



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ

**Α.ΔΙ.Π.**

ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ  
ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ  
ΣΤΗΝ ΑΝΩΤΑΤΗ ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC

**H.Q.A.**

HELLENIC QUALITY ASSURANCE AND  
ACCREDITATION AGENCY

## EXTERNAL EVALUATION REPORT

DEPARTMENT of **BIOLOGY**

UNIVERSITY of **Patras**



**European Union**  
European Social Fund



MINISTRY OF EDUCATION & RELIGIOUS AFFAIRS, CULTURE & SPORTS  
MANAGING AUTHORITY

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### **External Evaluation Committee (EEC)**

The Committee responsible for the External Evaluation of the Department of Biology of the University of Patras consisted of the following four (4) expert evaluators drawn from the Registry constituted by the HQAA in accordance with Law 3374/2005:

**1. Professor George K. Christophides (Chair)**

**Imperial College London**

**2. Professor Sophia Kathariou**

**North Carolina State University**

**3. Professor Spyros N. Agathos**

**Université Catholique de Louvain**

**4. Associate Professor Ioannis Vogiatzakis**

**Open University of Cyprus**

***N.B.** The structure of the “Template” proposed for the External Evaluation Report mirrors the requirements of Law 3374/2005 and corresponds overall to the structure of the Internal Evaluation Report submitted by the Department.*

*The length of text in each box is free. Questions included in each box are not exclusive nor should they always be answered separately; they are meant to provide a general outline of matters that should be addressed by the Committee when formulating its comments.*

## ***Introduction***

### I. The External Evaluation Procedure

#### **Dates and brief account of the site visit.**

The assessment exercise took place on 4-6/12/2013.

The EEC travelled to Patras in the afternoon of Day 1 (4/12; Hotel Rio). There, it was met by the Head of the Department of Biology (HoD; DoB; Koutsikopoulos) and the Chair of the Departmental Accreditation Organisation Committee (OMEA; Mintzas). EEC members were taken to the campus for meetings with the Rector and other University Administrators and for a first presentation session (session 1; see below). The second day (Day 2) included presentations (session 2 below) and separate meetings with permanent and non-permanent faculty members. The third day (Day 3) concluded the on-site activities of the EEC with meetings with undergraduate and postgraduate students, support staff and Heads of Divisions, and a concluding meeting with the HoD and the OMEA. A farewell meeting with the Rector, MODIP, HoD and OMEA took place at the Rector’s office before the EEC departed for Athens.

The visit was very well prepared and efficiently organised with all the main contributors (HoD, MODIP, OMEA) doing a great job to facilitate the work of the EEC and present them with everything that was requested before, during and in the days following the meeting. However, the work of the EEC was compromised by the fact that the DoB’s premises, including teaching, training, administration and research facilities, were closed for reasons not under control by the DoB and involving political protests against government initiatives. Therefore, this report will not comment on the state and suitability of any of the departmental infrastructures.

#### **Whom did the Committee meet and what was said?**

##### **Day 1**

1. HoD and Chair of OMEA at the Achaia Beach Hotel.
2. Rector (Panagiotakis), Vice Rectors (Kyprianos, Ntaouli), Dean of the Faculty of Natural Sciences (FoNS; Kordoulis), MODIP (Karamanos, Berberidis, Vergidis, Karalis, Stathopoulos), Department (Koutsikopoulos) and OMEA (Mintzas, Giompres, Dermon, Koilias).

The Rector gave an overall presentation of the University of Patras (UoP) highlighting mostly the grave situation in which the UoP, as well as other HEI (Higher Education Institutions) of the country, were at the moment. He discussed the Athena plan and explained that through this plan UoP lost one department and gained three (3) from the University of Western Greece, which, however, are yet to be fully integrated. He spoke about the Medical School and its importance to the local society. He referred to what he thinks are forbidden terms in the Greek academic reality including assessment, excellence and entrepreneurship, and explained how the UoP is trying to tackle those against the odds. He concluded that the UoP has fully complied with the new rules and regulations of the HEI and that the University Council has been elected; however, at that moment the Council was still trying to identify their role.

The Dean of FoNS presented the up-to-date figures of the FoNS: 4300 undergraduate students, 436 postgraduate students, 182 faculty members (DEP) and 71 technical staff. He continued that the UoP was ranked 3<sup>rd</sup> in the country in terms of publications, and that FoNS has greatly contributed to that achievement and indeed is ranked 1<sup>st</sup> with regards to publications per Teaching and Research Staff (DEP) member. He then analysed how UoP/FoNS are tackling entrepreneurship through central University support for such activities, close relationships with the district administration and participation of the private sector in grants through co-funding.

The Chair of MODIP (Karamanos) referred to the DoB/UoP as the oldest in the country and indicated that DoB/UoP alumni have populated other departments at UoP, Greece and abroad. He said that the Department has very few ETEP and EIDIP, while the number of DEP has been reduced; nevertheless, the number of publications has increased in the recent years.

## **Day 2**

1. The HoD gave a detailed presentation of departmental operations. He presented the history, structure, governance and administration of the DoB. He said that governance is essentially provided by the central administration of the UoP. Although shaping of the curriculum is up to the DoB, the department is restricted by the taught credit units (διδασκτικές μονάδες), therefore there is limited freedom in shaping the curriculum. He emphasised that students were not able to register thus far due to problems in the

operations of the University (Note: the entirety of the HEI institutions in Greece was in great turmoil at the time of the assessment), and lectures were given to non-registered students, which in turn brings up a multitude of liability and legal issues.

He said that the DoB has 3 scientific divisions and the administration sector. He emphasised that (a) the support and technical staff were reduced to a non-operational level; only 3-4 technical staff, of whom in practice (legally) only one had a relevant job description; (b) the academic staff were reduced (no new hires) to unprecedented numbers and the seniority pyramid was totally inverted (mostly Professors and very few starting faculty members).

From his presentation of the faculty members, it was clear that while initially there was a great level of inbreeding, this was a lesser issue in recent times. He also referred to the number of registered students, which is greatly increased in recent years (the actual figures were provided by the Dean of FoNS); this in conjunction with the reduction of DEP makes DoB operations unmanageable.

He presented the postgraduate programmes administered by the DoB, which he described as umbrella-type PGs effectively able to handle projects in diverse topics, namely Biological Technology and Ecology, Management & Protection of the Natural Environment. Relevant quantitative figures and metrics were presented. The mean effective duration of these MSc programmes is 2.6 years; students cannot register beyond the 3<sup>rd</sup> year of study. The gender balance among PhD graduates has improved dramatically in recent years; nowadays there is an equal number or in fact more female graduates/candidates. The minimum duration of PhD studies is 3 years and the maximum is 8 years. The mean duration of studies has dropped from an average of 7.4 years in 1994 to 6.3 years in 2012.

The research performance of the DoB was presented with metrics relevant to each discipline given the differences in impact factors between them. The committee was pointed to an external assessment published by the Department of Educational Sciences and Childhood Education of the UoP, which shows a great performance of the DoB/UoP. A reference was made for the brain drain in Greek science and the UoP due to the economic recession.

2. The curriculum was presented in detail by Dr Dermon. A special reference was made and discussion followed as to whether a specialising degree would be preferred to the generic degree (Integrative Biology degree) that is currently the model at the DoB. This model followed a decision by the general assembly in 2008, which overwrote a previous decision in 2003 for 2 major directions (Genetics/Cell Biology/ Molecular Biology/Physiology and Biodiversity/Ecology/Environment). Additional discussions between the EEC and DoB members focused on the adoption of the Bologna Agreement and the heavy course load. The weight and duration of the final year project (FYP) was

discussed as well as the effectiveness of e-class. A pioneering trial programme termed digital leap (ψηφιακό άλμα) was presented in which 20 courses (11 compulsory and 9 optional) taught by DoB faculty members will be made open access. The involvement in the ERASMUS programme was also presented. Two of the main issues identified following the internal assessment exercise were the large number of courses required for obtaining a degree (and a respective heavy teaching load for faculty members) and the limited infrastructure and facilities for training students. A proposal of the curriculum committee which was adopted by the department to address these issues was presented. It involves: (1) reduction of the number of courses required for a degree, (2) rationalisation and better structuring of the core courses, (3) retaining the generic character of the curriculum, (4) retaining the full course of practicals, (5) retaining the field practicals and (6) minimising overlaps.

3. Prof Kiliias presented the content and the objective of the postgraduate studies of the DoB. Two umbrella-type programmes exist: (a) Biological Technology and (b) Management and Protection of the Natural Environment (see above about the characteristics of the MSc and PhD programs). The department has supervised a total of 275 postgraduate diploma and 150 PhD theses. An extensive discussion followed the presentation of the MSc admissions procedures, whereby all candidates are invited to interviews. Funding of the graduate studies also sparked extensive discussions. At the moment studies are funded (in essence subsidised) by the UoP central university budget, supplemented by competitive national and European funding to faculty members, while there are no tuition fees.
4. Prof Katsoris presented the research activities of the department, and in a linked presentation Dr Rosmaraki presented the infrastructures. There is a wealth of research activities linked to largely 6 thematic areas: (1) Morphology-Anatomy, (2) Ecology - Environmental Management, (3) Physiology – Biochemistry, (4) Cellular and Applied Biology, (5) Molecular Biology and Genetics, and (6) Systematics – Phylogenetics. These encompass a total of 152 research projects: 49 in the Division of Animal Biology, 26 in the Division of Plant Biology and 77 in the Division of Genetics, Cell Biology and Development. The publication output in terms of numbers, percentages and impact factors of each of those divisions and research activities was presented. The number of publications, H-index and citation index per academic level was described. A discussion followed as to how the results from such metrics are interpreted and evaluated. Funding by national and international schemes was also presented. The distribution and level of contribution of staff members to external funds (Research Programs) was also discussed. The available departmental and interdepartmental infrastructures and facilities as well as their operation/management were presented and discussed. Access to international infrastructure projects and facilities including the NASA Ames Research Center, the Grenoble synchrotron, multipurpose research marine vessels and others

were described. Ending the presentation, the department's widespread research portfolio across the full spectrum of biology was highlighted. An initial proposal towards the establishment of core facilities was presented. The decrease in governmental funding, the lack of technical personnel, the inefficiencies in administrative management and the decrease of faculty members in conjunction with considerable delays in the ratification of the appointment of new faculty members were described as obstacles to retaining the current portfolio and attaining new goals.

5. Dr Margarity presented the department's contribution to Greek society, locally and nation-wide. The presentation included the involvement of faculty in various scientific societies and initiatives (regional and national), school and community outreach events, authorship of popular books such as "The Red Book of Endangered Animals in Greece" and "Alice in the Land of Plants", the production of video footage and information leaflets.
6. Dr Papastergiadou presented in detail the mechanism for collating and analysing feedback from students and faculty members. The questionnaires and the results since the 2010-2011 academic year (when this mechanism was established) were presented.
7. Mr Passas presented the IT facilities, technical support and the website of the department, and described how these are linked to and managed by the UoP IT. Future needs and initiatives were identified.
8. Prof Manetas ended this session by presenting the department's history, achievements and contribution from a philosophical point of view.
9. The EEC met with non-permanent faculty members, including Giokas, Tzanatos, Rosmaraki, Margiolaki and Dailianis. Issues of mentoring, grantsmanship, collaborations, start-up and other strategic funding, administration, and departmental structures and hierarchies were discussed.
10. The EEC had a meeting with all the permanent faculty members, including Professors, Associate Professors, Assistant Professors and Lecturers. All but two Professors, Georgiou and Angelis, were present. The two absent faculty regrettably did not attend any of the assessment sessions and were not represented by any associate or deputy. The discussion unfolded around grave issues that the department and individual faculty face in the midst of the economic crisis, especially about the imminent retirement of a large number of faculty members (ca. 50% in the next 5-7 years), which is not linked to future appointments. The issue of a large number of new students was also discussed.

### **Day 3**

1. The EEC met with a group of postgraduate students (28 MSc and PhD) and postdocs

- (2). The EEC asked for opinions about the educational, research and operational aspects of the department. The discussion was very useful and allowed the EEC to appreciate the issues faced by the students and postdocs, especially in relation to the difficult financial environment.
2. Next, the EEC met with a rather small group of undergraduates (18 mostly 4<sup>th</sup> and 5<sup>th</sup> year and carrying out their diploma work). The main topic of discussion had been the diploma project and how this is managed by both students and staff. The curriculum including taught courses and practicals and the ERASMUS training were also discussed.
  3. A meeting with support staff including professional services, ETEP, IDAX, EIDIP followed, whereby the EEC had the chance to discuss administrative issues of the Department including job descriptions and actual roles of each job category, involvement in practicals, IT support, the “digital leap”, student affairs and support, University support and coordination.
  4. Next, the EEC had separate meetings with each of the three Divisions including Human and Animal Biology; Genetics, Cell and Molecular Biology; and Botany. Each session started with a presentation from the Division Heads (Tzanoudakis, Stephanou, Giompres) and continued with open discussions. The common topic of discussion was the future plans of each Division. The following figures were recorded: In the Division of Human and Animal Biology, there were 12 faculty members, including two recently appointed faculty in Vertebrate Biodiversity and Aquaculture. In 3 years, 3 (and likely 4) faculty members and one support staff will retire. In the Division of Genetics, Cell Biology and Development, there are currently 12 faculty members, including two new recruitments in Developmental Biology and Molecular Biology. However, in 4 years there will be 5 retirements, which will bring the number down to 7 if no new recruitments are made. In the Division of Botany, there are 10 faculty members, of whom 4 are retiring in the next 5 years. A new faculty position in Ecology was expected to open soon.
  5. In the closing session the EEC had a meeting with the HoD and the OMEA where topics that the EEC considered to be of vital importance were discussed. These included the overall structure of the Department, academic and support staff management and responsibilities, undergraduate and postgraduate curriculum and student affairs.
  6. Before departure to Athens, the EEC met at the Rector’s office with the Rector, Vice-Rectors, the Head of MODIP, the HoD and the Head of the. The Rector restated the commitment of the University administration in retaining high standards and in helping the Department to overcome issues arising from the financially difficult times and reassured the EEC that their conclusions will be seriously considered.

**List of Reports, documents, other data examined by the Committee.**

1. Internal evaluation document
2. Cumulative presentations provided as bound hand-outs
3. MODIP data collection protocol/handbook
4. Updated internal evaluation quality metrics and other quantitative figures
5. UoP and FoNS national comparative quality metrics
6. Presidential decree No 63/1999 and 4009/2011
7. Memo from the University Graduate Student Association
8. Sample of student feedback questionnaire
9. Proceedings of PG workshops 2012 and 2013
10. List of submitted grant proposals for the period 2006-2013
11. Examples of Zoology III and Biochemistry I exams and notes recorded in September 2013

**Groups of teaching and administrative staff and students interviewed**

(see above)

**Facilities visited by the External Evaluation Committee.**

The Committee could not visit the Departmental facilities as these were closed due to political protests and occupations, as described above.

II. The Internal Evaluation Procedure

**Appropriateness of sources and documentation used**

The documentation provided prior to, during and after the site visit was appropriate and sufficient. All the requested documentation and information sources were made readily available to the EEC.

**Quality and completeness of evidence reviewed and provided**

High quality and largely complete. Requested updates were readily provided at the time of

the visit.

**To what extent have the objectives of the internal evaluation process been met by the Department?**

The internal evaluation exercise has largely met its objectives. Corrective measures were taken by the department prior to the EEC visit, including a full review and adoption of a new teaching curriculum.

## **A. Curriculum**

*To be filled separately for each undergraduate, graduate and doctoral programme.*

### **APPROACH**

The undergraduate curriculum is structured to: Provide knowledge and skills expected from graduates of a “general” Biology Department; Differentiate among different teaching practices: theory, laboratories and field exercises; Assess and weigh courses based on ECTS framework and evaluate courses during the year they are offered; Identify knowledge and skills for graduates so that they can be competitive in a European framework; Identify specific features of the Greek economy related to Biology

The postgraduate programme curriculum is designed to lead to a Master’s degree (duration 2-3 years) and a PhD degree (duration 3-8 years). The objectives are to support and further promote basic and applied research at the Greek Universities and Research Institutes, and to produce scientists who can populate the broader public and private sectors in posts related to human health, quality of life, nutrition, and environmental protection & management. The Master’s programme entails both lecture courses and practicals and includes a diploma thesis. The PhD required submission and approval of a dissertation, which can be in the form of a monograph or bound published papers.

### **IMPLEMENTATION**

These objectives of the undergraduate curriculum were decided historically. They were setup by the initial faculty and in consistence with a common dogma that courses shall be based on the expertise of the faculty member and vice versa that each faculty member develops and delivers a course that fits his or her expertise. The EEC observed that the objective of providing a generic biological education did not fit very well with the objectives of increasing European competitiveness and addressing specific features of the Greek economy related to Biology. It was decided that while retaining a broad and inclusive core curriculum providing graduates with a wider understanding of Biology, elective courses could allow them to specialise in areas that the department identifies as strategic and which match the department’s research portfolio.

The structure of the two postgraduate programmes managed by the DoB is well designed allowing it to function as a hub not only for the current Master’s and PhD streams but also for many sub-disciplines of biology.

### **RESULTS**

It was also thought that the student workload and number of courses are very high, while there is excessive overlap between courses and practicals. This in combination with the imminent decrease in the number of faculty makes the curriculum unsustainable. These

problems were identified by the Department as a result of the internal evaluation procedure and a curriculum committee was established to coordinate a consultation process with all stakeholders, including faculty, students (through specifically designed questionnaires) and employers from the industry (no evidence for this was provided). A comprehensive reform of the curriculum was adopted, including decrease of the number of courses, reduction of overlaps between taught courses and laboratory practicals and inclusion of an internship (“practical placement”).

An issue identified by both staff and students is the length, implementation and weight of the diploma thesis. The thesis often takes more than one year and occurs at the same time as other courses and laboratory practicals. This not only puts extra pressures on students and increases the time to graduation but also makes effective implementation of curriculum reforms difficult, especially in conjunction with the imposed increase in student admissions.

The curricula and syllabi of the postgraduate programmes appear to be not entirely up-to-date, and important elective courses for career development of the postgraduate students are missing, including innovation and entrepreneurship, scientific writing, training in intellectual property and others that are key elements in doctoral training in Europe and elsewhere. In addition not all the courses listed in the curriculum seem to be offered, perhaps due to the lack of lecturers.

#### IMPROVEMENT

Although the new curriculum is undoubtedly addressing many of these issues, the measures taken do not seem to be sufficient to fully address the problems, largely due to the insistence on a generic and comprehensive character of the curriculum. In addition, the insistence on the dogma of one lecturer - one course, in conjunction with the imminent massive reduction in the number of faculty (almost 50% in the next 5-7 years) limits the effective lifespan of the proposed new curriculum. The curriculum is currently heavily loaded with practicals, and indeed the new curriculum aims to maintain this, but given the reduction in the number of faculty and especially in support staff, it is incomprehensible to the EEC how this can be sustained. The Curriculum Committee and the Department have identified this deficiency of the proposed curriculum; however, there seems to be an unjustifiable expectation that the number of support staff will not be reduced and therefore no measures to address this issue were proposed.

The great and systematic effort that the department has put in reviewing and restructuring the undergraduate curriculum has to be also put into the postgraduate curriculum.

## **B. Teaching**

### APPROACH

The Department overall appears to have a well-defined and unified pedagogic policy regarding teaching approaches and methodologies, and to take its teaching mission seriously. This was reflected by the comments of students interviewed by the EEC, as well as by input of faculty and support staff with teaching duties. Students overall expressed satisfaction with the accessibility and expertise of their instructors.

Teaching methods used appear to be conventional, i.e. traditional lectures which may employ PowerPoint presentations and other materials. In an international climate of increasing evidence for the usefulness of novel, alternative methodologies to promote student learning, the EEC encourages considerations of the latter. Such tools can include case studies, participatory learning, group exercises, class discussions and other activities, and can complement traditional lecture-based approaches. Information technologies already available to the Department can be utilised in the development and implementation of such methodologies.

Electronic platforms such as e-class are utilised, but not by all faculty. The EEC recommends consistent utilisation of such platforms, including prompt e-class posting of syllabus, grading criteria, PowerPoint presentations and assignments (e.g. required or suggested readings).

The grade assignment system continues to largely depend on a single final exam. Alternative grading schemes may improve attendance, especially in lecture courses, and may promote learning by providing multiple incentives to review and process the material. Such scheme may include a variety of course assessments, e.g. mid-term exams (e.g. 2-3 exams /course, including the final exam), in-class presentations and class discussions. This will be fairer to students as it will target different skills and abilities and at the same time it will address the serious issue of memorisation.

### IMPLEMENTATION

Teaching procedures are conventional. They can be improved by inclusion of alternative methodologies, as described above. Textbooks and other resources appear up to date and adequate for the level of the classes. Textbooks are provided to the students at no cost. Other resources (e.g. suggested or required readings, outside of textbooks) are available, and their usefulness would be enhanced by prompt posting on electronic platforms (e.g. e-class), as described above.

Research and teaching appear to be linked occasionally, in some but not all classes. Instructors are encouraged to design venues that would promote such linkages, e.g. via the inclusion of case studies in the lecture classes.

There is substantial mobility both for academic staff and for students. However, this can be

enhanced to the clear benefit of both faculty and students. Faculty can update their skills and toolsets, while students can become exposed to alternative teaching and research cultures and infrastructures. This can be especially useful in the context of the required year-long diploma research project. Part of this (e.g. one semester) can be pursued at another university, e.g. through support by the Erasmus Program, assisting the student in timely completion of the Diploma work while leading to enhanced research productivity and collaboration networks for the faculty.

Starting with the 2010-2011 academic year, classes are evaluated by student questionnaires. The EEC recommends full adoption of the evaluation system for all classes. In addition, the Department may wish to consider peer review of teaching approach and methodology, whereby 2-3 faculty in the Department periodically (e.g. once every 3 years) attend 1-2 selected lectures or lab sessions of a specific class and provide assessments and recommendations for improvement.

## RESULTS

The Department clearly takes its teaching mission seriously. Courses vary in success/failure rates, but the EEC identified no specific trends linking high failure rates to specific teaching or examination approaches for the courses taught by the Department's faculty and teaching support staff. However, during the interview with students the EEC noted frequent concerns regarding poor organisation and delivery of elective courses offered outside of the Department.

The time to graduation remains unduly long. The reasons are multiple and complex, but enhancing class attendance and employment of alternative grading formats (besides the current standard of a single final exam) has the potential to promote student learning and enhance the rate at which students complete the class in a satisfactory way. This can be also promoted by further attention to the Diploma research project, so as to avoid or at least minimise overlaps with required coursework and to ensure that it is completed within a defined length of time, not to exceed one year. The prompt and satisfactory completion of the Diploma work will be also promoted by a class or teaching module/tutorial on effective literature searches, and on how to prepare an effective manuscript, report or presentation.

## IMPROVEMENT

The Department appears open to the adoption of novel and alternative methodologies for teaching and for grade assignments. Concrete initiatives along these lines were not presented, but the EEC obtained the impression that these will be developed in the near future. In addition, the Department indicated clear willingness for measures to reduce the length of time required for graduation, especially in regard to time limits and improved guidelines on the diploma work. The faculty are open to Erasmus and other initiatives that would facilitate the performance of portions of the Diploma work, and certain such efforts have already been successfully undertaken. The Department also indicated agreement on the

need for consistent employment of electronic platforms such as e-class and for Department-level discussion and utilisation of evaluation results in order to improve teaching performance. There appeared to be agreement and interest in updating certain classes and development of new classes (or teaching modules/tutorials) to help prepare students for literature searches, presentations, reports and manuscripts.

## **C. Research**

*For each particular matter, please distinguish between under- and post-graduate level, if necessary.*

### **APPROACH**

Research in the Department covers a wide range within the life sciences. The Department's declared policy is to promote bioscience through high-calibre research that would make the Department internationally competitive. It has set for itself a central objective to perform high quality research in cutting-edge areas of interest to the extent possible, both in-house and in collaboration with other recognised units at UoP and at other Greek and international institutions. Research is performed by the faculty members and PhD students conducting research for their doctoral thesis, with the participation of Master's students through their projects within the two departmental post-graduate programmes (Biological Technology; and Ecology, Management & Protection of the Natural Environment) and, finally with contributions by most of the undergraduate students through their diploma thesis. The main target in research is to generate new knowledge and, at the same time, to train students in performing original research. This generated knowledge is disseminated by publications in peer-reviewed journals, book chapters, conference proceedings, etc. Faculty members present their work at national and international conferences.

The Department has used internationally accepted yardsticks for the assessment of productivity and quality in research output, such as the number of publications (peer review journals in ISI Web of Science or Scopus, refereed proceedings and chapters in books), the number of citations, the impact factor of journals in which the results have been published, the number of invited talks at conferences, and the recognition of faculty members with international awards.

### **IMPLEMENTATION**

The implementation of the Department's research policy is monitored in a number of direct and indirect ways: in the beginning of every year the Department's website and those of individual faculty members are updated with the publications of the previous year so the research output becomes publicly available. The Rectorate is also collecting cumulative data on overall research performance data to be published in the Research Chronicle (Ερευνητική Επετηρίδα) issued by the University every four years, while these data serve also for each faculty member's evaluation of his/her achievements during their promotion process. Moreover, there is an annual scientific conference organised by the post-graduate students of the Department which also helps track research from the DOB research groups.

As stated previously, the EEC was not able to assess the quality and adequacy of the research infrastructure because the facilities were closed due to political unrest on campus. Thus we are unable to evaluate and comment on the quality and adequacy of the Department's

research infrastructure. We consider this forced lack of access to the laboratories and facilities of the DoB a fundamental failure of the Department's and University's leadership.

The number of peer-reviewed publications and citations during the 5-year evaluation period 2006-2011 and the updated numbers the last two years are adequate and increasing in time, but the performance is uneven among individual faculty members.

A fraction of the faculty members is very active with writing competitive grants in response to calls for proposals by both EU and national funding agencies such as the General Secretariat for Research and Technology (GSRT, ΓΓΕΤ). During the period of evaluation there have been very few calls for funding by the Greek State and although this situation improved in the last two years with programmes like Aristeia and others, overall national funding remains erratic with the result that only few fellowships are available through competitive grants for MSc and PhD students. This could jeopardise the quality of the research and contribute to brain drain for Greece in the near future.

Research collaborations are encouraged in principle, but in practice they are set up mostly with research groups from other institutions in Greece and abroad. There appeared to be limited collaborations between groups within the Department.

Although there is no start-up package programme for new faculty members, the pioneering programme "Karatheodoris" (restricted to UoP) can provide some funding on a competitive basis.

## RESULTS

The Department's objective to perform internationally competitive bioscience research is met to a reasonable extent even though there is room for further improvement.

Research is carried out under the direction of individual faculty members and PhD students who do original research for their doctoral thesis, with the participation of Master's students through their projects and, finally with contributions by most (90%) of the undergraduate students through their diploma thesis. The numbers of peer-reviewed publications and citations reached 270 and 4260, respectively, over the 5-year period of evaluation, and they present an upward trend. If seen, however, from the point of view of mean performance per faculty member, the number of publications per year and faculty member in SCI journals was barely over 1 and the impact factor of the journal publications per faculty member per year was 2.52, i.e., rather modest average values. These metrics are indicative of uneven performance reflecting a small core of active or very active research-oriented faculty members co-existing with many others who could do better. Some of the former group of researchers are either seasoned senior faculty members or recently hired lecturers and assistant professors who are highly productive and on the way to national and international excellence. On the other hand the EEC expresses concerns about mid-career and other faculty members whose research output appears stagnant.

The totality of competitive research grants received by DOB faculty members over the 5-year evaluation period from international and national funding agencies exceeded 3 million EUR i.e. more than double the state funds allocated via the regular budget appropriation. Although this level of external fund raising is satisfactory, the capacity of a 35-member strong department to obtain research funding should increase, as is also acknowledged by the internal evaluation.

The international visibility of the DOB's faculty members is documented by participations in editorial boards, invited lectures in international conferences and by two international research awards, one to a senior and another to a junior faculty member.

#### IMPROVEMENT

The Department is aware of the delicate situation in which it will find itself over the next few years, not only because of the economic crisis that is affecting all Higher Education institutions in Greece, but also because of the skewed distribution of its faculty members with a preponderance of senior professors that will retire imminently. If these faculty members are not replaced by new appointments, the Department will be reduced by 50% over the next 5 years. The EEC in full agreement with the Department recommends the initiation of the procedures for hiring talented young faculty especially in research subjects that are missing or underrepresented in the DOB, based on current trends in the biological sciences. The EEC encourages the Department to avoid the temptation to replace each retiring faculty member with a new faculty in the same exact subject to cover the relevant teaching needs.

The Department is also aware of the need to enhance collaborations and partnerships with other research groups both domestically and abroad. The EEC agrees and encourages this initiative not only to meet the interdisciplinarity requirements of today's biological research but also to increase the capacity to attract research funds for the Department. The recent decision, based on the 'Athena' strategic plan, for the young but strongly research-oriented Department of Environmental and Natural Resources Management (DENRM) in Agrinion to join the University of Patras, should be seen as a unique opportunity for the DoB to establish stronger partnerships. This will be especially effective in the complementary subjects of ecology, bioinformatics and metagenomics, where the DENRM is internationally competitive.

The lack of centralised core instrument and modern animal housing facilities were pointed out by the internal evaluation and the EEC concurs as to their importance. The Department should attempt to obtain competitive funding for infrastructures from regional and EU funds with an appropriate vision and the formulation of proposals that could assure the allocation of matching funds.

Until now, Greek state funding has been erratic and this undermines the sustainability of cutting-edge research efforts. Thus it is important that state calls for research programmes

should be established at regular intervals. Funding by the EU is increasingly competitive and difficult to secure. DoB faculty members should make a greater effort to attract EU and other international grants by increasing collaborations with colleagues in Europe and other developed countries. Similarly, domestic sources of funding must be pursued vigorously by DoB faculty members. On both of these fronts, a proactive attitude of the Department should be complemented by effective administrative support from the University Research Committee.

Although good work is done in specific areas in the Department, there is clearly significant room for improvement at the level of attracting research funding and producing an increasing number of high quality research publications.

A factor that adversely affects research output is the excessive number of incoming students imposed by the Ministry in clear opposition to the DoB capacity for training students. Limiting the number of students will allow faculty members to pursue grant applications, do research, attract high quality postgraduate students and postdoctoral researchers and thus increase research productivity. This enhanced impact will promote the academic reputation of the Department.

Elaborations on the above plus additional suggested actions are given in Section F of Final Conclusions and Recommendations.

### ***D. All Other Services***

*For each particular matter, please distinguish between under- and post-graduate level, if necessary.*

#### **APPROACH**

The DoB views that the various kinds of administrative and technical services provided by the Department itself and the UoP are inadequate particularly with an ever increasing number of students. The technical support staff for teaching and supervising the undergraduate laboratories is often not adequate to cover the needs of the curriculum and is aided by several graduate students, with no remuneration.

Overall, the administrative services handled by the Department are offered with commitment despite the lack of resources. Furthermore, the current dire financial situation has increased the administrative load and the filling of necessary forms for simple purchases. Student admissions and the recording of course grades are handled by the secretarial staff of the Department in what seems to be an outdated system. By comparison, in many other foreign universities such administrative duties are handled by the central administration and/or are managed through an electronic platform that minimises the burden to staff.

Overall, despite the multiple commitments of the faculty members and the other technical and administrative personnel, there appears to exist a positive, collaborative, family-like atmosphere that allows the accomplishment of most day-to-day tasks.

There is currently a complex structure of committees and sub-committees, which creates a further burden to faculty in the Department. One example is the committee for selecting MSc candidates. In addition to the existing numerous criteria personal interviews are also carried out for all candidates, resulting in more pressure on faculty time.

As the University was closed during the EEC visit, the EEC was prevented from accessing infrastructure facilities such as the library, computer rooms, restaurants and halls of residence.

#### **IMPLEMENTATION**

There are 9 laboratories and 2 museums. Currently there are 9 administrative and technical support staff including secretarial and lab support personnel of various grades and responsibilities. IT support is provided by 1 member of staff and through the central University IT unit. There are computer teaching labs for students in the Department while sports and cultural activities (which, however, the EEC could not visit) are provided for at the University level.

#### **RESULTS**

See comments above. The Department declared and the EEC concurs that the services

provided are suboptimal since the number of support staff are disproportional to the increasing administrative and teaching load.

#### IMPROVEMENTS

The Department recognises some of the major obstacles in achieving its targets and has raised them with central University administration. The Department has shown a certain willingness to be extroverted and contribute to local and regional development with a variety of initiatives as outlined in the following section.

#### **Collaboration with social, cultural and production organisations**

Since its early days the Department has had a local and nation-wide impact on Greek society. Faculty members are involved in various organisations and initiatives (regional and national), school and community outreach events, authorship of popular books and production of video footage and information leaflets. Some faculty members have also developed substantial collaborations with local and national commercial enterprises such as cooperatives, industrial and private sector companies as well as public sector regional and state organisations. A number of faculty members actively participate in various Hellenic and international scientific society activities, and as expert evaluators of peer-reviewed manuscripts and national or international scientific programs. The DoB in its internal evaluation report recognises its role as provider of a multitude of services to society and promotes the involvement of faculty members in related activities.

#### ***E. Strategic Planning, Perspectives for Improvement and Dealing with Potential Inhibiting Factors***

The evaluation took place at a time when the state and the universities were in great turmoil. The financial recession dictated that state funding to the universities is drastically reduced, and a great number of administrative and support staff is made redundant, while new appointments are frozen. Many faculty members are expected to retire in the next 3-5 years. If new faculty are not recruited, the number of faculty members of the DoB will be abruptly reduced to almost 60% reaching almost unmanageable levels (about 20 faculty left). At the same time the number of students increased dramatically in the last 2 years and will remain at high levels, at least throughout the financial recession. This is one of the most difficult situations the university institutions across the country, including the UoP and its DoB have ever been in. Both the UoP and the DoB appear to recognise these issues; however, no plan to endure these harsh conditions seemed to have been developed. The EEC strongly believes that the Department makes imminent and radical strategic decisions to minimise the

forthcoming devastating impacts of the current trends. Specific recommendations are made in section F.

## ***F. Final Conclusions and recommendations of the EEC***

### **A. Curriculum**

As a direct result of the internal evaluation exercise, the Department has made substantial progress towards revising its curriculum for undergraduate education and readjusting it to its original objectives. However, the EEC feels that additional, more radical reforms are needed, partially to proactively address issues arising from the imminent reduction in the number of faculty and support staff and the parallel increase of the number of students. More, not necessarily balanced, rationalisation may be needed, also in accordance with the “smart specialisation” strategy of the EC. These reforms should take into account the following observations:

- Further reduction of the number of courses is needed with parallel increase of the credit units/ECTS of each course. This could be combined with the general opinion that some further (smart) specialisation might be needed.
- The credit units/ECTS of the diploma thesis must be significantly increased following further rationalisation of the Curriculum. At the same time the duration of the Diploma work must be well-defined, to no more than 1 year.
- It was felt that further reduction of the overlaps between courses is needed although the proposed curriculum is thought to address this to a large extent. Overlaps that were noted between the various Zoology courses, between Molecular and Cell Biology, between Cell Biology and Immunology are expected to be addressed by the recent curriculum review.
- It is advisable that the dogma of each faculty teaching a course in his or her expertise is modified, adopting a new protocol in which faculty team-teach courses
- The EEC was unclear about whether the number of field courses was sufficient. It was felt that the Department should take advantage of the campus and its surroundings in order to increase the field work component in the degree.
- Several elective courses are relevant and appropriate, but additional may be needed including courses on research design & technologies, biostatistics, scientific writing and science communications and/or on cutting-edge and emerging fields. Courses aiming to assist in career development and in developing teamwork skills must be also considered both at the undergraduate and postgraduate levels, e.g. capstone courses.

- Students must be allowed to obtain credits through ERASMUS placements. Such placements must be promoted and encouraged and also included in the design and credit assignment for the diploma work.

The syllabus of the postgraduate programme needs updating. The EEC understood that only some of the courses listed in the prospectus are indeed given and that the main reason is that there are no instructors to give these courses. Other courses appear to be outdated. The EEC recommends that the entire prospectus is critically reviewed and that in this review issues referred to above for the undergraduate studies are also taken into account, e.g. reduction of number of courses and highly specialising elective courses, including a seminar series. New elective courses could include innovation and entrepreneurship, scientific writing and grantsmanship, training in intellectual property and others, which are considered key elements in doctoral training in Europe and elsewhere. Such courses will aid the students' career development and increase their competitiveness. In addition not all the courses listed in the curriculum seem to be offered, perhaps due to the lack of lecturers.

### **B. Teaching**

The Department appears to take its teaching mission seriously and overall students expressed satisfaction with their coursework experiences. The following recommendations are towards enhancing them:

- Although it appears to be highly appropriate that elective courses are provided by other departments, it was the impression of the EEC that some of these are poorly organised. It is suggested that the Department drops courses that are not up to the standards of the departmental courses, if these are not improved, while the University has to secure the overall quality of teaching across departments.
- The emphasis must be shifted from memorisation to alternative learning strategies such as problem-based learning, teamwork, group learning, self-learning etc.
- The EEC encourages the Department to consider methods to decrease the weight of the final exams by introducing additional assessment tools including midterm exams, individual and teamwork essays, reports, presentations, teamwork projects etc.
- Innovative methods and other incentives to encourage student attendance in classes must be considered.
- A full adoption of ECTS abandoning the taught credit units is recommended to avoid future confusion.
- Further guidance is needed on how to conduct literature reviews and prepare scientific reports, manuscripts and presentations.

- Procedures must be established to utilise the data from student questionnaires toward immediate tangible outcomes.
- E-class must be promoted as the main portal for communication with the students and for monitoring and assessing their performance.
- The Diploma work should be within a well-defined time period (1 year maximum) and have well-defined and tangible objectives. At the same time, Erasmus placement opportunities allowing students to carry out their Diploma thesis in other universities outside Greece must be promoted. This will have the additional value that it will expose students to other research cultures and open their career horizons. Together these two measures will assist in the effort to reduce time to graduation, address the reduction in the number of faculty and support staff and cope with increased number of students.
- Despite a great improvement in the last years in shortening the duration of the PhD studies (currently 6.3 years), further reduction is needed towards graduating scientists who can be competitive not only qualitatively but also earlier in their careers. An immediate aim of 5 years of average duration, with a further decrease to about 4 years in the next 3 years seems reasonable.
- Postgraduate studies have no tuition fees following a council's decision. The EEC remains unsure whether this is indeed a good service to community/state. It is suggested that the Department and the University as a whole examines and considers the option of minimal tuition fees to alleviate the financial burden to the core budget and ensure sustainability of the programs. Mechanisms to waive part or all of the tuition fees when and as needed can be then considered.

### **C. Research**

The research portfolio is wide and largely uneven with regards to funding and productivity. Specifically, we recommend strengthening key research areas by capitalising on current and anticipated strengths of the faculty, by seizing opportunities and responding to regional, national and international needs. Critical mass that could translate to a competitive advantage has been noted in the area of integrated ecosystems biology. Future consolidation and strategic development of this key research area can capitalise on the excellent descriptive work that has been done in the Department in the areas of island biogeography, biodiversity and conservation, and aquatic systems biology and resource management with fresh water and marine ecosystems. Along these lines, the EEC recommends that adequate attention is paid to the complementary expertise in the Department of Environmental and Natural Resources Management (DENRM, in the former University of Western Greece), especially taking into account the research (as well as curriculum) gaps expected by the imminent retirement of several faculty members. The substantial expertise of the DENRM in molecular

and cell biology (including omics and bioinformatics) as well as current and new strengths in organismal and structural biology at DoB could promote the area of integrated ecosystems biology. Therefore research must be more focused and in depth rather than spread out in the effort to cover many areas of biology – in some cases – thinly.

The Biomedical Sciences research theme must be further strengthened through integration among the scientists with relevant interests and through increased links and interactions with the Medical School. The targeting of future appointments towards this direction is considered appropriate.

Current funding record is uneven across faculty and more intensive and collaborative funding must be procured from diverse sources including regional, national and international programmes. The Department must identify methods to encourage grant applications and assess the effort and output of all faculty members. It is recommended that senior faculty with relevant experience are engaged more actively with mentoring junior or less successful faculty.

Current publication records are also highly uneven. An effort must be made by all faculty members to contribute to the collective peer reviewed literature.

Along these lines, the EEC recommends that the Department carry out a yearly assessment exercise of faculty productivity including publications, grant submissions, and grant awards using clearly established benchmarks. Incentives and rewards may be useful in this process.

Postgraduate students (Master's and PhD) are heavily involved in the research carried out by the Department. Indeed, they are the main research personnel of the department, in addition to the faculty and the very few postdocs. The EEC remained unclear as to the status of employment of these students, especially in European programs. Most seemed to be employed as casual workers with varied stipends but there seem to be severe delays (up to 9 months) in receiving the stipends. Some of these delays appear to be due to bureaucracy at the University administration rather than lack of funds.

In connection with this, there seems to be a generic problem with registration, management and monitoring of research projects, which becomes problematic when applications are indeed funded. For example, the EEC understood that an investigator could apply to a research funding body, e.g. the European Commission, without any prior authorisation and registration of the proposal by the University research services. In addition to the fact that this means that the application is never registered, it implies that there is no control as to whether the funds requested are adequate to carry out the proposed project and whether the University is in a position to manage the grant. If the proposal is indeed funded, the University takes the responsibility to manage a grant that it has never been aware about before and has not been involved in its budgeting. Therefore, monitoring and accounting will likely be highly problematic, including the stipends for graduate (Masters or Ph. D. student) research assistants. This is a serious problem, which has to be rectified in order to increase

the competitiveness of the UoP in general and the DoB in particular. The EEC recommends that efforts to introduce a project management protocol be established at the University level as soon as possible.

A preliminary proposal for consolidation of equipment and infrastructures into core facilities was presented. This is an excellent idea, which must be imminently implemented with the support of the University. The restructuring of the Department and rationalisation of its various activities including administration and technical support, which are presented and discussed below, will further facilitate this.

#### **D. All other services**

A centralised (University-wide) e-system to handle student admissions, student grades and other student-related inquiries will be of substantial value to the University and DoB. This will alleviate the heavy load currently handled by the Department's secretarial staff. The grades for a given course should be available to students online through a secure internet site. Along these lines, the "digital leap" project has to be accelerated. The EEC understood that the personnel employed to develop these tools have been largely made redundant and therefore there is no clear progress.

In addition to the imminent need of a project management system mentioned in the previous section, an e-procurement system would make the placement of purchase orders less time consuming. At the departmental level the number of committees should be reduced and procedures should be simplified.

Procedures of mentoring new faculty members must be established. Currently there is no system in place and any such activities are happening *ad hoc*. The EEC suggests that senior faculty members take this responsibility through a structured process, including recorded meetings, milestones etc.

Most students that graduate from the DoB or to lesser extent from other departments at the UoP choose to stay or come in the DoB for postgraduate studies, respectively. Although this may be good for the Department, it appears that students are not aware of additional options. Most students did not seem to know about options through ERASMUS. The DoB must further promote student mobility through this and similar programs.

It is understood that some postgraduate students serve as part time administrative assistants. This indeed may relieve some of the clerical burden stemming from the major redundancies and lack of personnel. However, it must be done in an accountable way and students should receive appropriate support and recognition for their services, including appropriate stipends.

PhD posts, even if unfunded, must be advertised in the department's webpage in the interest of fairness and as a means to minimise inbreeding. It is recommended that a rigorous

shortlisting protocol for postgraduate student admissions be established before in-person interviews, in order to minimise the workload of faculty and support staff.

There is a noteworthy effort on educational and research outreach initiatives involving many different stakeholders including regional and national organisations, schools and communities. An effort to continue these initiatives and to further involve and strengthen the functionalities of the museums must be made.

#### **E. Strategic planning, perspectives for improvement and dealing with potential inhibiting factors**

The EEC encourages the imminent establishment of a strategic planning committee responsible for long-term planning and sustainable development of the Department. It must be a top priority to address the challenges stemming from imminent reduction of the number of faculty and support staff and to make quick decisions that would address the forthcoming problem: it is projected that in 3-5 years the number of faculty will be reduced to almost 60%. This, in conjunction with the increased number of students may put the Department in very difficult position unless corrective measures are taken well in advance. In addressing this issue, the EEC believes that recommendations made in each of the above sections could be valuable including further restructuring of the undergraduate and postgraduate curriculums, potential specialisation of the undergraduate degree, streamlining and “smart specialisation” of the Department’s research and establishment of core facilities operating in an economically sustainable fashion.

However, the EEC’s main recommendation is restructuring of the entire Department. The EEC feels that the traditional partitioning of the Department into 3 divisions no longer serves the purpose of their existence and indeed is likely to be an impediment in implementing most of the above-suggested reforms. It must be noted that each division is predicted to include no more than 5-8 faculty members within the next 3-5 years. Therefore, the EEC recommends that divisions be abolished and replaced by non-administrative research themes that align with recommendations made in section B. These themes shall only aim to highlight the strengths of the Department and to promote collaborations. Having a Department with no subdivisions will also permit administration and support personnel to be streamlined and managed centrally at a departmental level, which will also rationalise the allocation of resources and make procedures more efficient. It will permit consolidation of the infrastructure currently distributed across divisions and will promote the establishment of core facilities that can be managed either directly by the Department or by a core facilities committee. Finally, it will allow better management and permit more effective further restructuring of the curriculum and its delivery though support staff currently allocated to divisions.

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