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HELLENIC REPUBLIC

H.Q.A.

HELLENIC QUALITY ASSURANCE AND
ACCREDITATION AGENCY

EXTERNAL EVALUATION REPORT

DEPARTMENT ELECTRONICS

TEI LAMIAS

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External Evaluation Committee

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

1. Prof._____George Srylios_____(President)
   (Title)   (Name and Surname)

   Heriot-Watt University, Edinburgh, Scotland, United Kingdom _____
   (Institution of origin)

2. Prof._____Panagiota Morfouli_____
   (Title)   (Name and Surname)

   Grenoble Institute of Technology/PHELMA – Grenoble University, France _____
   (Institution of origin)

3. Prof._____*Thierry Ouisse*_____
   (Title)   (Name and Surname)

   Grenoble Institute of Technology/PHELMA - Grenoble University, France_____
   (Institution of origin)

4. Prof._____Nicolas Tsapatsoulis_____
   (Title)   (Name and Surname)

   Cyprus University of Technology, Lemesos, Cyprus_____
   (Institution of origin)

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

The External Evaluation Committee (EEC) met from the 29th of October to the 3th of November 2013 to conduct the external assessment of the Department of Electronics of the Technological Educational Institute (TEI) of Lamia, Greece, referred to as "Department" and "Institution" respectively in this report.

The EEC was briefed by the Hellenic Quality Assurance Agency (HQAA) in the morning of the 29th of October 2013. Later, on the same day, the EEC visited the Campus of the Institution under evaluation where they had a short meeting with the President and the Vice Presidents of the Institution, the Head of Department and other staff. The 30 and 31 of October were spent with specific visits to facilities and discussions with staff and students, on the 31st of October 2013 and prior to the departure from the Institution, a preliminary presentation of the findings was given to a group of delegates of the Department, the Head of the Department and the OMEA committee.

The visit to the Institution involved meetings with the following executive and academic faculty members of the Institution:

- President (Prof. Ntinos Anastasiou);
- Head of the Local Quality Assurance Committee and Vice-President (Prof. Kontogiorgos Athanasios);
- Vice-Presidents (Professors Athanasios Kanapitsas and Aristidis Mertzanis)
- Head of the Department (Associate Professor Christos Tsonos)

It also involved meetings with:

- the members of academic staff of the Department who were also responsible for the internal assessment report (OMEA);
- members of permanent academic staff;
- non-permanent academic staff;
- lab assistants;
- technical support staff;
- students (from different year of study);
- alumni;
- administration staff ;

Prior to arrival at the institution the HQAA provided, in electronic form to the EEC the following documents:

- the 2009-2010 internal evaluation report prepared under HQAA rules,
- an updated supplementary version of the internal evaluation report of the period

2010-2013;
- the programme of undergraduate studies
- a detailed list of publications of the academic staff of the Department
- the questionnaire used for the evaluation of modules by the students
- the template used for reporting the academic activities of staff members
- the template used by the academic staff for module description

On arrival and during the visit to the Institution the EEC was also given copies of:
- an updated version of the programme of undergraduate studies;
- the guide for industrial placements;
- samples of exam papers and coursework briefs;
- samples of exam and coursework scripts, and dissertations;
- samples of module grades including coursework, exams and dissertations;
- samples of textbooks and other learning resources (e.g., lecture notes);
- the course syllabus and specifications;

The EEC was given access to the virtual learning environment used by the Department (e-class) as well as to an especially prepared for the evaluation folder which contains links to (http://www.eln.teilam.gr/el/node/687): (1) the presentations given to the EEC by the departmental members, and (2) material used for the evaluation, Such as links to the:
- undergraduate program guide
- module WebPages
- academic staff WebPages (permanent staff and contract staff) quality assurance process of the Department
- internal evaluation process followed by the Department
- mobility and international cooperation activities of the Department
- guide for project dissertations ("πτυχιακές"), project proposal lists, proposal forms, project extension forms, project assessment committee appointment forms, project evaluation reports, project submission notification forms and project abstracts;
- guide for industrial placements, industrial placement approval forms, industrial placement log books, industrial placement completion forms, and contact details of organisations hosting industrial placement students;
- webpage describing the role of the student advisor

The EEC visited the following facilities of the Institution:
- lecture theatres / rooms;
- the conference centre
- undergraduate and research student laboratories;
- academic staff and administration offices;
- the library;
- the liaison office;
- student and staff refectories; and

- the sport facilities (the pool and the gym)

The EEC is aware that some remarks/suggestions contained in this report may not meet the existing institutional and legal framework of Greece, but are consistent with the policy of their own institutions and that of the EU.

II. The Internal Evaluation Procedure

The Internal Evaluation procedure was followed by the Department in accordance with the HQAA directive. The appropriate template was used and all members of the academic staff were involved for the preparation of internal assessment report.

According to the report, the sources used were taken from:

- the departmental archive;
- earlier studies and reports related to EPEAEK programs and especially those referred to programmes of undergraduate studies and instructional / teaching evaluation;
- data collected from the questionnaire for module evaluation, module description and academic activity reporting;
- decisions taken by the departmental general assemblies;
- the archive of student grades

Module evaluation obtained from students has taken place in 2012 and 2013 over a specific time period prior to final exams with the aid of a designed online tool. So far the student participation is low and the EEC encourages the Department to think how to increase it and to consider student involvement in both the questionnaire design and in data analysis. Furthermore, it recommends to the Department to communicate to students more effectively the module evaluation procedure and its purpose.

The EEC members were given access to two different versions of the internal assessment report: The one that took place in 2008-2009 and an update supplementary version covering the period 2010-2013. Both reports were properly merged and the staff members tried to comment on every section. However, in the majority of sections critical view is missing and the answers are quite generic. Furthermore, despite the presentation of a lot of statistics conclusions drawn are minimal and generic, and there is no clear strategy or plan to deal with the weak points identified in the internal evaluation. Specific comments on these issues follow in the corresponding sections of this report.

The aims of the internal evaluation process are clearly mentioned in the corresponding section of the report (page 3 of the updated version) as follows:

- to point out and justify the achievements of the Department
- to identify weak points and areas that need improvement
- to define actions for improvement
- to take decisions at the Departmental level for self-improvement
- To take decisions at the Institutional level for self-improvement.

The EEC feels that the above aims were partially met: Important steps dealing with quality in teaching and curriculum have been made through the module evaluation by students and module description by the academic staff. Concerning research the Department needs to define a clear strategy and show how they will improve the research output (in terms of

research projects, collaborations with industry, utilization of Department's modern equipment, and patents). While the research achievement at individual level is quite high the research strategy at Departmental level is poor. Moreover, significant research achievements are poorly presented / promoted outside the Department. Finally, a more critical consideration of some of the assessment report points is needed for helping the Department to improve in curriculum, teaching and research. Clear actions must be defined for this purpose. The lack of clearly defined actions for improvement is the weakest point of the report.

One of the most important aspects, however, is that all Departmental staff members accept that the evaluation process is an opportunity to gain external feedback for improving on all its procedures, policies and processes, for the benefit of the Department, its students and the institution.

ACKNOWLEDGEMENTS

The EEC would like to thank the HQAA which has been very effective in organising our visit and providing all necessary papers, and for being very helpful and accessible for advice and guidance throughout our evaluation process.

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

APPROACH

The goals and objectives of the curriculum have been clearly defined by the Department and are stated in the programme of study. They are focused on producing electronic engineers who specialise in all areas relevant to the design, production, installation and repair of electronic systems and their applications, including telecommunications, power electronics, automation, computer hardware and medical instruments. These objectives are determined based on (i) the aims of the Department as given in the statute (Φ.Ε.Κ.), (ii) the history and heritage of the department and its faculty, (iii) the curriculum of other relevant departments at national and international level, and (iv) through continuous discussion in formal and informal Departmental and institutional meetings.

The main plan for achieving the above goals is the horizontal and vertical integration of modules within the programme of studies. Theoretical and background modules are taught first while almost every module includes laboratory assignments and projects to help the students master theory and enrich their practical abilities in electronics. The basic rational behind the objectives of the curriculum is the effort to produce properly trained graduates with abilities consistent with the vocational rights of electronic engineers as set in the Presidential Decree 346/8/06/1989. A second important factor influencing these objectives is the Department's strategy to keep its curriculum in agreement with those of similar departments in Greece. Finally, the rapidly changing field of electronics and the requirement to follow the international standards demand for a continuous amendment of curriculum objectives. The Department tries to keep the objectives up to date; however, it seems that the decisions are taken without consulting the industry or the alumni.

The curriculum serves well the traditional aspects of Electronic Engineering, putting also some emphasis on microelectronics and materials as a result of the expertise of faculty members. In an effort to keep up with the rapid growth and changes in the field, the Department offers background and core modules in the first two years (Physics, Mathematics, Informatics, Electronics, English, Telecommunications, Microelectronics, etc.) and specialized modules in the last two years. Overall, the emphasis of the curriculum is on breadth of relevant subjects which is consistent with the strategy of other departments followed in the field of Electronics. The EEC encourages the Department to strengthen their links with the local community to better understand societal needs to revise the specialized modules offered.

Procedures for the revision of the curriculum are set out in the statute, governing the operation of the Department and are based on subject area informal group meetings that feed into departmental committees. According to the statute, major restructuring of the curriculum is allowed every three years. In order to do so the Department follows robust departmental procedures (which include student representatives) and the relevant legislation of the state. The EEC feels that the faculty members should enhance their links with industry and with their alumni in an effort to act proactively for curriculum revision. So far, the major revisions of the curriculum emerged as a result of changes in the legislation made by the Ministry of Education.

IMPLEMENTATION

The curriculum is broadly in line with the stated aims and objectives of the Department as given in the last modification of the statute (Φ.Ε.Κ. 463/13-4-2006). The undergraduate programme includes general content and specialized modules. A total of 39 modules and a project dissertation (counting as one module) must be completed for the award of the degree. These modules are taught over seven semesters (usually five or six modules per semester). The project dissertation and a six month industrial placement ("Πρακτική Άσκηση") are scheduled in the eighth semester. During placement, the students work in the premises of an industrial partner and in some rare cases in Departmental labs. Both project dissertation and industrial placement provide a further opportunity for an integration of theoretical knowledge with practice using experimental tools, techniques and methodologies of the chosen subject. This is also the main conduit for student preparation and familiarization with research. The Department and the EEC are in agreement that these processes are an important component of the degree as they facilitate a smooth transition to industrial environments and research culture. The final year project (dissertation) usually combines a theoretical study with the development of electronic systems, either fully implemented or up to the design (or simulation) level. The results of these projects are frequently used as teaching material in several lab modules. According to the faculty members the final year project provides the highest opportunity to students to expose themselves to the practical aspects of Electronic Engineering in a coherent and systematic way.

The curriculum is consistent with those of similar departments in Greece and abroad. According to the faculty members the basic guide for the design of the curriculum was a study conducted within EPEAEK I: 1998-2002 in which the programme of studies was compared with those of several similar departments in EU and USA. In that study the market needs for trained Electronic Engineers were underlined and also recorded.

As is consistent with international best practices, the structure of the curriculum makes use of "background", "core", "compulsory" and a few optional modules to guide students through the programme of study and also providing some flexibility. This structure appears to be well articulated in the degree guide ("οδηγος σπουδών") with a rather detailed description of the offered modules. In an effort to further improve the implementation of the curriculum, the EEC recommends the Department to clearly indicate in the degree guide, for each one of the modules "recommended prerequisites" in order to help students better understand the overall curriculum progression.

The curriculum allows for smooth development of both theoretical knowledge (from breadth to depth) and practical abilities in Electronics by gradually increasing exposure to specialized labs. There is some evidence for both vertical and horizontal integration between modules providing opportunities of setting subjects in the context of each other, exploiting synergies between course modules, and hence improve learning by integration. Having said that, there are some problems associated with the inability to synchronise theory lectures with labs, as detailed in the teaching session. Overall, the curriculum appears to be both coherent and functional.

Detailed module information including syllabus, aims and objectives, learning outcomes, bibliography, are provided at the Departmental webpage for the majority of modules. The EEC reviewed the teaching material for theory and laboratory work and found it adequate. However, EEC notes the limited usage of e-Class, which is the formal Learning Content Management System (LCMS) of the Institution, and considers that the philosophy of online dissemination of teaching material is not well-cultivated in the Department. EEC believes that this issue must be addressed by the Department as a particular mean for improving the implementation of the Curriculum.

After interviewing faculty members and students, it has been clear that staff members have been making commendable efforts in implementing the curriculum, despite the large number of students, particularly in carrying out laboratory work. Infrastructure appears to be adequate as far as the novelty of the equipment is concerned but in many cases is insufficient to support actual hand on activities of every student, whilst specialised equipment are lacking There is no doubt that the faculty members have the necessary training and expertise to deliver the curriculum, but there is a high degree of reliance on non-permanent academic staff for the delivery of some of the modules which is a cause of concern. The greatest concern, however, is the fact that the laboratory work, one of the strongest aspect of the degree cannot be carried out efficiently due to the unacceptably low staff to student ratio discussed in other sections of this report. Limited individual exposure of all students to lab exercises has been highlighted by students and was raised in the EEC's meeting with faculty members, who have acknowledged this issue and have assured the EEC that they are doing their best, given limited budget to hire non-permanent staff.

In summary, the programme of studies strives to provide breadth across the field of electronics and to integrate theory and practice. The current implementation of the curriculum is deemed by the committee adequate, coherent and functional. Improvements are possible as suggested in the previous paragraphs. The limited available human resources mainly, in terms of permanent academic staff (thirteen), impose constraints and stretches the Department's ability to sustain the implementation of the curriculum. The culture in the

Department is responsive and collegiate, fostering good collaboration among members. The EEC is particularly impressed with the approachability, friendliness, collaborative and supportive spirit of all faculty members, also confirmed by the students.

RESULTS

The implementation of the curriculum seems to be achieving the Department's goals as defined by the programme of studies. Discussions with a few of the Department's alumni have confirmed that the content, structure and articulation of the curriculum, allow for the production of electronic engineers consistent with the vocational rights of electronic engineers as set in the Presidential Decree 346/8/06/1989, while keeping flexibility for further specialization and continuation of studies at higher levels (Masters, PhD). The programme is well supported by laboratories, computer software, IT infrastructure, and library facilities. The present rate of students' attendance is rather high in laboratories (since this is mandatory) but quite low in classes that are theory based. The EEC encourages the Department to investigate ways to increase the attendance of students to these classes.

An important obstacle in achieving sustainability and improvement of the Department's goals is the lack of necessary resources, especially for the laboratory component of the curriculum. In particular, the equipment in many cases is insufficient and combined with the excessive number of students compared to staff, results in some laboratory exercises becoming just demonstrations rather than active lab work carried out by the students. The students have confirmed in discussions that staff are doing everything they can to deal with this problem (adding many extra unpaid hours of laboratory sessions in many cases, leaving the labs open in non-class hours, hiring students to work as assistants in the labs), but the number of students in those sessions is prohibitively high for the problem to be eliminated. Nevertheless, more extended usage of simulation software; whenever this is possible prior to the lab sessions may be beneficial for students' involvement in lab exercises.

The overall workload of the curriculum as perceived by the students is rather high. There are various factors contributing to this issue: First, the students consider that the lab work-theory load is very low. Second, the educational background of the incoming students is diverse and it ranges from students having a solid foundation to Mathematics and Physics, to students having none at all. Many students are familiar with lab work and practical laboratory activities while others are not familiar at all. As a result, a considerably high percentage of students find it challenging either to follow and pass the maths / physics modules or follow and get full advantage of the laboratory classes. The faculty members try to do their best to alleviate this problem. Some of the lecture hours are replaced by virtual labs (exposure of students to simulation software like MatLab) while tutorial sessions are organized whenever the teaching load and the available budget.

The key issues inhibiting the effective run of the curriculum can be summarized as follows:

1. Lack of control over student entry is a challenge, especially as students have different backgrounds on entry, especially in terms of mathematical ability and/or lab work.

2. Long mean completion time for students, low pass rates in modules and low lecture attendance are issues of concern that need addressing.

IMPROVEMENT

The Department attempts to improve the quality of curriculum through internal reviews of its entire academic staff. The EEC considers recommends the Department should also seek the systematic advice from other stakeholders, namely industry and alumni, along with inputs from academic staff, students and Central Administration. An essential ambition of the programme should be to prepare students for their professional life and hence enhancing considerably their employability and skills.

Another issue is the increasing tendency to cut down laboratory classes allegedly due to the limited budget allowed by the Government for hiring non-permanent staff. The number of students in laboratory sessions must be kept low for effective learning. As a result, this increases the overall cost of laboratory classes and in a limited budget framework laboratory modules become non-sustainable. The EEC and the Department (both faculty members and students) consider that is of high importance to maintain the lab work, at least, at the current level. In that perspective several measures have been agreed:

(1) The Department should propose the soonest possible a postgraduate programme of study at MSc level in order to provide an opportunity for its own graduates and others to further specialize in the Department's fields of expertise. This may also provide extra funding.

(2) The Department should investigate ways of attracting PhD students, probably in cooperation with other institutions in Greece and abroad. PhD students, with advance the primary research of the Department and would allow smoother operation of the curriculum by offering tutorials and helping in laboratory modules.

(3) Involvement of students in laboratories as assistants should be extended and better planned in order to facilitate full utilization of sessions.

(4) Utilization of software tools for design and simulation could be imposed in theoretical classes in a project oriented basis. This will allow familiarization of students with modern approaches of design, analysis and testing of electronic systems and hopefully will increase the motivation of students to attend the theoretical classes and the laboratory sessions.

Finally, the Department should encourage e-learning approaches, whenever this is possible, and as a first step they should make better use of the current LCMS (e-Class).

B. Teaching

APPROACH

The Department of Electronic Engineering covers subjects in the field of science and technology of electronics with focus in the domain of industrial automation, telecommunications, information technology and services. It provides the necessary and specialized scientific and technological knowledge and application experience appropriate at undergraduate level. Consequently, its graduates possess sufficient theoretical and practical background that enable them to be employed either independently or in teams to study,

research, and apply the technology in fields of electronic engineering, such as for example; the design, and production of electronic components and devices, equipment or systems, in telecommunications, audiovisual applications, safety and fire prevention, electronic measuring, power electronics, computers and networks and medical instruments.

Due to the nature of the course, it is necessary to give a strong emphasis on practical exercises and lab activities which are complemented by lectures. The EEC finds that the Department's facilities, laboratories, and equipment are satisfactory. Students seem to enhance their experience by practical work in the lab sessions which provide hands on opportunities and practical benefits.

Attention should be given in the synergy and pedagogical link between the theory and the laboratory practice. Students report problems related with the synchronization of theory and the corresponding experimental lab activities, as well as a somewhat weak interaction between staff teaching theory with staff supervising the labs. Additionally and in accordance to students' comments, the EEC notes that some of these labs are restricted in to demonstrations of the experimental apparatus without the possibility for any practical 'hands-on' work, due to the excessive number of students. Therefore, an approach offering group work in problem solving with task allocation and team working may be an effective way of complementing existing traditional teaching. It would be also useful if lectures and tutorial notes, labs activities and guidance were also available in e-Classes, an area that is currently more and more being developed and used by the department.

The EEC also notes the low student attendance rate in lectures (20% - 30%) and, in some cases, in laboratories. The legal framework, which does not oblige students to attend, lectures maybe a significant contributor to this problem, and this may also influence to the fairly low degree completion rate. Likewise low rate is also observed in the corresponding examinations of the theoretical and the laboratory work. For example for the academic year 2008-2009 (first and second semester), in 2500 reported students, those enrolled were 1300 and only 550 students had validated the corresponding ECTS. A similar situation, (something which is more alarming), observed in laboratory examinations. For the same academic year, in 1650reported students, only 600 attended of those only 230 students were successful.

Another major problem is the number of students coming to the end of their studies in a reasonable time. As noted in the table presented in paragraph 4.2 of the internal evaluation report, all students enrolled in 2005 (8 years ago) have not yet graduated, 97.5% of students registered 9 years ago, 85.5% of students registered 10 years ago and 56% of students registered 11 years ago, are still without any degree. The average time of study before graduation seems to be 14 to 16 semesters, i.e., more than double of the normal duration of studies. For the members of this committee this is an unsustainable problem of major importance and must be resolved as a priority. According to new legislation (which will be applied from next year) the maximum duration of a 4 years course cannot exceed 6 years.

The EEC would like to note the low number of permanent academic staff, at present the department has 13 full time faculty members, 14 temporary instructors and 2 technicians. It is clear that the number of permanent and temporary faculty members is insufficient, and as a result, the program, mainly laboratories are performed under very difficult conditions, which are not satisfactory to staff and particularly students. More precisely the view expressed by the students is that some laboratories do not occur and for some others they are just observers. Even if the quality of the temporary staff is high as appears to be the case,

their temporary engagement and the fact that they are only present for their lectures in the Department (their participation is limited to 2-4 hours per week), restricts their accessibility to the students and creates discontinuities in terms of teaching philosophy (correlation between theory and practice), teaching consistency, familiarity between students and staff. The EEC members note that there is an evident and unquestionable passion and commitment from both staff and students to improve the standards of the Department. During our visit, both groups demonstrated a notable and exemplary high level of co-operation, so they are encouraged to consider solutions to these difficulties.

Regarding the policy for postgraduate studies, the Department does not offer any postgraduate programme at Master's level. The EEC members believe that it could be a good idea to set up an MSc course which will allow a realistic connection between research and teaching activity, which is necessary. An important point that needs to be addressed about the MSc would be the direction to which the MSc should be oriented in order to truly differentiate the department from others, whilst maintaining and enhancing the strengths of expertise of the members of the department. The Department could think for a co-sponsorship of an MSc course with another department of another institution with complementary expertise which might be a much more effective and realistic solution.

The student performance is assessed by a variety of methods including examinations, presentations, practical coursework and reports. The final written exam is the main method of assessment in all modules, both for theoretical and laboratory work. In some laboratory classes there is also intermediate evaluation, while in some subjects homework is required, of which count towards the final mark. The final mark is determined as a weighted sum of the marks achieved by the students in the different assessment parts of any given module and across modules for the overall grade award. The transparency and meritocracy of the evaluation process is ensured by public announcement of the results and by access of student's written exam scripts, as well as feedback discussion with the teaching staff.

A special case of evaluation is the dissertation ("πτυχιακή"), which is examined by a three-member committee appointed by the Department, requested by students and approved by the supervisor. One of the three members of the selection committee is the academic supervisor.

IMPLEMENTATION

The level and quality of teaching and teaching preparation of the course seems to be good and students seem to be satisfied with the teaching procedures and quality. The course material consists of a set of textbooks and lecture notes, which are distributed for free to the students. A library with very good standards is also available to students and staff for accessing, books, reports, theses and research papers. The teaching assessment approach of examining seems to be consistent with one used by the sector across the country. The existing infrastructure in terms of buildings and rooms is good (unfortunately we have not been able to get an idea of the computing equipment, except the library), but problems arise primarily due to the large number of students, because the Department has to accommodate with approximately twice the planned number of students.

For the year 2008-2009 and just for one semester of the academic year 2012-2013, students were asked to evaluate academic staff and the course modules through a formal procedure. Nevertheless, it has been noted that there is a very low participation (~ 20%), because in the

opinion of students, this assessment will not achieve any changes. Moreover, the method used does not motivate students to increase participation, and teaching staff are encouraged to improve student's understanding, implement changes based on student evaluation with transparency so that the student participation in increased. This is not coherent and should take place for every semester in each academic year. It seems that the outcome/findings are not used to further enhance the Departments' performance since there is no formal procedure to discuss and reflect on these results, and in doing so develop ways to integrate the needs of the students in teaching improvement and course development. Adopting an assessment strategy that perceives assessment as part of the learning experience, and enhancing the feedback provided to students from their assignments, could improve the situation. We think that further improvements are possible to enable students to better their educational experience and to complete on time their studies.

RESULTS

The department is established in 1982. Throughout this evaluation, the EEC observed a high level of commitment from staff and students towards improvement of the department.

The efficacy of teaching is generally good, but students note a disparity regarding the methods and coordination between staff, especially regarding those involved in teaching theory and those who supervise laboratories.

It is noted that the average degree award grade is consistently low over the years (i.e. ~ 6,5/10 over the last 12 years). Also, the percentage of students obtaining first class awards, i.e., awards with an overall mark between 7 and 8.5/10 is extremely low, but it is balanced by the also very low percentage of students obtaining an average around 5.5/10. The Department is encouraged to use the whole marking scale.

It has been revealed that some students cannot follow the course due to personal reasons (military service, financial problems), while others have difficulty in following certain subjects of the curriculum. Part of this problem is the quality of student intake, with insufficient background (students can enter from Lyceum and from technical schools). This significantly contributes to delaying their graduation.

There are significant indicators of good quality educational provision, such as the good employment rate of the Department's graduates (50 % of the graduates are working, with 40 % on these, as private employees and 10% as freelancers). It is also worth noting that a good percentage of graduates (~60%) find jobs relevant to their degree within less than a year of graduating. 20% of graduates have continued their education at masters, certifications seminars, etc. and 55% wish to continue their education with post graduate studies.

IMPROVEMENT

The Department would like to see staff teaching load reduced, at least as a first step. The Department has identified the need for appointing new permanent academic staff, which is strongly recommended by the EEC for reducing teaching loads and improve teaching quality and research. The EEC strongly supports this demand that would certainly improve quality of teaching. The department and the EEC are concerned with the fact that for several years, intake students with an average below 8/20 on their overall intake exam are admitted to enroll and study. If this can be controlled, it would lead to less disparity within the cohort and a more effective teaching of the educational programme.

Some Recommendations Regarding teaching :

The EEC suggests renewing aspects of course content so that students are taught the latest technological advances.

The very low attendance in certain modules by students is a concern that may also contribute to low completion rates. Thus, in those modules that the assessment is only by exams and as such attendance is not required, the EEC encourages the department to reflect and consider ways that this can be changed i.e., mid-term exams, assignments, or assessment by multiple choice (MCQ). A significant component of learning through problem solving coupled with interaction of lectures and laboratories need to be addressed as part of solving student progression. The department should also consider and formalize ways to assist the weaker students and to align student intake backgrounds to a common level. The faculty and the EEC felt that the acceptance of students scoring less than 10 as an entry requirement, (introduced in 2010-2011 academic year), is a counterproductive proposition and should be avoided.

Concerning the very useful industrial placement, perhaps a closer and more formal relationship with companies and students monitored by visits, where possible, can eliminate problems and improve the experience. . Ex-graduates may be involved more effectively for finding industrial placements but also more actively involved through various conferences and seminars that are close to their expertise and in accordance with the objectives of the department.

Finally, the EEC would like to point out that there is no international dimension in the teaching, and it will be very useful to develop more, students and staff mobility through EU schemes such as ERASMUS, for enhancement of the course provision.

C. Research

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

APPROACH

Strengths and weaknesses in the department's approach to research are detailed in the following section (implementation and results).

The research objectives of the department are subdivided into four different fields, all directly related to electronics: digital and analog electronics, telecommunications, nanotechnology and photonics. For each of these fields, the strategy of development of the research activities seems to have been dictated in part by necessity, but on quite logical grounds. Owing to an obvious lack of technical support and specialized equipment, the department has decided to promote only two forms of research activities which lead to efficiently contribute to research: characterization (mostly electrical and optical) and theory (microwave theory, transmission theory, numerical analysis of photonic devices, etc.).

The department assesses the research by:

1/ Using the information and data collected from the administrative support activities which it provides to the research programs.

2/ Collecting and counting the scientific publications.

3/ Producing statistics such as the number of citations on an annual basis.

4/ Recording and archiving up-to-date biographical data of the research staff.

All collected data are compiled in an annual report. Formal decisions are made during the department meetings which take place on a regular basis, and which include the totality of the permanent research staff as indicated in the Departmental report provided during the visit.

IMPLEMENTATION

According to the internal report, there is no specific and well-developed internal policy to promote research, due to a lack of dedicated financial resources. However, two points are to be mentioned: firstly, a somewhat scarce but still reasonable budget is allocated for travel to conferences, etc. and, most of all; a substantial part of the funding obtained from the research programs seems to be used to provide complementary financial gratifications to the research staff participating to those programs. This is not negatively perceived by the committee, for it is indeed an efficient way to encourage research initiatives at the individual level in today's difficult economic circumstances, although project remuneration is being practiced for many years. The Department has a mechanism to inform staff of the calls for proposals which are made at the national and European level.

The main weaknesses are related to the quality and adequacy of research infrastructure and support; They can be divided into two parts:

1/ Human resources: there is an almost total lack of technician support for research (there are only two technicians in the whole department, whose main task is to ensure the maintenance of the practical teaching equipment). This clearly precludes the development of specialised equipment. Besides, and sounding somewhat astonishing to scientists working outside Greece, the absence of master's and PhD students puts an unreasonable burden on the shoulders of the permanent staff involved in research programs. In most other European countries, a very important part of the research is actually achieved by PhD students and post-docs. If permanent staff are also involved in heavy teaching and administrative duties, as in this case, it seems unreasonable to demand a significant research output on a long-term basis without the help of non-permanent staff (*e.g.* PhD's). In this particular case, this is clearly a problem with current government legislation and efforts of the institution to collaborate with universities to enable them to award PhDs. In our opinion, producing a legal framework for allowing the TEI to carry out masters and PhD degrees has to be seriously considered. Research and teaching cannot be dissociated, so all TEI departments need to develop research activities. This development should not be impeded by counter-productive legal dispositions.

Currently, there seems to be a large diversity of research topics. Although this does not affect scientific output, a more coherent research policy with focus needs to be discussed, because scattered scientific activity does not favour a much needed external visibility of the department as a whole, a fact which may render future funding more difficult, especially at the European level. Despite the lack of human resources, the good quality of the scientific output and the obvious willingness to maintain and develop state-of-the-art research are remarkable, and it contributes in the strength of the Department.

2/ Equipment: there are only few state-of-the-art characterization equipments (*e.g.*, micro-

Raman spectroscopy), which have been bought thanks to research programs. Although that equipment is put to good use for producing original research, further development should be sought. A way to overcome the lack of specialised equipment required for producing, *e.g.* electronic circuits or devices is to develop characterization tools and techniques which require both skills, time for the analysis and internal collaboration, this will allow collaborate rather than competing at national but also at European level. And such research policy requires a long-term reflexion and clear aims which have to be made not at the individual staff level, but at Departmental level and in a collegial way, followed by research funding and by establishing proper internal collaborations. The department seems to be aware of this possibility, because it has already initiated collaborations in for example a THALES project. But this could still be improved and expanded. Eventually, the internal report is concerned with the lack of available space for the installation of equipment, and the necessity to share this space with teaching of practical work, a point confirmed by the visit.

- Scientific publications.

They form the main scientific output of the research activity. They are discussed in the next section.

- Research projects.

Seeking of research projects takes place at national and European level, and are discussed in more detail in the next section. Discounting the salaries of the permanent staff involved, they bring the totality of the research funding for the Department.

- Research collaborations.

They are set both at national and European level. They are discussed in more detail in the next section (results).

RESULTS

Despite of the lack of PhD student activity, scientific output is quite respectable, both in volume and quality. The majority of scientific articles are published in good refereed journals (IEEE trans., Phys. Rev., Applied Phys. Letts., J. Opt. Soc. Am., etc.), and there is an active participation to international or national conferences . This is a highly commendable result and good practice applied to both theoretical and applied research. This clearly indicates the good effort made at individual staff level. Here we do highlight that although the output of each academic staff should be indicated, the cumulative output of the Department should not be given by accounting the outputs of each academic staff when they share the same publication. It is standard practice to credit the publication to the one that contributed most or in the worst scenario to split the paper into fractions attributed to the effort that each author has made. In the EU if a paper has more than one authors that are from the same Department, agreement is made to attribute the paper to one author only, who is by implication the one that carried out the research and wrote the paper. Publications in peer-refereed journals, amount to 85 articles over the last 7 years, which certainly represent substantially more than 1 article per year per researcher. According to the produced statistics in the report, the publications of the department have received 396 citations in the literature, with a marked increase in the last two years. From the provided statistics in the report, there is a significant increase in the scientific output and citations when comparing the periods 2003-2007 and 2007-2012 (from 67 to 94 articles and from 250

to 342 citations, respectively).

The research funding is essentially supported by programs at the national or European level (9 achieved research projects in the past 5 years, and 7 currently run projects, including an important funding obtained in the frame of the ESPA program, bringing about 300000 euros to the department in the next few years). Owing to the low number of permanent staff (13) and the other duties required from them, this is considered as satisfactory. . It can be noted that although 100% of the staff contribute to the completion of the research projects, only 60% actively seek to obtain funding for such programs. Many running projects deal with aspects related to solid-state physics, most probably due to staff skill and experience but their contributions always remain in the scope of device physics, and thus electronics. It is worth noticing that the research programs and scientific output of the department should have been better described in the internal assessment report, because there seems to be a disconnection between research and the other objectives of the Department.

Research collaborations exist either at the national (11) or at the European level (16), but it is difficult to quantify the real extent of each collaboration from the data given in the internal report. However, the existence of joint publications clearly proves that these maybe effective. The Department has recently favoured the development of collaborations with laboratories possessing specialized equipment or clean room facilities, thus really allowing one to produce devices or samples relevant to the field of nanoelectronics (*e.g.* with the Demokritos Institute, NCSR). This kind of collaboration should be strongly encouraged, and also pursued at the European level.

IMPROVEMENT AND RECOMMENDATIONS

The institution should not rely on the continuous good will and commitment of the individual staff and should solve the difficulties due to the lack of research students, equipment and technical support. The Department should be allowed to undertake Master of Science and PhD degrees and we expect this to be considered at TEI and government level. Despite this and in the meantime we encourage the Department to overcome these legislative problems by fostering collaborations with universities at home and abroad. Concerning the equipment, the department has identified lacks in a number of fields (telecommunications, VLSI circuit design, nanoelectronics, sensors), but lacks a wish list of specific equipment explaining their use and their relationship to the aims of the Department. The department should also take the necessary steps to ensure a closer collaboration between its members of staff. Even if the nature of some of the research makes difficult internal collaborations, the department should help to foster such collaborations whenever possible. The acquisition of new equipment as well as the strategy developed for obtaining the necessary funding need to be established. The Department should aim to develop a coherent and focused approach to research, and to articulate it in any communication so that the visibility of the Department is established at national and international level. There are a commendable number of publications and citations, and the effort made to maintain this trend should be encouraged and a strategy should be set out to sustain it.

D. All Other Services
For each particular matter, please distinguish between under- and post-graduate level, if necessary.

APPROACH

The Department provides a set of services to students and staff (permanent and temporary), either independently or in collaboration with the central administration of the institution. The information provided in advance of our visit in relation to support services is primarily summarized in the internal evaluation report of the Department. The administration office of the Department is staffed by two permanent members of staff that we had the opportunity to visit, discuss aspects of their responsibility and sampled relevant documents provided. Visits were also made to various institutional support services available to student and staff; these included the library, the refectory and the sports facilities, including the Olympic swimming facility that is situated inside the premises of the TEI. The external relations and liaison and the Erasmus office was also visited manned by 3 staff members and is responsible for all Departments of the TEI. The Committee also examined the Departmental web page as well as the two electronic platforms (i.e. eclass, estudents), which are invaluable supporting tools of the educational process.

The electronic communication of procedures and information to students and staff are important requirements that are ensured by the Administration office effectively. To this end, the Department has made a substantial effort to develop the infrastructure for the provision of electronic services across the entire range of its operation. Special attention is given on the way that the administration office collaborates with the Departmental community (staff and students) on a personal level so as to deliver a very effective service to students and staff, which is also extended to daily visits on one to one basis. Therefore effective access to information using the web as well as in person takes place, and this was evident by our discussions with students and staff. The Department are provided with a complete set of services related to industrial training, students mobility, students welfare, access to information (internet access, library) and recreational activities (sport and culture).

There is a need of simplifying some administrative procedures (e.g. procurement of materials and equipment) defined centrally by the central TEI administration and State law and especially in this case where the two departments Chalkis and Lamia have merged together and need physical signatures of paperwork to be transferred from one site to the other before even submitted for execution; an example was given in the delay of payment of non-permanent staff because their log books had to be signed in Chalkida and returned back to Lamia.

The Lamia campus has attractive advantages of a well designed library, its swimming facility and its sports centre (though the two latter are not fully operating for the benefit of all students; the former because of being sponsored by organisations outside TEI and the latter due to lack of sport-trainers). The campus has also a small outside theatre for cultural events and it is reported that has been used in the past to that effect; a number of personalities such as Kastoriadis, Glikou and others, and for the 30 years of its establishment as TEI last year a very successful cultural event took place with personalities from the academe, industry, art and political establishments.

In the following subsections the Committee evaluates the implementation and impact of the following service categories: administrative support to students and educational staff, access to information, library, and access to PCs and to Internet, internships, mobility, catering, recreational activities and accessibility.

IMPLEMENTATION

Administrative support to students: The Departmental administration is manned by two full time members, it is well organised and working effectively. Services provided to students are supported by two electronic platforms. The first concerns student registration to individual modules and laboratories, marks reporting, issuing certificates of study, industrial placements and having student files for each student. The second is the platform e-class; a web-based asynchronous e-learning platform through which staff members provide detailed information about each course, additional training materials , tutorials, exercises , bibliography, links, etc. Student teaching is also supported by the acquisition of books through the electronic system "Evdoxos", which supports all higher education institutes in Greece.

Administrative support to educational staff: The Departmental administration also supports permanent and temporary staff for the delivery of courses and for processing several managerial tasks, in managing of documents, managing marks, and delivery of educational material and providing information to students electronically. The administration office also supports the faculty on procurement of equipment and purchase of consumables especially regarding the functioning of the laboratories. It also operates an electronic protocol with direct connection to the central administration of TEI that supports the Head of the Department.

Provision of information: The Departmental website contains information both in terms of informing its students as well as promoting the educational and R&D activity of the Department. This information can be made more effective by introducing the mission statement of the Department its aims, achievements and by promoting its research. One of the members of the educational staff is nominated as "student advisor" who can be contacted by students for any issue during their study.

Library: There is a central library for all departments. It is spacious, well organised and manned with 2 members of staff who provide the necessary support and assistance. The library is said to have 20,000 books related to departmental subjects, serviced automatically by an online system called ADVANCE (installed in 2005), and linked to other libraries throughout Greece offering interlibrary services. The library also provides access to many scientific journals through HEAL-Link (Hellenic Academic Libraries Link). There are 20 study spaces available and 8 PC stations in the library, which seems small for the number of students, although at the time of the visit only a few students were studying at the library. The library maintains hardcopies of all final year project dissertations supporting new students during their practical study.

Access to PCs and Internet: The Department is connected to the web. Internet access is freely available and the students may use the Wi-Fi infrastructure as well as a number of PCs placed in three computer rooms and laboratories.

Internship: The Departmental administration along with the liaison office assists students

with their industrial placements undertaken during the last year of their study. It monitors these placements, which is also supported by one of the aforementioned electronic platforms. Unfortunately, there is no formal procedure for keeping records concerning the employment and destination of graduates, which may help the department if this task was to be better organised.

Mobility: Students' mobility is supported by the liaison office, a central institution facility, which appears to be active with the Erasmus programme; the department maintains Erasmus agreements with several Universities across Europe. The Committee was informed that on average approximately 1 student is exchanged annually in the last couple of years and is said to be increasing in the forthcoming years.

Catering services: Inside the campus there some catering/coffee provision, however the main refectory is outside the campus in the city which although very good in service, it creates a disconnection with the main campus and disadvantages some students and staff that need to return for lectures. The possibility of acquiring space near the campus was discussed and the committee encourages the institution to actively think for bringing the refectory nearer. A less costly solution maybe the enlargement of the current catering provision by opening the 2nd floor and/or adjacent to it. The current refectory is open at lunchtime and in the evening, providing good quality and low cost meals to students and staff.

Student residence: There is no student residence provision in TEI Lamias and discussions took place of the possibility for acquiring Army barracks that were recently emptied for that purpose.

Recreational activities: At TEI level several recreational activities are provided to the student in the campus. The swimming pool is a facility built to Olympic Standards offered to local clubs but also for national and international events, such as the Hellenic Swimming Championships in 2012 and several games of Water Polo. This facility however is not offered to students. The sports centre is equipped but is not operational due to lack of sport trainers. To be consistent with standard practice the institution needs to resolve problems with offering sports services to students.

Accessibility: The Department and Institution have clear accessibility policy, and access to lecture rooms, theatres and labs, the library and other services was adequate, including access for disable people. Access to the refectory, which is outside the main campus was not as easy and attention for access by disable persons, needs more attention.

RESULTS

During the Committee's visit we asked several students to evaluate the quality of the services provided by the Department's administration and the level of satisfaction is remarkably high. Administrative staff is being friendly and helpful, with commitment to the well-functioning of the Department. Members of educational staff also express high level of satisfaction from the services provided by Departmental administration. Tasks given to educational staff by central TEI administration unrelated to education or research were reported as reducing the already scarce staff time allocation. Speed of delivery and transparency of actions and procedures at all levels and particularly by central administration need to be looked at for the

effective and efficient running of the provision.   Students are being informed for Departmental activities through the web site and the electronic platforms and are able to call in person to the administration office for any problem or any clarification. The willingness of the admin staff to help the students even outside the set hours around lunch time is acknowledged by the students and it is highly commendable.

The library provides very good quality service. The number of students who systemically use its services can be increased by organising fresher's seminars on books, periodicals, access tools, internet and written reports, essays and dissertations, referencing and on copying and plagiarism. The Department allows access to departmental PC labs, which complements the library facility; there is also wireless (Wi-Fi) access available to the students. Students reported that the aforementioned provision is sufficient.

There was no evidence of students facing significant difficulties in finding industrial placements. The Departmental administration and liaison office support effectively the whole process. On the other hand better organised and a more systematic managing of the cooperation of the Department, its staff and students with stake holders such as industry and commerce, and the regional state is recommended. Examples maybe by the formation of an Industrial Advisory Board or by clustering groups of companies of similar interests with staff expertise. The absence of a formal tracking of the employment status of the Department's graduates needs to also be addressed. The support provided to students which are exchanged under the ERASMUS framework is good and it is encouraged to use it in its maximum for students and staff.

Catering services provided on campus and outside are adequate and contribute to the wellbeing and recreation of students; however access outside of the main campus of the main refectory creates difficulties to staff and students and needs addressing. Accessibility is good and adequate, however it needs continuous monitoring and reinforcement, with some attention of disable access to the main refectory outside the campus. There are no residential facilities in TEI Lamias.

IMPROVEMENTS

During our visit and after discussions with students and staff several propositions for improving the Departmental operation were discussed.

Given the lack of financial autonomy of the Department, there is limited scope for initiatives at Departmental level. It is strongly proposed that the Institution should proceed without delay on implementing the government directive concerning budget allocation per Department.

It is the Committee's view that the web site could be better utilised to further promote the Departmental aims and objectives as well as its research achievements.

Although the Department allows students to use its PC clusters and there is also a free Wi-Fi provision, the existing PC cluster room inadequate for the number of students.

The presence of students and staff on campus will be increased if catering facilities were within the premises of the TEI.

Likewise, halls of residence would also enhance student life, culture and experience.

E. Strategic Planning, Perspectives for Improvement and Dealing with Potential Inhibiting Factors
For each particular matter, please distinguish between under- and post-graduate level, if necessary.

The Committee did not see evidence of a written strategic plan that clearly describes the Department's mission, establishes goals and identifies mechanisms for achieving them.

The major strategic planning objectives that we see fit may be summarized as follows:
- The Department should facilitate the necessary partnerships by interfacing at its boundaries and hence expanding and complementing undergraduate and research activities.
- Recruitment of academic and technical staff
- Continuous improvement of curriculum, based on academic criteria and responding to modern requirements.
- Establishment of postgraduate programs and collaborations in PhD degrees where possible.
- A managed approach to industry

Some key inhibiting factors are:
- The framework and adverse economic conditions render heavy teaching and administrative loads for the faculty, thus inhibiting research growth;
- The legislative framework that allows students to remain enrolled indefinitely irrespective of their academic performance, thus creating a large body of inactive students although now legislated need to be implemented.
- Low staff/student ratio is unsustainable and needs addressing.
- Economic hardship of the students is a problem needing a sustained strategy.
- Implementation of degree completion by limiting the length of registrations in accordance to latest state rules. Some improvement of the building infrastructure, the lab equipment to support teaching and research activities of the department.
- Lack of formal centralized procedures for assessing attainment of teaching and learning objectives;
- Reduced professional rights to the department's graduates as described by the law. As a result, the department becomes less attractive to good applicants. The academic level of the department's student is further affected by a societal perception (lower class than polytechnic/university level) related to Technological Institutions (TEI).
- The acceptance of new students with low grades, mixed backgrounds and against their choice creates a number of difficulties in teaching, degree completion, low

morale and identity perception of graduates.

- Lack of funds for recruitment of staff supporting technical and research roles. This includes disproportionate low fraction of research budget allocation to the Technological Education Institutes when compared to the universities and the lack of funds to replace faculty members who retire;
- The legislation framework that does not allow the Department to offer post-graduate degrees and PhDs.
- Lack of accreditation of research laboratories;
- Increasing the presence of students on campus by providing main catering within the TEI premises.
- Increase the student culture and experience by providing halls of residence.
- Sport facilities within the TEI are not provided to students and this should be resolved.

Most of the strategic planning factors seemed to be shared by all Departments in TEI. The very low staff/student ratio, which is the main teaching challenge for the department is affected by two State policies. Firstly no new academic/teaching positions are approved by the Ministry of Education, due to the current economic climate and therefore the number of academic staff continuously decreases, as retired members are not replaced. Secondly, the number and quality of student entrants are explicitly or implicitly specified by the Ministry of education. The Ministry sets the exact number of entrants for each department. By increasing the number of entrants it reduces the quality of students, as applicants with high entrance scores choose to study other subjects and/or in universities or other institutions. Having placed the Universities and the Technical Education Institutes at the same educational level, the State needs to clarify some contradicting features that have emerged since the transition of the Institutes from technical to university status.

Further inhibiting factors identified from within the department include the lack of a centralised procedure to assess the extent to which the learning and teaching objectives have been achieved, the low average marks achieved by the students, the lack of continuous student engagement with their studies, the uneven knowledge of science subjects like maths rendering difficulties in progression, the synchronisation of lectures and labs and the replacement of some lab work with demonstrations. The introduction of pre-requisite modules to proceed to further and more advanced ones, and the reducing the maximum duration of the study seem to be needed for improving the course provision. Economic hardship forces some students to work in parallel with their studies resulting in not having enough time to study falling behind in their studies.

The Committee has not seen any proposal related to any Masters programme and therefore cannot comment on it. It is unclear to what extend provision for research degrees and laboratories will be made in future legislation. Given the current financial circumstances, it is difficult to foresee the release of any substantial State funds. In view of that, the Department and Institute could plan in raising external funding from third party resources. The establishment of taught and research postgraduate programs as well as enhanced interaction with the industry could attract further funds in this direction. Consulting to companies, research and development services and the use of laboratories by companies maybe areas that may attract outside income.

F. Final Conclusions and recommendations of the EEC
For each particular matter, please distinguish between under- and post-graduate level, if necessary.

The overall picture of the Department as formed through this evaluation procedure is positive in that the department is well organised and delivers high quality applied engineering skills to its students. The Department maintains a well-developed curriculum which is published and easily accessible, in-line with best practice nationally and internationally for Electrical Electronic Engineering BEng degrees (or equivalent) with a strong hands-on training element, which is seen as advantageous. The learning and training of graduates is underpinned by functioning teaching laboratories delivering the educational mission of the department to provide practical experience to their graduates.

Quality of teaching is good and many good teaching and learning practices are already in place and student satisfaction is good. The overall student experience appears to be positive with relatively simple procedures for administering student matters such as enrolment, registrations, dissemination of marks etc. Replacement of laboratory work to demonstrations should be avoided.

The Research activity and output are good, particularly when considered within the context of the heavy teaching load, the national legal framework not allowing postgraduate degrees and limited resources. The majority of faculty members are research active and well qualified to undertake research. Alumni of the department have been successful in pursuing professional careers in the national and international industry.

The EEC brings to attention that national legislation presently has contradictory elements in relation to the operation of TEIs. In the case of engineering departments, such as the Department being assessed, this is reflected in the limited professional rights of its graduates. The law further makes no provision for the award of PhD degrees from any TEI Department, posing unnecessary impediments to the research activity these Institutions. In the case of the Department being assessed, this restriction comes despite the fact that the vast majority of faculty is trained at PhD level and maintain an active research profile. The fact that career progression of faculty is assessed against their research performance is a further contradiction of the current legislative framework. The EEC believes that the State should reconsider the framework within which TEIs operate to resolve such contradictions. The lack of resources (in terms e.g. of budget and staff replacement) is a further significant difficulty that the Department is facing. It is understood that to a large extend these are dictated by the financial circumstances nationally and internationally. Increased autonomy of academic institutes could provide pathways for maximising the efficiency of the available resources and the benefits they offer to the Greek society.

The outward looking of the Department is fundamental for its future development, its differentiation, benchmarking and collaboration with other Departments at home and abroad necessary. Fostering closer communication with industry and facilitating their support through industrial placements, job destinations, bi-lateral business lectures, training and visits are important and necessary. The formation of an Industrial Advisory Board

maybe a way of strengthening the networking with companies and help the Department with its strategic positioning and future goals.

At institutional level, the EEC understands that the Department has very limited autonomy; for example, there is no Departmental budget despite the relevant provision by the law. Staff advised that a case should be made to the Institute centrally even for everyday consumables. This brings unnecessary inefficiencies as a result of the increased bureaucracy.

Recommendations

Within the aforementioned limitations that originate outside the Department's authority, the EEC believes there is space for improvement:

The Department would benefit from a more outward looking attitude that will promote its educational and research services nationally and internationally. A strategic plan of the Department should identify the mission and identify the uniqueness of the educational and research aspects they wish to develop, namely what they want to achieve, which is the target audience and what would the relationship be between this Department and departments in a similar subject area from other higher education institutions nationally and internationally. For example, in relation to the education offered, the Department would benefit from promoting the BEng level of the degree on offer to prospective students, enrolled cohorts and the wider society. Emphasising the strong hands-on aspects of the education delivered can also be seen as a comparative advantage. In relation to the research the Department would benefit from a more structured research strategy that will consolidate the strengths to provide more funding opportunities and deliver increased impact.

A key challenge is identified in the quantity and quality of the Department's student population and mainly the variety of educational backgrounds of first year students. The Department could benefit from the design of a strategic approach for teaching/learning to address this challenge. The EEC encourages the Department to consider the role of e.g. the student tutor; peer mentoring; supporting teaching sessions; lectures from alumni and industry; revisiting the curriculum along the lines of best practice nationally and internationally; in addressing the low average marks and prolonged studies period.

The Department would benefit from a more structured approach in their interaction with the industry; this could be implemented for example through the establishment of an industrial advisory board and/or the implementation of a database of industrial contacts. Such a mechanism would provide feedback for improving the educational program, enhance the employability of graduates, and increase the Departmental visibility. The Department could also benefit from a formal mechanism for maintaining contact with its alumni. Evidence of progress in this direction is available and further efforts in this direction are encouraged. Use of tools such as the Wold-Wide Web and social media would enhance the image of the Department in the society at large.

The Department should recognise that EU directives welcome initiatives of generating funding by EU higher education institutions, towards becoming self-sufficient. To that effect the EEC recommends to the Department to examine innovative and sustainable ways of generating funding for part of its activities, especially those that cannot be supported centrally. A number of examples are given below:

- Undertaking research and becoming partners in EU and local projects should be enforced by the management, better organised and monitored.

- Provision of lab-space to company training and testing or new product development where possible, may be a way of generating extra funding. Recognising the lack of lab certification, which may then be easier to undertake having generated its own funds.

- The establishment of short-training courses to dedicated master's but offered also outside Greece and by charging a fee and licensing the provision to approved partners in developing countries

- Building of consultancy is another area that the Department could use its staff to undertake commercial services, perhaps involving graduates and its technical infrastructure.

- Organising seminars and conferences on a fee paid basis.