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HELLENIC REPUBLIC

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HELLENIC QUALITY ASSURANCE AND
ACCREDITATION AGENCY

EXTERNAL EVALUATION REPORT

DEPARTMENT OF ELECTRONIC COMPUTER SYSTEMS

TEI PIRAEUS

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External Evaluation Committee

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

1. Professor Antonios Tsourdos,

   Chair in Control Engineering, School Of Engineering, Cranfield University, UK

2. Dr. PD. Panagiotis Papadimitratos,

   Associate Professor, School of Electrical Engineering, KTH, Stockholm, Sweden

3. Dr. Argyrios Zolotas,

   Senior Lecturer in Applied Control, School of Engineering and Informatics, University of Sussex, United Kingdom

4. Mr. Manolis Stratakis,

   Director of Research, Forthnet S.A., Heraklion, Greece

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

The external evaluation committee (EEC) visited the Department of Electronic Computer Systems (ECS) of the Technological Educational Institute (TEI) of Piraeus during the period July 1-3, 2013.

The first day of the visit (arrival time was just before noon, after the introductory meeting at HQA offices) comprised:

(i) Meeting the members of the Internal Evaluation Committee (IEC) (in addition, the representative of the Department's Secretariat was present),

(ii) Meeting the President of TEI Piraeus together with the Deputy-President of Academic Matters (representing the Quality Assurance Unit- QAU), and

(iii) Visiting the staff catering facilities. The first day visit continued mainly with the departmental presentation by the IEC to the committee members and examination of the supplied (by the IEC) folders with material relating to the evaluation process.

The rest of the visit included visits to:

− Teaching and research labs and IT facilities

− Auditorium

− Library facilities

− Liaison Office of the T.E.I. of Piraeus.

It also included group and individual meetings with:

− Faculty (ΕΠ) and teaching/research associates (ΕΤΠ)

− Current students (including recent graduates)

− ECS alumni

− Administration staff (including secretarial staff).

The last day of the visit included an exit meeting with the Chair of the Department and the members of the Internal Evaluation Committee (IEC).

Most important, during the meetings, the staff, faculty, and students and alumni present responded to a series of questions by the EEC. The provision of material relating to the evaluation was comprehensive, and the IEC provided any additional information requested by the EEC was provided in a timely fashion, in full honestly. The EEC appreciated the hospitality of the ECS Department, as well as their willingness to facilitate access to premises, facilities and materials of importance to the external evaluation process.

The EEC would like to point out the high level of professionalism and collegial atmosphere during the visit, and express its gratitude and appreciation to the Department's Chair and the members of Faculty as well as the Departmental services staff for all arrangements and very well organized visit.

The EEC was provided with the internal evaluation report (IER) by the Department of Electronic Computer Systems (ECS), conducted during the 2011-2012 period (an earlier 2008-2009 IER, also provided, was just information with historical value). The more recent IER is an extensive, appropriately documented, and clearly written report, containing a particularly rich set of information and data on the Department. The IER comprised a plethora of sources and statistics, covering courses, research, students, academic staff and instructors. The EEC feels that the Department used all possible sources of information that could be identified and be made available to them. As a result, the report is deemed comprehensive and of high potential value as a strategic tool for the Department, for the School, as well as the TEI.

Overall, the report provided valuable information regarding most major issues faced and addressed by similar in nature academic departments of the TEI Piraeus. In this context, some critical conclusions were drawn and analyzed to a satisfactory degree. In addition, the critical discussion was rather adequate most probably in an effort to respond to the general objectives of the evaluation process the best possible way.

The EEC main criticism on the IER report is that discussions relate mainly to the State and they are institution-dependent; hence mostly beyond the control of the ECS Department itself. The EEC acknowledges the situation behind such reactions. However, the EEC points that there is lack of reflection on identifying issues, which the ECS Department has more, or full control on and could positively exert influence through their own appropriate actions and procedures.

It is worth noting that the IEC felt the evaluation process was a positive experience and expressed their willingness and desire to learn from the overall process and its conclusions. In addition, the department expressed its desire to carefully consider the recommendations of the EEC and improve the overall approach and operational procedures for all ECS departmental activities.

A. Curriculum

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

APPROACH

The objective of the curriculum is to cover the areas related to the hardware and software of modern electronic computer systems. The curriculum was recently renewed, putting a greater emphasis on adding courses extending coverage of the broader area of information technology. Based on these additions, the program can be characterized as largely complete: it contains a sufficient number of modules on general knowledge (foundations), core modules and specialization modules, and it serves well the subject matters of all three sectors of the ECS Department.

The current curriculum of the department (which was effective from the academic year 2011-12) was successfully implemented and achieved the targets set. Evidence of this is the increased demand of the students of the department to carry out their internship in companies with similar discipline, and the absorption of our graduates despite a difficult economic environment.

Nonetheless, the ECS Department has proposed to further improve the current curriculum by re-introducing redesigned, modernized versions of modules such as CAD/CAM or Bio-informatics. With the proposed amendment of the curriculum, ECS graduates would have the engineering knowledge integrating subjects on both hardware and software.

IMPLEMENTATION

Undergraduate Programs

The curriculum appears to be rational, clearly articulated, coherent and functional, while the taught material and duration of modules delivery emphasizes the practical aspect of the area. In addition, there is clear indication of the semester in which each module is offered and the expectation of attendance by students (however, lab attendance is compulsory while attendance of lectures (theory) not obligatory) The recommended textbooks and notes provided to the class for each module are generally appropriate, and it appears that the recommended literature is revisited during refurbishment of modules to include a number of recent books from a wide range of authors. In addition, the EEC was informed that some modules could be delivered in the English language (which also links to Erasmus exchange schemes) however no concrete evidence, on how this is implemented in the curriculum, was provided.

It is worth noting the substantial use of ELECTRA, which is an e-class equivalent online module and class management database, in the curriculum of the Department. This appears to allow great flexibility and a focal point for additional student engagement with the modules and the EEC praised this practice.

Although, the curriculum is implemented in an appropriate way, there are areas, which need to be further addressed.

It appears that the curriculum is somewhat lacking in the sense of not offering many elective course opportunities. Moreover, a module prerequisites framework is not evident, albeit the Department stated that this is something they intend to implement. The EEC recommends that clearly defined prerequisites for modules are important and should be pursued.

The staff/student ratio relating to lectures varies from very low in early semesters (i.e. 1/170 in 2011-2012) too much higher in later semesters (i.e. 1/10 in 2011-2012). In the case of labs, the staff/student ratio appears to be at a constant level of 1/20 (2011-2012) and relating to available resources in the lab. This issue may affect smooth running of labs in early semesters, where basic

understanding of the applied practical aspects of the modules is important. Moreover re-arrangement of student work in groups (if possible) and exploitation of synergy between similar in nature modules in other departments may be advantageous.

The ECS Department implemented the ECTS credit system, at the same there are too many modules (lectures and labs) each studied have to take. The EEC recommends investigating the total workload per module and the related ECTS credits allocation, the total number of modules required for the degree in conjunction with a more flexible elective-modules scheme courses when the curriculum is next revised.

It appears that there is no ECS-wide set of guidelines and templates regarding student theses, as well as a (even non-credited) seminar/lecture module on preparing students for thesis writing. The EEC recommends that implementing a department-wide set of thesis guidelines and templates (with possible refinements per sector) and considering a preparation module for thesis writing (including avoidance of plagiarism etc.) will be advantageous.

Graduate Programs

To this date, no MSc program is offered as part of the curriculum; this would be possible only after the completion of the external evaluation process. In this context, the Department plans to pursue an MSc program in the area of "Applied Information Systems". An early proposal (with the aforementioned title) - targeting mainly engineering and applied aspects of computing systems - appeared in 2010. It was clearly tied to the then expertise of the ECS academic staff.

A revision of the MSc program followed. However, it is unclear what the objectives of the revised MSc program are, how it relates to the strengths of the Department and how it adheres to current market needs and research efforts and trends. Based on the discussions with the IEC, it seems that the Department aims at introducing a Bio-Informatics dimension. The EEC feels that this is an important step for the Department and recommends the (revised) MSc program to be discussed in depth, to clearly identify and state the competitive advantage, compared to similar programs offered by other TEI or Universities (AEI), and benefits to the potential MSc graduates of such a program.

RESULTS

The absorption of the graduates in the labor market, compared to graduates of other departments of TEI Piraeus and graduates of other universities, especially taking into account the current economic situation in Greece, is very satisfactory.

Many of the ECS students (especially those at their last semester) are prematurely absorbed by the labor market, thus abandoning their studies. It appears that they are no longer motivated to complete their studies; this results in a reduction of the throughput.

From the provided statistics, spanning a period of 24 years, the bachelor degree average grade is approximately 6.5/10 which is deemed satisfactory in general. However, the distribution favors lower grades, with an 8% of graduates obtaining grades over 7.0/10. There may be correlation with current legislation prompting large numbers of students return and complete their studies with possible impact on lowering grade averages, although this is not clear.

IMPROVEMENT

The department believes in improving the curriculum, to address the ever growing technological challenges and observed changes in the labor market during this period. The needs of the Greek labor market in this area require, in the opinion of the department, that the ratio of the curriculum subjects remains roughly 60% software-40% hardware.

The EEC recommends the following changes towards a more rational and effective implementation of the curriculum:

- Improvement of the material for certain subjects/courses
- Adaptation of the material for certain subjects according to the activities of research

programs of the ECS

- Addition of subjects relating to cutting-edge technology

- For some specialty courses, definition and use of prerequisite courses

- To investigate the total workload per module and the related ECTS credits allocation, the total number of modules required for the degree in conjunction with a more flexible elective-modules scheme courses when the curriculum is next revised.

B. Teaching

APPROACH

The used teaching methods are based on the department's goal to educate students providing them with good theoretical and practical knowledge and experience. This is considered necessary for a career in the field of electronic computer systems engineering. Following the common set up of most departments of TEI with an applied technological character, the ECS department has adopted the traditional method of lectures and laboratory work. Furthermore, supportive lectures, seminars and modern interactive methods were also included in the teaching methods. Attendance at lectures is not compulsory, whereas for laboratory work student attendance is obligatory.

The staff-student ratio is not a constant ratio: In early semesters, the ratio is 1/170 while in the later semesters is 1/10. For the laboratory-based lectures the ratio is 1/20.

The department recognizes the importance of effective teacher-student collaboration. In that direction, each incoming ECS student is assigned to one permanent ECS staff member, who is acting as her or his academic advisor for any matter that is not curriculum specific. There is no formal staff-student committee. Students are encouraged to seek advice from members of staff and staff seems to make every effort to be available for providing advice. New students should, however, be made more clearly aware of this facility and its purpose.

The laboratory facilities, departmental administrative offices and staff offices are located in the same building. The ECC had the opportunity to visit selected laboratories. The Department should carry out a systematic evaluation of each research and teaching laboratory, taking into account the skills its students need to acquire. This would help the Department to identify and prioritize areas of improvement, in line with the Departmental short/medium planning. The good practice of linking research work carried out in some of the laboratories with theses offered to the students should extend to all laboratories. The laboratory regulations concerning health, safety and rules of conduct must be given to all students, for every laboratory, in a well-documented way and in accordance to international standards of laboratory-based teaching.

In the immediate future, further reduction in the number of temporary staff recruited, the reduced budget for consumables (necessary for the regular operation of teaching laboratories) and equipment upgrades (also for research laboratories) due to the financial crisis affecting the country may affect running teaching and research laboratories and thus the quality of education and research results of the Department.

IMPLEMENTATION

It is clear that the ECS faculty members love teaching and have a great deal of interest in their students and the quality of knowledge they gain through their courses. As a result, it is obvious they are doing their best to provide the best education they can. Course material was deemed of reasonably good quality. Students conveyed that most modules met their expectations.

It is very encouraging that several faculty members are also engaging in research (some more than others). Most of the active researchers are incorporating their findings in their teaching, and expose students to the latest scientific trends in their respective fields, to the best of their abilities and knowledge, particularly during the thesis work.

The Department presented to the EEC a number of international collaborations with a number of foreign institutions. The EEC would like to note that this activity is highly commendable. However, the EEC noticed that only very few members of the ECS staff have pursued or taken advantage of such opportunities. The EEC was also informed that faculty of foreign universities have been hosted in the Department and given seminars and guest lectures to the students. The EEC also noted that ECS students are encouraged to take advantage of student exchange programs (e.g., ERASMUS) and work on their graduation thesis projects at a variety of collaborating institutions in EU. The EEC would like to encourage the further development of mobility programs and the increased

participation to these programs by larger number of both students and faculty staff. Moreover, a number of courses are planned and prepared to be offered in English; nonetheless, there was no evidence that any of those modules was ever offered so far. Only a few individual tutorials and invited lectures were provided in English. The recommendation is to more actively pursue this direction, to cater to the need of incoming international students and expose Greek-speaking ones to English-taught courses (for example, especially for advanced semester courses).

The student evaluation of teaching is done through questionnaires. The percentage of returned questionnaires is not high and this raises questions about the reliability of statistical evidence. In order to overcome this problem, ECS and the TEI of Piraeus are currently exploring the possibility of providing questionnaires via e-forms. Also the nature of the questions and ability to include comments are also planned for the questionnaires. The questionnaires are means for evaluating the indented learning outcome (ILO) of each module.

RESULTS

The efficacy of teaching is generally good. However, there is a low attendance rate and long-lag for graduation; it is understood this is common practice in the higher education sector. ECS and the TEI of Piraeus are concerned and steps to address this problem are considered. The situation is exacerbated by (i) regulations that (at least implicitly) encourage this phenomenon and (ii) the current financial crisis.

The Department does not formally consider discrepancies in success and failure rates between modules. Quality of examination questions, marking schemes, examination of scripts, transcription of marks and final module assessments are all left entirely up to the individuals (ECS staff) teaching a specific module. Any corrective actions can only be taken by the individual concerned if they choose to do so. The EEC would encourage the ECS Department to become more proactive and establish systems and/or procedures for assessing the quality of examination results, such as the adoption of an Exam Board.

IMPROVEMENT

The Department presented to the EEC a number of potential opportunities for improving its teaching activities. The primary one put forward by the ECS was the organization of postgraduate studies (an MSc program).

The EEC noted the absence of any quality assurance procedures related to the examination process and encourages the department to address this. The quality of every aspect of examination should not be left simply to the good will of each staff. It is important that a unified process is established that ensures transparency, correctness, fairness and compatibility across all modules.

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

APPROACH

The Electronic Computer Systems (ECS) Department is aware of the challenge to undertake research and engage in collaborative research-oriented projects. ECS is cognizant of the importance, notably based on the recently augmented mandate and expectations of the TEI Departments, to produce research results. The willingness to make progress in that direction was stated. The importance of peer-reviewed publications was also stated, notably the volume of research output (number of papers). There have been EU and national projects awarded to faculty members of the department, and these led to publications, and included as part of their deliverables publications; in specific cases, it was explicitly decided to aim for numerous publications.

IMPLEMENTATION

ECS wishes to see research results. The different sectors undertake their own efforts, notably in the context of their research interests and activities. Engagement in EU and national projects is based on such interests and background, yet it is mostly driven by appearing opportunities (e.g., connections with the academic community or industry).

The research infrastructure primarily leverages the established teaching lab resources, the homegrown network and IT infrastructure, built over the years by ECS faculty members and hosted in different labs, and the equipment planned for work packages of collaborative EU and national projects. ECS assigned one room (E25) for EU projects, nonetheless without specific lab equipment, as well as a new room, in Building A, assigned to the "ΘΑΛΗΣ" project (to host expected equipment). Within the ECS Department, two faculty members took the initiative to dedicate their office space to several students working on their degree (graduation) theses; this is commendable. The Special Account ("Eidikos Logariasmos" or ELKE) at the level of the TEI acts as the authorized representative and provides administrative and financial support, during project proposal writing and execution phases.

Scientific publications are pursued, the numbers are deemed important and, overall, there are ECS labs that pay attention to this aspect. Based on the cross-school evaluation issued in 2011 by the Quality Assurance Unit (QAU) of the TEI, the ECS Department has 363 publications (of all types, which are however not provided in the said report). Independently of the types, the comparative table reveals that the Department has the highest number of publications among the TEI Piraeus Departments.

Based on data provided by the ECS Internal Evaluation Committee (IEC), for the 2008-2012 period, its faculty published 28 book chapters and journal papers. Among those, there are papers in Elsevier and SPIE Journals ([1]-[5] herein) that are internationally known. Book chapters include ones in edited volumes (handbooks) by John Wiley and CRC press ([6],[7]), also well-known publishers. These are interesting and welcome highlights. The distribution of the 28 publications per faculty (for the 2008-2012 period) is: 7, 6, 4, 3, and 2 papers. Out of eleven faculty members, eight have coauthored at least one of the reported 28 papers.

Overall, eight European ([9]-[18]) and two national projects ([20]-[21]) have been awarded and were or are currently executed to the ECS Department faculty members, and one is awarded and expected to start late in 2013. There are a couple of faculty members have been the primary actors for these projects. There has been collaboration among faculty in such proposals.

In the period up to 2011, ECS faculty members were involved in nine out of thirteen of the reported externally funded projects across the TEI Piraeus. The amounts of funding per project and the budget share for each Department were not reported in the said documents and they were not provided to the EEC.

The ECS faculty has engaged in several international national collaborations. Beyond collaborations within the aforementioned European projects (with Cranfield, Georgia Tech. Univ., Univ. of Malta, Denmark Tech. University, Cyprus Agricultural Research Institute), some of the ECS faculty have established collaborations with researchers in near-by institutions (e.g., NTUA, Univ. of Athens (UoA)). Other contacts and activities, discussed below in Sec. D, along with the student activities (e.g., building of an IEEE Chapter) demonstrate efforts to be extrovert and establish contacts and they may lead to future research collaborations.

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[17] LIFE/Adapt2Change (Adapt agricultural production to climate Change and limited water supply), http://www.adapt2change.eu/el/

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[19] FP7/ SECURE2I (Reinforcing cooperation with Eastern Partnership countries on bridging the gap between research and innovation for inclusive and secure societies) (Starts 10/2013-09-2016)

[20] THALIS (09/2012-08/2015) Omni-directional study of air quality with emphasis on interiors

[21] ΑΡΧΙΜΗΔΗΣ III (2012- 2015) Development of an integrated electronic system built into garment for measurement and wireless transmission of biological signals, http://www.edulll.gr/wp-content/uploads/2012/12/Apofasi_Entaksis_383575_Sosto_ada.pdf

RESULTS

The implementation has in all evidence moved beyond set goals, in the sense that sectors/labs and

specific faculty publish and attract external funding without any specific and overall agreed upon research objectives for and stated by the ECS Department. New and interesting research activities should be well integrated with current undergraduate (and the envisaged post-graduate) curriculum and overall ECS mission and strategy.

The scientific publications, in particular the journal papers for which the EEC received detailed data, are reasonable, i.e., good in numbers for a couple of the faculty members. For example, two papers per faculty per year, is a good starting point. However, this is not the case for most of the permanent researchers (professors and lecturers). Information on the types of the 363 publications reported was not available. Participation in conferences was not available either.

The research project success is high compared to other TEI Departments based on the provided information. The execution of the projects seemed successful, with the participating labs delivering successfully their parts. The overall volume of funding, or per project, was not provided. The dissemination of results per project followed EU norms (e.g., project web sites). The longer-term benefits for the ECS department was not clear (e.g., which hardware, software was obtained), although per lab know-how was, in all likelihood, significantly enhanced due to project participation and equipment. .

Research collaborations draw on the project consortia members, including contacts with industrial partners. Successful participation in prior projects led to new projects. Connections with near-by institutes (e.g., NTUA, UoA) also lead to collaborative publications. Personal contacts of the ECS faculty members drove collaborations, rather than a more organized or strategy-driven approach.

Demonstrable results (demos, proof of concept systems or parts of) have been achieved (relating to externally funded research projects) and efforts towards patenting have been undertaken, although there was no patent was awarded.

Unrelated to research results, yet relating to innovation efforts: there is one start-up company built by ECS graduates and a student innovation award. This, in particular the startup creation, was not the result of a concerted ECS or TEI effort. Nonetheless, it is very positive for ECS and it provides visibility.

IMPROVEMENT

The ECS Department in response to the questions of the EEC contemplated on future directions for improvement and proposes to:

- Request that the TEI of Piraeus formal procedures for dissemination of results to the wider academic community and industry

- Assign additional space for setting up equipment for research activities

- Reflect and set mid-term research objectives that relate to its curriculum

- Request that the TEI of Piraeus sets accordingly research objectives, considering the job market needs, and outlining a profile for the institution

- Towards achieving the above, the ECS faculty members wish to:

    (i)   collect views and opinions within the Department,

    (ii) expand the collection of opinions to other TEI and AEI faculty, and

    (iii) executives of related companies and more specifically leverage ECS alumni.

The EEC agrees with the above initiatives and encourages the ECS Department to proceed with this structured reflection and take the related initiatives, to create a clear set of research objectives for the Department. Active participation in research projects is strongly encouraged, to help the Department entering new areas, evolve and modernize, and even solve practical but pressing problems such as coverage of expenses for students, consumables and equipment (vital for

laboratories). At the same time, new research pursuits should be coherent, focused and aligned with real market needs.

The EEC is aware of the overall history of TEI, their initial mandate, and the recent modifications and the conversion to "highest education" institutes. In that sense, it is understandable that there is no strong research culture across the ECS Department. As commented above, there have been significant highlights and distinctions within the TEI Piraeus. Nonetheless, there is a lot of space for improvement. In that direction, the EEC makes the following recommendations:

1. To establish a research culture, without necessarily strict rules but clear statement and understanding that all members of faculty conduct research and attract external funding. A distinction between professors (assistant, associate, and full) and lecturers (primarily involved in teaching) should be made.

2. For publications:

   a. To establish lists of journals, conferences, and publishers that are highly or at least well regarded within each of the areas research is conducted at ECS. This could be undertaken, for example, per ECS sector, based on international objective standards. For example, there is no IEEE and ACM Journal (Transactions) publication.

   b. To strongly encourage that ECS researchers aim for the best possible venues, journals, and publishers, monitor this approach, and strongly discourage low-level publications.

   c. To establish expected numbers of publications for each faculty member, per year and per type. This, of course, can differ across sectors and fields, e.g., first-tier conference publications may be more competitive than many journals for computer science topics. Appropriate flexibility with a time window (e.g. a few years) to average results over should be given, as a transition.

3. For externally funded projects:

   a. To expand efforts to attract external projects.

   b. To couple those with scholarly publications, demonstrable technologies, maturation of technologies, and possibly innovation.

   c. To align research projects with the lab or sector interests and activities, and the broader ECS objectives and the TEI strategy.

   d. To pursue funding in collaboration of ECS labs and sectors, where this would strengthen proposals and enhance benefits for the ECS. If/when collaboration is not optimal/desirable, to ensure dissemination across ECS and the School.

   e. To establish clear expectations for each faculty in terms of the expected projects she or he should be involved in and the amounts of attracted resources. Appropriate flexibility, with a time window (e.g., several years) to average results over, should be given, as a transition.

4. Considering the impact of research efforts, beyond the aforementioned ones, ECS should state clear objectives, notably due to the applied nature of a lot of its work, towards technology transfer and innovation. This could be a comparative advantage, especially thanks to connections with local industry.

5. To leverage experience and expertise and past and ongoing efforts and enhance them, towards improving the underlying IT infrastructure and other basic resources that benefit research activities.

6. To connect research and teaching, through degree theses and dissemination and course renewal

7. To disseminate effectively, to build a set of success stories (e.g., results, tech transfer, startups, other major initiatives), and promote its activities to the community.

8. To leverage and be proactive with facilities and centers already available. For example, work further with ELKE to ensure there is sufficient co-funding, especially when ECS members have multiple external projects. Or, work with the Center of Technological Research (KTE, http://kte.teipir.gr); or coordinate and undertake initiatives across the School of Technological Applications, and TEI.

D. All Other Services

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

APPROACH

The Department operates within the School of Applied Technology of TEI Piraeus sharing many supporting facilities with other departments such as library, liaison office, refectory, child-care and gym services. All buildings visited, teaching rooms, laboratories and public areas were exemplary clean, tidy, ordered and functional.

A newly constructed, three-storey library serves the whole Institute. A well-organized Liaison office provides critical connection links with industry for practical experience placements and professional work.

A modern, brand new Conference Center of exceptional quality has been established in the Institute but remains locked and unused most of the time.

An Academic Tutor seems to have been assigned to each student at least since last year (therefore affecting only students of first and second semesters). However, it was not evident from personal interviews that this important institutional role operates properly, or has been effectively disseminated to students.

The Department organizes a good number of related events all over the year, which involve students in various activities, competitions and edutainment, thus further encouraging their active participation.

IMPLEMENTATION

The Secretariat comprises three members of staff with adequate level of experience. Despite the limited opening hours schedule (Mon-Wed-Fri 10:00-13:00) the secretariat makes sure that the reception stays open long enough in order to serve satisfactorily all the students.

The Library staff clearly goes beyond their obligations having established a volunteer book and CD/DVD exchange facility open to all students and staff members. However, a more concise promotion policy must be utilized in order to attract more students to enjoy the available services and generate the necessary demand for more. Also the adoption of e-books and electronic access to various scientific should be adopted.

Surprisingly, free broadband Wi-Fi is NOT offered throughout the campus and around the Department. This forces the students to spend money in order to buy airtime for GPRS/3G Internet and creates unnecessary inconvenience.

RESULTS

Although the Library facilities are definitely considered more than satisfactory, they are clearly underused by the students and staff. There is a well-defined procedure for ordering books and journals, which involves the approval of the central administration; however interviews showed that for the last two years (2012-13) not a single request has been approved. This illustrates the need to revise the policy or adopt a more proactive approach, convincing students and staff that the library is a vital part of the educational services provided for them and they can (and should) make full use of it.

IMPROVEMENTS

The work of the Liaison office is important and must be supported more actively by the Department (and vice-versa).

Full Wi-Fi coverage is required in the Library and some other areas where there is higher

concentration of students. Although the whole campus is difficult to cover, certain Wi-Fi hot spots must be installed at suitable points. This will also help to increase the student presence in the campus.

The Department needs to document the most important administrative procedures and ensure that all relevant documentation is effectively communicated to students, together with regular reminders of all administrative procedures. Course descriptions, assignments, presentations, exercises and solutions, laboratory guides and other useful material must be available online and coordinated by one appointed course administrator.

The web material is highly fragmented and must be re-organized in a more rational manner. The central TEI web page is quite informative and can provide the hosting of all the relevant material.

The institutional role of the Academic Tutor must be drastically promoted and disseminated to all students, even with the establishment of compulsory personal tutorial sessions. The senior management must actively support this.

The career service unit seems to be doing a good job. However, the current financial crisis has already created challenges that require an even more aggressive approach in order to identify and capture the few and valuable industrial placement opportunities, therefore the Unit must act accordingly and towards this purpose it must receive all support from Senior Administration.

The Department should try to play a more dynamic role in the support of local SMEs, organizations and the local community in general.

The Administration must seriously and urgently consider and deploy suitable policies for the exploitation of the outstanding conference center facilities.

Collaboration with social, cultural and production organizations

The ECS faculty established joint actions in the context of the TEMPUS and ERASMUS programs, having collaborating with KATHO of Belgium, Tbilisi State University and GTU of Georgia, and Univ. of Technology in Bratislava, Slovakia, SRH Hochschule Heidelberg, Germany.

Staff exchange was also implemented with Lomonosov Moscow State University, and Perm State Technical University, both in Russia. Other contacts were also reported. Staff and students participated in international organizations (RANS, http://www.raen.info/; Intercultural Euro-Mediterranean Center for Unesco, http://www.iemc-unesco.org/; The *Euro Mediterranean Academy of Arts and Sciences*, www.euromediterraneanacademy.org/).

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.

No clear medium or long-term strategy was identified in the internal evaluation report; neither was it explicitly or implicitly presented during the ECS Department interactions with the EEC.

One element of short-term departmental strategy presented was the development of postgraduate studies at the MSc level. This was a plan put together three years ago. The ECS Department acknowledged that the plan may be partially outdated and stated that the willingness to revisit, accepting the EEC recommendation to leverage various sources of information (e.g., responses of alumni, their absorption in the job market, inputs from local industry, coordination with the School, the TEI and other related departments).

The EEC feels that the lack of strategy is understandable and in parts justified by the fast, or in some

fronts possibly dramatically, changing higher education environment. Nonetheless, it is paramount for the ECS Department to identify, state, and work towards its clear goals and future directions. In case the higher management of TEI Piraeus does not state sufficiently clear objectives, ECS is encouraged to be proactive.

The absence of strategy was clearer for the ECS Department's research, technology transfer, and outreach activities. In the light of the plan towards an MSc program and the past and recent revisions of the undergraduate curriculum, the teaching strategy was relatively more developed. However, the changing job market environment should stimulate reflections and drive ECS towards a well-articulated strategy for undergraduate education.

In that context, a strategy for faculty-student communication and student development should be worked out. While the EEC witnessed excellent personal contacts and commendable efforts, these were limited to a few bright cases.

Given the role of TEI to be close to industry and applications, it is of paramount importance to develop a strategy regarding the role of the ECS Department towards technology transfer and interactions with the local industry.

The overall development or refinement or even redefinition of the ECS Department character, expressed through the curriculum, undergraduate and possibly in the near future postgraduate, research, technology transfer and industrial collaborations, and outreach, is necessary. With a historic perspective on ECS, a point of caution is to fundamentally question and reflect on the future of the Department beyond individual tastes of faculty members.

Last but not least, a strategy regarding the management and development of infrastructures and services should also be established. Thus far, such efforts were based on ad hoc (and clearly commendable) efforts of individual faculty (reg. for example networking and IT infrastructure).

Based on the above, the recommendation of the EEC is that the ECS Department prepares and works towards the implementation of a strategic planning overall and for each of the elements addressed in the Sections above and summarized in Section F.

F. Final Conclusions and recommendations of the EEC

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

Lack of clear, well-defined procedures and framework at Institutional level often creates unnecessary frustration and confusion among the staff members regarding their roles, inter-relations, rights and obligations. The changing state environment and the general insecurity intensify this problem. As a first measure and since long-term planning is currently not feasible, it is imperative to put more emphasis in the creation a stable, sound and unambiguous everyday environment with well-defined procedures, which (a) will leave little room for misinterpretation and misunderstandings among the staff and (b) help the students feel more comfortable in a friendly and inclusive setting and navigate more easily through the Institute and Department procedures.

The EEC has an overall good impression of the state of the department. The EEC would like to comment the positive attitude of faculty staff regarding the future prospects of the Department and the pride of all staff about the quality of service they offer. The EEC feels that the Internal Evaluation Report has thoroughly touched most of the aspects that reflect the true situation of the Department and is the result of long cooperation among academic and support staff. The EEC also feels that the faculty members subscribe to their stated goals, although the implementation can be relatively slow mainly due to exogenous reasons.

The EEC noted that based on the opinions of students they met with, student satisfaction appears to be good. The EEC also noted that there is evidence of good relationship of the students with their teachers.

The research practice and interest at the department go beyond what could be expected at a TEI department. The EEC was happy to observe pockets of excellence.

While there are clear efforts and success in several ways, there is a lot of space for improvement and an opportunity for the ECS Department to reclaim a leading position among departments of similar nature. Further to or summarizing the detailed comments in previous sections, the EEC strongly encourages the ECS Department to work on the following points:

- The Department should become more proactive and establish systems and/or procedures for assessing the quality of examination results such as the adoption of an Exam Board.

- Given the limited resources, a better collaboration and management of these with other departments within the same School could ease the pressure on staff and equipment for teaching labs. This could also free funding for new research activities.

- While the curriculum is implemented in an appropriate way, there are areas, which need to be further addressed.

- Investigate the total workload per module and the related ECTS credits allocation, the total number of modules required for the degree in conjunction with a more flexible elective-modules scheme courses when the curriculum is next revised.

- Strive to increase research impact: aiming for high quality, visible venues and journals, produce demonstrable solutions, pave the way towards technology transfer. The latter could be a strong differentiating point for TEI Departments due to their proximity to industry.

- Link teaching and research activities, notably on the applied research front and the interactions with industry and innovation activities. Strengthen the involvement of undergraduate researchers (diploma thesis), and plan accordingly for the envisioned MSc thesis, and the dissemination of project results to students. At the same time, teaching-only faculty and full-fledged members of the faculty should have clarified roles. A point of caution is to not over-estimate the role of degree thesis and more so of graduate studies (MSc) towards research.

- Ensure that all members of the faculty are consistently involved in research, aiming for high standards.

- Ensure that all members of the faculty are consistently involved in attracting external funds.

- Encourage and implement engagement in cross-lab, cross-sector collaborations in research projects, and accordingly engage in cross-departmental and cross-school actions and project participation, notably in the direction of interdisciplinary efforts.

- Enhance coordination within the TEI Piraeus and existing centers, notably towards promoting collaboration with local industry.

- Enhance and extend collaborations with other Greek TEI and University Departments; for example, the broader metropolitan area of Athens and Piraeus offers numerous opportunities.

- Craft a strategy with clear objectives within the ECS Department, towards achieving the above. For example, identify topics that ECS could focus on and be competitive, dedicate resources for research (e.g., lab space, equipment, a standing committee with research leading faculty), continue engaging research collaborators (e.g. research engineers, student assistants) and ensure their visible participation in research, plan the introduction of a

Doctoral program (possibly in collaboration with other Departments/Institutes/Universities).

The Members of the Committee

      Name and Surname   Signature

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