and outreach activities of the Department. The dedication and enthusiasm exhibited by several members of the faculty, staff and student body was clearly evident throughout our visit.

The committee feels that a number of programs in the Department are of international stature and our report focuses on recommendations to further improve the educational and research mission, goals and visibility at an international level.

We should note that we were provided with a plethora of information in a short period of time and we might have not addressed all issues in this report. Every effort was placed in addressing important issues that we think have a broader implication in the operation and success of the Department. We believe that by addressing the major issues identified will alleviate the smaller issues.

We understand that some of the issues encountered are systemic or State-imposed and we hope that appropriate changes can happen at the State legislature so that the University and Departments within are empowered to become more efficient and better cope with the changes due to the rapid development of science and technology. However we encourage the Department, even with the current system limitations, to be more proactive in addressing the current issues internally through better communication and collaboration efforts.

Overall we are impressed with the recently implemented changes in the department and we believe that the department is moving in the right direction.

We would like to thank the Hellenic Quality Assurance Agency for providing us with the opportunity to contribute to the further improvement of the Higher Education System of Greece.