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HELLENIC REPUBLIC
H.Q.A.A.
HELLENIC QUALITY ASSURANCE AGENCY
FOR HIGHER EDUCATION

EXTERNAL EVALUATION REPORT

DEPARTMENT OF ICHTHYOLOGY AND AQUATIC ENVIRONMENT

Faculty of Agricultural Sciences

University of Thessaly

April 2011

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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

External Evaluation Committee

The Committee charged with the task of External Evaluation of the Department of Ichthyology and Aquatic Environment (DIAE) of the University of Thessaly, was composed by the following four evaluators drawn from the Registry constituted by the HQAA in accordance with Law 3374/2005 :

1. Prof. Constantin Vamvakas (Coordinator)
   University of Ghent
2. Prof. Elefterios Zouros
   University of Crete
3. Dr. Maria Alexis
   Research Director, Hellenic Centre Of Marine Research
4. Dr. Constantine Stamatopoulos
   LAMANS s.a., Management Services, Athens, Greece

Dates and brief account of the site visit

The site visit to the premises of the Department of Ichthyology and Aquatic Environment (DIAE) of the University of Thessaly started in the afternoon of Monday 11 April 2011 and was completed in the afternoon of Wednesday 13 April. The Committee met with scientific and administrative staff as well as with groups of under-graduate and post-graduate students. The facilities visited included classrooms, libraries, laboratories, study rooms and the student and staff cafeteria. Consultations involved presentations by the Department's scientific staff, round table discussions and individual interviews.

The External Evaluation Committee (EEC) wishes to express its most sincere thanks to the staff of the Department of Ichthyology and Aquatic Environment of the University of Thessaly for their generous hospitality and their keen and active participation in the activities of the Committee. Our thanks are extended to the few DIAE students who responded to our invitation to participate at the discussions and who provided very valuable feedback. The EEC was much impressed with the excellent arrangements made by DIAE to facilitate the visit and the very good state and appearance of the premises, equipment and facilities. The latter observation reflects a truly exceptional attitude on the part of DIAE students who respect the space where they study and work.

Thanks are extended to HQAA for giving us the opportunity to be involved in such a challenging and rewarding job. Their generous assistance and valuable support is very much appreciated.

Whom did the Committee meet?

HQAA

Prof. Spyros Amourgis, President
Prof. Kleomenis Oikonomou
Prof. Ioannis Vlahos

University of Thessaly

Prof. Yannis Theodorakis, Vice-Rector
Prof. Michael Zoumboulakis, Vice-Rector
Prof. Christos Neofytou, Dean of Faculty of Agricultural Sciences and President of DIAE.

The EEC had the opportunity to hold general discussions with most of teaching and research staff of DIAE as well as with groups of under-graduate and postgraduate students. The following DIAE staff expressed their willingness to hold individual discussions with the EEC:

I. Arvanitoyannis, N. Dalezios, A. Exadactylos, K. Fisentzidis (administrative staff), E. Golomazou, I. Kagalou, I. Kastritsi, S. Klaoudatos, S. Matsiori, E. Mente, P. Panagiotaki, A. Psilovikos, K. Skordas, A. Theodorou, A. Tsikliras, D. Vafidis.

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

- Programme of Studies of the University of Thessaly.
- Internal Evaluation Report of the University of Thessaly (2009-2010).
- Internal Evaluation Report of DIAE (2008-2009).
- Internal Evaluation Report of DIAE (supplement for 2009-2010, on CD-ROM).
- Detailed teaching material (exam specimens, manuals, notes, textbooks, etc.).
- Description of courses and courses syllabi, including practicals.
- Complete profiles of teaching and research staff.
- PowerPoint presentations relating to DIAE's activities (CD-ROM).
- The following documents were provided upon request by the EEC:
    - A compiled list of titles of BSc., MSc. and PhD. dissertations.
    - A list of publications by researcher.
    - A list of projects and grants by researcher.

Facilities visited by the External Evaluation Committee

Student and research facilities

- Ichthyology – Hydrobiology
- Genetics and molecular biology

- Chemical Oceanography
- Physical Oceanography
- Protection of Aquatic Animal Resources
- Histology, physiology and nutrition
- Aquaculture
- Zoology
- Microbiology
- Electronic microscopy
- Snail culture
- Computers and IT services

Classrooms
Amphitheatre
Library
Computing facilities
Secretariat
Students' lobby
Conference and meeting rooms
Staff Offices

II. The Internal Evaluation Procedure

Appropriateness of sources and documentation used

The Internal Evaluation Procedure (IEP) represents a significant amount of work undertaken by the DIAE. The approach had been thorough and systematic and involved a high volume of information and data (over 1,000 questionnaires and some 100,000 answers were computer-processed) resulting from questionnaires especially designed for the purposes of the exercise.

Quality and completeness of evidence reviewed and provided

The quality of the IEP was satisfactory. The degree of completion was generally good. Some important elements were not included (see next paragraph on IEP objectives).

To what extent have the objectives of the Internal Evaluation Process (IEP) been met by the Department?

The objectives of the IEP were generally met. The EEC had the opportunity to verify that several weaknesses and constraints revealed by the IEP of 2008/9 have in the interim been addressed and resolved; these and other similar corrective actions are reflected in the IEP supplement for 2009/10. However, a number of key issues have still to be addressed within a more general context, such as cost/effectiveness of present DIAE structure and possible sustainability risks stemming from the simultaneous involvement into a relatively large number of application fields.

A. Curriculum

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

A1 – Under-graduate Curriculum

APPROACH

What are the goals and objectives of the Curriculum?

In Presidential Decree no. 109/2006 it is stated that the education objectives and goals of the Department are to train its students in the following sectors:

1. Development and application of innovative technologies in production (from aquaculture and fisheries) and processing-and-trade of fish and fisheries products.
2. Protection and conservation of the aquatic ecosystem.
3. Ascertaining the research capabilities of national production units and their contribution to national outputs.
4. Research approaches and diffusion of results.
5. Methods and techniques commonly encountered in fisheries, aquaculture, fish processing and trade, aquatic ecosystem and aquatic organisms.

What is the plan for achieving them?

By means of under-graduate and graduate programmes. In this programme the main subjects include:

(a) fisheries;
(b) aquatic animal and plant farming;
(c) processing and marketing of aquatic products;
(d) management of aquatic environment.

The ongoing undergraduate syllabus has an expandable duration of five (5) years with a maximum limit of ten (10) years and a maximum total score of 300 ECTS. The courses are taught over 10 semesters of 13 weeks each. A student must complete 62 courses of which 50 are compulsory and the rest are chosen from a list of 29 electives. The maximum total score from all courses is 264 ECTS. The programme also includes four months of obligatory practicals (maximum score is 6 ECTS) to be exercised outside the University. A requisite for successfully completing the programme is the submission of an under-graduate thesis that scores up to 30 ECTS.

How were the objectives decided? Which factors were taken into account? Were they set against appropriate standards? Did the unit consult other stakeholders?

The objectives are driven by the importance of aquaculture (Greece is one of the largest producers and exporters in Europe) and the need for rational exploitation of aquatic resources and protection of aquatic environment. An instrumental factor was the need for the establishment of a university unit that would serve uniquely and exclusively the above objectives. With regards to education and research standards the objectives are in line with the educational and research mission of other institutions that serve similar objectives. With regards to other stakeholders the EEC has no information.

Is the curriculum consistent with the objectives of the DIAE and the requirements of society?

Overall the curriculum is consistent with the objectives of DIAE and the requirements of society. However, the EEC feels that a certain degree of re-structuring of the curriculum might prove worth considering. There appears that some extent of overlapping exists between courses; consolidation and/or integration of such courses should open up the possibility for the addition or strengthening others which the EEC considers very relevant, such as ichthyopathology.

How was the curriculum decided? Were all constituents of the Department, including students and other stakeholders, consulted?

The ongoing curriculum and courses syllabi were approved by majority vote in the Departmental Assembly in which representatives of students also participate.

Has the unit set a procedure for the revision of the curriculum?

There is a procedure in place (Internal Evaluation Procedure - IEP) for regularly reviewing the curriculum and proposing revisions to be examined and decided upon at the Departmental Assembly.

IMPLEMENTATION

How effectively is the Department's goal implemented by the curriculum?

The Curriculum courses are organized into the following six thematic categories:

- General subjects (Mathematics, Physics, Chemistry, IT, etc.)
- Economics
- Biology
- Fisheries and Aquaculture
- Processing
- Environment

The above composition of courses, the inclusion in the Curriculum of training activities with the industry and the preparation of a final thesis, adequately meet the Department's goals.

How does the curriculum compare with appropriate, universally accepted standards for the specific area of study?

The curriculum is in line with similar programmes in Aquaculture, Fisheries and Aquatic and Environmental Management offered at university level.

Is the structure of the curriculum rational and clearly articulated?

The curriculum is clearly articulated. There is a good balance between theoretical (60%) and practical training (40%). The DIAE has recently introduced the concept of requisite courses which has created some hardship among the students. Steps have been taken to alleviate these difficulties without substantially changing the role of the concept, an action with which the EEC concurs.

Is the curriculum coherent and functional?

Overall the curriculum is functional; however its coherence ought to be improved as stated earlier.

Is the material for each course appropriate and the time offered sufficient?

The various training tools and facilities offered to students are appropriate and sufficient. However, the present teaching programme seems to put the students into a rather tight learning path with no sufficient time for homework; learning effort could become more focused and effective by means of a more flexible and rational teaching schedule.

Does the Department have the necessary resources and appropriately qualified and trained staff to implement the curriculum?

Technical infrastructures and equipment are quite appropriate and sufficient (classrooms, laboratories, equipment, library, etc.). A good proportion of equipment and facilities was funded by extra-budgetary sources such as projects and grants obtained by the Departmental staff. It should be stressed here that any reduction of income would jeopardize the regular operation and maintenance of existing equipment and facilities.

With regards to external practical training the EEC was informed that due to lack of funding trainees tend to choose "financially convenient" locations (usually the places they come from) that are not necessarily the most appropriate ones. Moreover it was brought to the attention of the EEC that the main difficulty of the Department in placing students for external practical training is the unwillingness of the industry to accommodate them.

Regarding the qualifications of teaching staff the view of the EEC is that they are highly qualified, dedicated and enthusiastic. This view is also shared by the students with whom the EEC met.

RESULTS

How well is the implementation achieving the Department's predefined goals and objectives?

According to the statistical records of the Department the average duration of studies is 6.08 years with an average academic attainment around 7, a rather high score if compared to current national standards. Regarding the professional career prospects of graduates the Department is not in a position to provide sufficient data given the short period of DIAE's functions. Statistical analysis of questionnaires completed by students shows an overall "satisfaction index" of 7/10 which is considered a good level of achievement.

Regarding changes to the existing staff the EEC was informed that three full professors will be retiring in 2011 and a fourth in 2012. Delays in the replacement of these faculty members would create a strain in delivering programmed training activities.

If not, why is it so? How is this problem dealt with?

N/A

Does the Department understand why and how it achieved or failed to achieve these results? Does the Department know how the Curriculum should be improved?

The Department is monitoring its successes and failures and obtains valuable feedback through the regular implementation of Internal Evaluation Procedures and other sources both within and outside the Faculty.

IMPROVEMENT

Which improvements does the Department plan to introduce?

The Department is examining ways and means of addressing problems emerging from the recently conducted Internal Evaluation Procedures and other sources of feedback on the structure and contents of its Curriculum.

A2 – Graduate Curriculum (MSc. & PhD.)

APPROACH – Postgraduate programme

What are the goals and objectives of the Curriculum? What is the plan for achieving them?

The Department offers an MSc. degree on "Sustainable Management of the Aquatic environment" (SMAE). The general objective of the curriculum for this degree is to develop environment-friendly practices, techniques and procedures. The main goals are:

- Postgraduate studies of high quality;
- Knowledge of current scientific methods for management of aquatic resources;
- Acquisition by students of necessary knowledge and skills for a successful career in the private, public and academic sectors;
- Provision of background knowledge for eventual continuation with PhD. studies.

How were the objectives decided? Which factors were taken into account? Were they set against appropriate standards? Did the unit consult other stakeholders?

The deterioration of aquatic environment and the dangerous reduction of aquatic resources were the main impetus in formulating the SMAE curriculum. With environmental issues becoming increasingly important, new jobs on environmental subjects are expected to emerge and this should increase employment opportunities. Moreover the creation of a post graduate degree offers DIAE scientific staff with more opportunities to exploit their capabilities for research and development. In formulating the curriculum the Department has first taken into account the curricula of other similar degrees. This was followed by a phase of experimentation (as a two-year programme) before reaching its present form of a one-year degree. Further revisions will depend on the results of internal evaluation procedures in which several key factors will be examined and analyzed, such as performance, success rates and job opportunities.

Is the curriculum consistent with the objectives of the Curriculum and the requirements of the society?

The curriculum is consistent with the objectives of the MSc. programme. MSc. students also agree on this point.

How was the curriculum decided? Were all constituents of the Department, including students and other stakeholders, consulted?

Decisions in the Department are taken through its General Assembly at which student groups are represented. It is not clear whether the Department had initially consulted other stakeholders. Some feedback was obtained from MSc. students coming from the industry; their overall reaction has been quite positive and they have expressed a good degree of satisfaction for the content of the curriculum.

Has the unit set a procedure for the revision of the curriculum?

DIAE has set-up an Internal Evaluation Procedure (IEP) which operates with questionnaires and computer-supported analysis of collected information and data. Revision of the curriculum is among the objectives of the IEP.

PhD. degree

The PhD. candidates have to take lessons and be examined in three subjects that are taught by tutors other than their supervisors.

IMPLEMENTATION

How effectively is the Department's goal implemented by the curriculum?

The MSc. Curriculum courses are organized into the following thematic categories:

- Protection and Management of Aquatic Ecosystems - Biostatistics
- Approaches for sustainable development of fisheries and aquaculture
- Conservation of aquatic organisms and bio-diversity – marine mammals
- Water quality - Oceanography
- Policy, marketing, environmental economics
- Long-term conservation of natural water sources
- Public health and micro-organisms in aquatic systems
- Processing technology, quality control and food safety

Candidates for MSc. who have not obtained their BSc. from the DIAE have to take admittance exams. From the 8 courses offered 4 are obligatory and 4 are elective. Six courses have to be completed successfully. The programme is realized over 13 months and includes preparation of a dissertation, involving experimental work on related scientific subjects.

The MSc. curriculum does not contain compulsory laboratory sessions. Practical training is part of the thesis preparation. Overall the MSc. curriculum adequately meets the Department's goals.

How does the curriculum compare with appropriate, universally accepted standards for the specific area of study?

The curriculum is in line with similar programmes offered at university level.

Is the structure of the curriculum rational and clearly articulated? Is the curriculum coherent and functional?

The structure of the curriculum has periodically undergone changes in order to improve the sequence in which courses are taught. Reforming is a continuing process depending on the outcomes of annually conducted internal evaluation procedures (IEPs).

Is the material for each course appropriate and the time offered sufficient?

The material is appropriate. The courses however have to cover several application fields in a relatively short period (13 months).

Does the Department have the necessary resources and appropriately qualified and trained staff to implement the curriculum?

The department has highly qualified staff. It also invites external researchers for responding to eventual needs in specializations. In contrast, financial resources are limited. The students have to pay a fee of € 3000 for MSc. and € 6000 for PhD. These fees some students consider excessive; in general however the courses continue to attract students. Regarding the fees some students felt that there is low transparency as to where and how the money is being used by the department, while the Department indicated that sufficient procedures exist for adequate transparency.

PhD. degree

The PhD. work is supervised by a three-member Committee that involves members of the University as well as scientists from Research Institutes in Greece or abroad. Progress is assessed by the Committee on the basis of yearly reports prepared by the candidate. The latter has also the duty to deliver two seminars related to the PhD. thesis. For obtaining the degree the candidate has to: (i) present the thesis for approval by a 7-member scientific committee and, (ii) publish at least one scientific paper at an international journal.

RESULTS

How well is the implementation achieving the Department's predefined goals and objectives?

Starting in 2004 and up till now the MSc. has attracted 142 students of whom 97 have completed their degree and 28 are still studying. Satisfaction of students is high with respect to staff involvement (8.0/10) but according to the last IEP there is still room for improvement. Regarding time available for homework satisfaction is rather low (3.6/10). There is a marginal satisfaction (5.7/10) regarding involvement in research activities. At present there is no systematic follow-up concerning employment and future career prospects.

If not, why is it so? How is this problem dealt with?
N/A

Does the Department understand why and how it achieved or failed to achieve these results?

The department analyses questionnaires provided to the students every year, which are quite detailed and provide all necessary information for accessing reasons of success or failure.

PhD. degree

There are at present 15 PhD. students attending the programme. No student has yet completed the course.

IMPROVEMENT

Does the Department know how the Curriculum should be improved?

DIAE systematically obtains feedback from students and follows up on research developments in the field. However in issues relating to regular funding, there are factors and problems that lie outside the Department's responsibilities and control.

Which improvements does the Department plan to introduce?

Submission of new project proposals for post-graduate studies. Enhancing teaching methods. Career development is a high priority.

B. Teaching (for all levels of education)

APPROACH

Teaching methods used

Teaching of most subjects is usually done via lecturing, tutorials and laboratory sessions. Modern teaching tools such as internet use, video projections and demonstrations are practiced regularly.

Teaching staff/ student ratio

The teaching staff/student ratio for undergraduate students and per year of study is estimated to be about 1:4. Additional time is also spent for postgraduates. This ratio favours of course the students but, on the other hand, indicates a rather costly use of human resources.

Teacher/student collaboration

According to the interviews with the students the level of collaboration is highly satisfactory.

Adequacy of means and resources

It was reported that due to financial difficulties there have been problems in obtaining the necessary parts and consumables supplies intended for laboratory sessions and practical exercises. Another problem is the lack of technical and administrative staff to effectively respond to the educational and research needs of the Department.

Use of Information Technology

The use of IT by students and Departmental staff is quite satisfactory. It is worth mentioning that students have easy access to a database of literature from which they can order and obtain the textbooks needed for their studies.

Examination system

Assessing the students' performance involves written and oral exams the choice of which is left at the discretion of the instructor. In several cases the tests involve the use of especially designed computer programs that are operated directly by the students themselves. The computer-driven tests are time-limited and involve multiple choice questions, questions that require critical thinking and other questions where general knowledge of the subject is needed. Students seem to generally favour this approach though there have been some criticisms with regards to the time limit, especially in cases where pieces of text have to be composed and typed in.

IMPLEMENTATION

Quality of teaching procedures

On the basis of what was reported by the DIAE teaching staff and students, teaching of most subjects is mostly done via lecturing, tutorials and laboratory sessions. Due emphasis is placed on methods that stimulate active participation of students. Modern teaching tools such as internet use, video projections and demonstrations are practiced regularly. Regular and at times personalized tutoring also plays an important role.

Quality and adequacy of teaching materials and resources

According to students' views teaching materials are generally appropriate if marginally. The list of books is regularly updated. The library is well equipped with textbooks. The manner in which textbooks are selected and obtained by the students is quite efficient (see also earlier note on IT use). Regarding the staff/student ratio this, as already described earlier, is rather high (see p.14 par 4).

Linking of research with teaching

Both under-graduate and graduate programmes involve a certain extent of research that is integrated into the syllabus. A research thesis is a requisite for both BSc. and MSc. graduates. BSc. students are also expected to be involved in external practicals outside the University. Furthermore, students can benefit from the results of the research done by academic and technical staff of the Department.

Mobility of academic staff and students

Although there has been some student mobility under the Erasmus programmes, its level is low. Mobility of academic staff related to teaching enhancement has also been low.

Evaluation by the students of (a) the teaching and (b) the course content and study

As shown in the 2008-2009 Internal Evaluation Report and its 2009-2010 supplement, the views of students on both aspects have been positive. However, on the basis of some comments made during the interviews of the EEC with groups of MSc students, some communication problems seem to exist between them and the DIAE administration, particularly in matters relating to notification of curriculum changes and tests results.

RESULTS

Efficacy of teaching

The under-graduate student body is composed of graduates from general and technical secondary education. In the MSc. programme the student composition involves people from universities as well as from Technical Educational Institutes (TEI). This heterogeneity in both BSc. and MSc. programmes demands additional effort on the part of teaching staff in order to bring all categories at the same level. This heterogeneity problem also affects the students' body.

At courses and laboratory sessions the size of student groups is considered a key factor for effective learning. According to the Internal Evaluation Report the relatively small number of students attending courses and laboratory sessions facilitates contact between students and tutors and hence enhances the learning process. However, as already mentioned (see p.14, par. 4), the current staff/student ratio seems to be rather high , a fact that discourages tutors and creates the impression of irrational use of costly staff resources.

Discrepancies in the success/failure percentage between courses and how they are justified

Based on the results of the Internal Evaluation Report the EEC considers that there are no noticeable discrepancies.

Differences between students in (a) the time to graduation, and (b) final degree grades

According to the statistical records of the Department the average duration of studies in the under-graduate programme is 6.08 years with an average academic attainment around 7, a rather high score in considering national standards. The EEC considers that there are no noticeable discrepancies across students and/or graduation periods. With regards to the postgraduate programmes of the DIAE, the EEC is of the view that at this early stage and due to the lack of enough historical data it would not be possible to derive any well-founded conclusion.

Whether the Department understands the reasons of such positive or negative results?

N/A.

IMPROVEMENT

Does the Department propose methods and ways for improvement? What initiatives does it take in this direction?

With regards to teaching there is good room for improvement. Among possible actions increased attendance through more attractive teaching, awarding of prizes and promoting and facilitating mobility of students, ought to be viewed as key factors.

C. Research

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

APPROACH

What is the Department's policy and main objective in research?

Research activities cover the scientific areas in which the Department is involved. It concerns both fundamental (basic) and applied research. Its main objective is to develop and promote knowledge as well as new technologies for aquatic production and for the management of aquatic environment. The DIAE's research policy is not well-defined. The EEC agrees with the view of DIAE (p. 144 of IEP 2009-2010) that an improved research policy ought to be formulated in the near future.

Has the Department set internal standards for assessing research?

There exists a good degree of variability among faculty members with regards to the number and size of grants obtained and the number and quality of publications produced. This is not an uncommon situation in Greek Universities. The EEC would like to see stronger evidence of steps taken to resolve this imbalance.

Although internal standards are not clearly identified, the EEC's understanding is that the research record of a faculty member is a decisive factor for tenure and promotion considerations.

Furthermore (as per DEP) research is supported by projects. Scientific results should thus comply with the requirements set by each of those projects. The successful achievement of project goals is assessed by the President and the General Assembly of the Department.

IMPLEMENTATION

How does the Department promote and support research?

Funding of research is covered by competitive projects. The Research Committee, the Departmental Committee and the internet and personal contacts contribute almost equally to informing DIAE scientific staff for calls for proposals, while the involvement of other relevant offices (such as the Liaison Office) is smaller .

Quality and adequacy of research infrastructure and support

The Department has plenty of space which can be used, among other activities, for research. Its infrastructure was significantly improved during recent years. This was achieved through structural or research projects. Basic equipment for research and a number of more sophisticated equipment (like atomic absorption, high performance liquid chromatography, electron microscope both transmission and scanning) were obtained. These cover satisfactorily the research requirements. However there is a need for infrastructure enhancement in order to serve better the wider research objectives of the Department and particularly those for aquaculture. Lack of instruments is currently covered through collaborations with other research units external to the DIAE. A major problem is the almost complete lack of technical staff to support the existing infrastructure; this problem creates for both research staff and post graduates many difficulties in the use of facilities and handling of equipment.

Scientific publications

The number of scientific publications so far produced is considerable (see coming paragraphs for more details). However some DIAE staff feel that involvement in administrative work is given undue weight vis a vis research output and this constitutes an impediment for research. The explanation given to EEC was that due to the young age of the Department there is an increased need for administrative duties; such duties are expected to be significantly reduced in the medium-term.

Research projects

There are limited regular public funds for supporting research, even for common expenses for teaching and training. Nevertheless academic staff is active in submitting proposals for obtaining competitive research projects and funds to support the Department's activities.

Research collaborations

At the meetings of EEC with DIAE scientific staff all participants expressed their keen interest to initiate collaboration with foreign Institutions in order to improve their knowledge in their specific field. However the discussions revealed that teaching duties are often an obstacle to this. Ways and means for removing this obstacle should be examined by the Department.

RESULTS

How successfully were the Department's research objectives implemented?

The Department has obtained a large number of projects over the last years; however not all research fields were adequately covered.

Scientific publications

There is a considerable number of scientific publications (220 publications up to 2010) in international journals (SCI index), published from 2002, the time that the Department became operative. There are also 18 books and monographs and 18 contributed chapters in collective volumes during 2005-2010.

Research projects

A large number of projects have been realized during the last years which generated for the Department an income of € 3,430,000 in the period 2004-2010. Most of the projects were obtained by senior staff. The number of projects has been reduced recently but DIAE staff keeps on submitting proposals.

Research collaborations

The Department has initiated collaboration with European and National Universities and Research Institutes as well as with other National Organizations, production units and regional authorities. Most of the new staff members maintain good contacts with foreign and national research institutions. This could contribute positively in the process of f formulation, submission and approval of future proposals for scientific projects.

Efficacy of research work. Applied results. Patents etc.

A number of projects led to applied results which can be used by local authorities for improving policies and/or making better management of resources. Snail culture is also another activity that has produced applied results of considerable interest (contract with local authority). No patented products exist.

Is the Department's research acknowledged and visible outside the Department? Rewards and awards.

The research is visible and acknowledged since it attracts citations in international journals (1223 during 2005-10). The presence of the personnel in research conferences is also high (more than 209 publications during 2005-2010).

IMPROVEMENT

Improvements in research proposed by the Department and initiatives in this direction undertaken by the Department

The main problems faced in the research development are those related to funding and the lack of uniformity of fund distribution in various research areas.

Increase in research funding is chiefly dependent on the staff's interest and ability to formulate and submit good project proposals and to also generate appropriate collaborations. The Department should encourage the formulation of new project proposals and give this activity due importance. It should also encourage training of personnel at foreign laboratories.

D. All Other Services

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

APPROACH

How does the Department view the various services provided to the members of the academic community (teaching staff, students).

The Department feels that the various services provided to the academic staff and students are adequate.

Does the Department have a policy to simplify administrative procedures? Are most procedures processed electronically?

The department is under a heavy administrative load. The EEC felt that among the three areas in which the effort of a faculty member should be divided (teaching, research, administration), the third is at times overdeveloped at the expense of the second. This is partly justified if one considers the early age of the department and therefore the need to serve both an undergraduate and graduate program and the diverse nature of its academic specialities that include expertise in physical sciences, economics and humanities. The EEC feels that there is good room for the simplification and streamlining of administration procedures without reducing the current administrative efficiency, an action that in any event is part of the DIAE's medium-term plan.

Most administrative procedures are carried out electronically.

Does the Department have a policy to increase student presence on Campus?

The undergraduate program is time-intense with the result that students (at least the few who take their student status seriously), need to be in the department's premises for the whole day. Even though eating facilities exist in these premises there is lack of other facilities that would allow the student to make better use of his/her free time, such as sports and recreational activities. In contrast good working space and adequate facilities are found in the library. Lockers for the students to keep their belongings during their stay in the building would be very welcome and useful.

IMPLEMENTATION

Organization and infrastructure of the Department's administration (e.g. secretariat of the Department)

The department faces a serious problem in administrative personnel. One person has requested (and been granted) transfer from the department to the central administration. Another person strongly resents his involvement in daily secretarial work, while he was hired as a full-time IT expert to support the computing facilities of the department. The shortage in personnel, combined with the high volume of administrative work, has resulted in more workload for the academic staff with all the consequences that were explained earlier.

Form and function of academic services and infrastructure for students (e.g. library, PCs

and free internet access, student counseling, athletic- cultural activity etc.)

As noted, the library is serving well its purpose both as provider of studying material (in hard copy and electronic form) and as a studying place. Students have access to a remarkably large number of electronic journals from home. Free access to internet services is provided to all students. IT facilities are excellent. There are catering facilities on the campus but there are no sports facilities (an initiative by the DIAE to create a sports facility was turned down by the University administration). Bus services between the campus and the city of Volos, where most of the students live, are running well. The EEC was happily surprised to see that the DIAE premises, labs, offices and all other spaces were kept at an excellent state, and that the distasteful littering caused by student indifference and neglect of public property (that has become a trademark of Greek higher education) was totally missing or restricted to a minimum. To a certain degree this is due to the small number of undergraduate students which helps in creating an intimate environment and also to the determination of the DIAE administration to keep the premises in good condition.

RESULTS

Are administrative and other services adequate and functional?

The administration is efficient, which is highly commendable given its understaffing. The electronic services are also very good. With minor exceptions the services offered to students and the academic staff are satisfactory.

How does the Department view the particular results?

The administration keeps a vigilant eye on anything that relates to its mandate and is very keen to make any improvement within the limits imposed by the inadequate funding it receives.

IMPROVEMENTS

Has the Department identified ways and methods to improve the services provided? Initiatives undertaken in this direction.

Improving the services is an integral part of the self-evaluations that the department conducts at regular time intervals. The quality of services and the potential for improvement are monitored through the questionnaires that filled by students and staff.

Collaboration with social, cultural and production organizations

Please, comment on quality, originality and significance of the Department's initiatives.

The department has undertaken an effort to advertise its undergraduate program in high-schools in an attempt to attract students. This effort must be maintained and intensified. The department's graduate programme is also well advertised. The department has also close contacts with the private industry and public administration at local and national level. However, it was brought to the attention of the EEC that the Department is facing difficulties in placing its students for practicals and/or research due to the unwillingness of the industry to accommodate them.

Staff members participate regularly and voluntarily in various public organizations and committees and the departments holds "open-house" functions during which the public and pupils witness the departments activities.

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

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

Potential inhibiting factors at State, Institutional and Departmental level, and proposals on ways to overcome them.

Major inhibiting factors that the DIAE and EEC consider important are:

- Excessive dependence from the Ministry of Education
- Current legislation inhibits collaboration and coordination between Departments
- Delays in the procedures of hiring and promoting on the part of the Ministry of Education
- The expected departure of academic staff (five out of 19) which will seriously affect the Department's capacity to effectively deliver its training and research programmes
- Lack of technical and secretarial staff
- Low mobility of academic staff and students
- Need for a multi-purpose sea-shore marine laboratory
- Insufficient funding from the regular budget
- Low preference among high school graduates
- Low scores obtained by the majority of under-graduate students entering DIAE

Most of the above inhibiting factors are beyond the department's power and thus are the concern of the Ministry of Education. DIAE has undertaken efforts to address the need of a multi-purpose sea-shore marine laboratory, with no success so far due to lack of funds. Also DIAE must intensify its campaign to promote the department's profile among high school students and the wider public.

In the strategic plan of DIAE it is envisaged the creation of a new MSc. degree in collaboration with foreign universities, an action with which the EEC fully concurs.

F. Final Conclusions and recommendations of the EEC

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

Conclusions and recommendations of the EEC on:

- *the development of the Department to this date and its present situation, including explicit comments on good practices and weaknesses identified through the External Evaluation process and*

recommendations for improvement

- *the Department's readiness and capability to change/improve*
- *the Department's quality assurance*

The DIAE is one of the two departments of the Faculty of Agriculture of the University of Thessaly, the other being the Department of Plant Production and Rural Environment. The two departments, that are housed in the same building and share many common facilities, were originally parts of one department which was divided along the basis of plant versus animal production. At the time of split (2002), the animal-production part was almost exclusively concentrated on aquatic animal resources. As a result, the new department adopted as its exclusive mandate the service and development of aquatic resources, both plant and animal, to the exclusion of terrestrial resources - quite unlike other agricultural university schools that serve both terrestrial and aquatic resources. Thus the new department appeared to have resulted more as a response to a historical contingency, rather than as an outcome of a strategic plan with due consideration to important factors such as geographic suitability.

This separation of the departments has had several positive consequences. It allowed stronger focusing on the subject matter through specialization and homogenization of sub-specialties. For the DIAE in particular, it provided the unique feature of being the only university department with a 5-year undergraduate curriculum whose exclusive domain is the development of aquatic resources. However, it should be mentioned that the fields of aquaculture, fisheries and management of the aquatic environment are served to a various extent by other universities and research institutions across the country.

The separation of the two departments has also had some negative consequences concerning rational use of human resources. One consequence is the duplication of courses of similar content that are taught in separate classrooms, only a few meters away and by faculty members that belong to different departments, to only a handful of students. These are classes in the basic sciences, such as mathematics, physics and chemistry, but also in more specialized topics. Some 20 classes, listed in the undergraduate curricula of one or the other department, can be easily designed to meet satisfactorily the general and specific needs of both departments. Another negative consequence of the separation is the need to accommodate faculty members who could otherwise be placed equally well in one or the other department. These faculty members faced the need to contribute to the teaching load of their new department at equal level with their more specialized colleagues. They also had to invest in additional knowledge in order to be fully integrated in their new environment. In turn this led to the creation of new classes whose content was not of high priority for the undergraduate curriculum of the department.

As a first option to remedy duplication the EEC proposes the introduction of common core courses (Mathematics, Physics, Biology, Chemistry, etc.) for the two departments. This action would require the dean to have the authority to call on the departments to hold join classes. A second option is for the students to enter a faculty rather than a department. They would thus be initially uncommitted and make their choice after the period of common training. Any of the above two options would achieve more rational use of human and other teaching resources and a better quality in common training. At this point EEC wants to refer to the last section of this report (section G) where the EEC takes the liberty to offer opinion on the important issue of rationalization of teaching and research on aquatic resources at the national level.

Choosing one of the above proposed options would address the problem of low number of students entering the undergraduate programme and that of the inevitable competition with

other institutions of higher education specializing in aquatic sciences, notably aquaculture (see next topic G).

Concerning the tuition fee the EEC felt that its existence for the MSc. and PhD. programmes is justified in principle, provided that it is fully accounted for by the administration.

The EEC felt that fish pathology is under-represented in the curriculum. The Committee was informed that a School of Veterinary Sciences exists within the same university in a different city (Karditsa) and that this hampers teaching of fish pathology at DIAE. The EEC feels that this situation merits some consideration: Owing to the distance between the two Departments it would seem reasonable to suggest that the DIAE deals with this issue the way it feels most appropriate.

Three of the five full professors will retire in 2011, one in 2012 and the other in few years thereafter. This raises a dual concern. The first refers to the strain of teaching and administration load on the remaining faculty members. The second refers to the structure of the hierarchy within the department which might be left with no senior academic staff.

The EEC's favourable impression from the general appearance of common grounds, which the EEC interpreted as a sign of healthy concern for DIAE, was somewhat countered by the fact that only 3 first-year undergraduate students responded to the EEC's call to meet with the student body. As a result the EEC considers that the feedback obtained from under-graduate students is not representative enough.

The Department's readiness and capability to change and improve its quality is evidenced by the introduction of mechanisms for internal evaluations and external feedback. The evaluation approach is mainly based on questionnaires that are completed by DIAE scientific and administrative staff and students. The information and data obtained in this manner are subsequently computer-processed with the purpose of analyzing the answers and formulating statistical criteria and indicators relating to performance, indices of satisfaction, etc. In addition to the internal evaluation the DIAE intends to set-up an external feedback system, to be operated every four years, with the view of obtaining valuable information from the private and public sector.

G. Suggestions for a national strategy regarding education and research on aquatic living resources

In considering the large number of national institutions that are involved in education and research on aquatic living resources, the EEC took the initiative of supplementing its External Evaluation Report with this special section in order to make proposals aiming at harmonizing and rationalizing the mandates and functions of the said institutions. This initiative is justified by considering the current economic situation of the country and the urgent need to increase the cost/effectiveness of all of its public sector including education and research.

It should first be pointed out that the fields of aquaculture, fisheries and management of the aquatic environment are served to variable degrees by several universities across the country, such as the DIAE of the University of Thessaly, the Department of Biology of the University of Crete (Aquaculture), the Agricultural University of Athens (Aquaculture), the University of Patras (Marine Life), the University of Thessaloniki (Fisheries), the University of Aegean (Marine Environment) and, to a lesser degree, the University of Athens and the University of Ioannina. Also included in the above list are three Technological Educational Institutions

(TEI) (Messolongi, Igoumenitsa and Moudania) that specialize at the technical aspects of aquaculture and fisheries. To complete the picture, one should also mention the research activities in aquaculture, fisheries and the aquatic environment that are conducted by the Hellenic Centre for Marine Research and the Fisheries Research Institute (Kavala).

The separation of the departments of the School of Agriculture of the University of Thessaly into Animal and Plant Production respectively, which occurred in 2002, may serve as an example of an action that brought with it both positive and less positive consequences. These consequences are dealt with in the earlier section of this report.

At this stage the EEC feels that there is a strong need for harmonization and rationalization among the activities of the various institutions mentioned before. In this respect the case of aquaculture will be taken as an example of major importance.

Aquaculture is a field of high priority, given that its products constitute one of the highest national exporting elements in value terms. To sustain this vibrant industry and retain its competitive advantage Greece needs to be ahead of its competitors in know-how and know-why, which means promoting research and training at the most advanced level. For this reason, there is a need for a critical re-examination of all higher education institutes and research centers that serve this field. The ideal scheme would consist of three types of institutions that would be tightly linked in a network of collaboration and interaction. The chain would contain at least one research institution of excellence in research in aquaculture, at least one academic unit at university level of excellence in research and training at all three levels (BSc., MSc., PhD.) and institutions that would produce through technical training and research highly skilled personnel needed to achieve and maintain high standards for the industry.

The above outline of a strategic plan for the research and training support of aquaculture should, of course, be worked out in a much finer detail. This would inevitably require a comparative evaluation of the various academic units that are now serving the aquaculture field across the country. In this context, the current exercise of individual evaluation of academic units (with no reference to other units of similar subjects) should be viewed only as the first step in an overall effort to rationalize and streamline the national higher education and research system and to create a national strategic plan on aquaculture.

Similar national strategic plans would be formulated for all other sectors involving education and research on aquatic living resources.

UNIVERSITY OF THESSALY

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