



ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Α.ΔΙ.Π.
ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ ΠΟΙΟΤΗΤΑΣ
ΑΝΩΤΑΤΗΣ ΕΚΠΑΙΔΕΥΣΗΣ

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

EXTERNAL EVALUATION REPORT

DEPARTMENT OF INFORMATICS

UNIVERSITY OF PIRAEUS

Version 1.0
October 2011

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External Evaluation Committee

The Committee responsible for the External Evaluation of the Department of Informatics of the University 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. Dr. Demetri Terzopoulos (Chair), University of California, Los Angeles, USA
2. Dr. Dimitrios Karampatzakis, Expert, Greece
3. Dr. Nikos Paragios, Ecole Centrale de Paris, France
4. Dr. Costas Xydeas, University of Lancaster, UK

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) comprised:

1. Dr. Demetri Terzopoulos (Chair), University of California, Los Angeles, USA
2. Dr. Dimitrios Karampatzakis, Expert, Greece
3. Dr. Nikos Paragios, Ecole Centrale de Paris, France
4. Dr. Costas Xydeas, University of Lancaster, UK

The EEC visited the University of Piraeus Department of Informatics on Monday 17th and Tuesday 18th of October 2011. The EEC committee members were briefed Monday morning by H.Q.A.A. Athens staff on the Greek Academic Quality Assurance Review framework and general QA evaluation procedures and afterwards travelled to Piraeus to visit the University. Upon arrival, they were welcomed by Professor George Tsihrintzis (Associate Chairman), introduced to the Head of the Informatics Department, Professor Vagelis Fountas, and proceeded to have a short introductory meeting with senior management staff of the University of Piraeus, including the Rector, Professor George Oikonomou, and the Vice Rector of Academic Affairs, Professor George Vassilacopoulos (Chairman of Quality Assurance University Unit - MODIP).

Furthermore, during the visit, the EEC had meetings with Academic, Secretarial, and Technical staff in general, and (i) staff in charge of internal quality evaluation preparations, who also contributed to the Internal Departmental Evaluation Report, (ii) leaders of established and other teaching and research departmental laboratories, (iii) departmental administrative staff, and (iv) selections of undergraduate, postgraduate, and PhD research students, in particular.

Also, the EEC members visited several teaching and research laboratory facilities, lecture theatres, the library, and other spaces used by students.

A number of detailed presentations were given to the committee, commencing with an overview of the structure, activities, and general aims of the Department delivered by the Department Head. In addition, teaching activities at undergraduate and postgraduate levels were highlighted, procedural rules were explained, and information on topics such as student admission, progression, and achievements were provided.

Research group presentations were provided on the second day of the visit (Tuesday), including in certain cases demonstrations of notable outputs. On the same day, the two post graduate (MSc) programs were also presented.

EEC members interacted with staff throughout the visit and their questions and requests for further information were promptly addressed.

In particular, this QA evaluation visit to the department of Informatics of Piraeus University included the following activities:

- i) Meetings with the:
 - Rector and Vice Rector of Academic affairs;
 - Head of the Department;
 - Heads and members of Undergraduate and Postgraduate Teaching Committees;
 - Academics responsible for the internal assessment report;
 - Leaders and members of research laboratories (groups);
 - Laboratory assistants;
 - Postdoctoral staff, research and postgraduate students;
 - Undergraduate students, including student volunteers offering network technical support;
 - Administration personnel.
- ii) Visits to the:
 - Software Engineering Laboratory,
 - Information Systems Laboratory,
 - Decision Support Laboratory,
 - General Purpose Computing laboratories,
 - University Library,
 - General Administration Office,
 - Department Secretariat.

The EEC was provided the following documentation:

- Original and updated (June 2011) Internal Evaluation reports,
- Program of Undergraduate Studies,
- Program of Post Graduate studies,
- Examples of examination scripts,
- Examples of textbooks produced by departmental staff and also other “external” recommended books,
- Examples of undergraduate and postgraduate dissertations,
- Examples of PhD theses,
- Examples of student questionnaires and related statistics,
- Examples of General Assembly minutes,
- Graduate employment/career report,
- Student questionnaire reply statistics,
- Summer Schools activity information,
- Erasmus and international collaboration activities.

Most of the aforementioned documentation was of high quality and was made available to the EEC from the start of the QA evaluation period. Further information that was also requested was provided along with appropriate explanations in certain cases. A few inconsistencies, particularly with respect to statistical data, as well as missing details related to aims, objectives, and strategy in general were raised and also discussed during the visit.

The Department also provided its latest annual Internal Evaluation Report (June 2011) that has been generated in accordance with current University of Piraeus Quality Assurance Unit procedures.

Finally, the committee witnessed the evacuation, due to a bomb threat, of the main University building late in the afternoon of the second day of the visit, which unfortunately abbreviated the visits to certain laboratories. This and other such events, which can easily disrupt normal university activities, although not very common, are nevertheless indicative of the difficulties that the departmental staff encounters in carrying out their regular duties. It should also be noted that, due to strikes, the University was closed on the following two days (Wednesday and Thursday).

A. Curriculum

APPROACH

– Undergraduate Programme

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

The Department's Undergraduate (UG) programme aims to offer high quality education/training to students in the wide and continually evolving subject area of Informatics. This implies the continuous updating of programme content according to international trends in general, and in a way that reflects the needs of industry and employers in particular. In addition, the Department views its UG programme as a source of graduates for post-graduate studies and research activities.

The programme extends over a period of 8 semesters and involves a total of 42 modules, from which 22 are core (plus 4 language modules and 2 thesis modules). The remaining modules are selected from a total of 60 optional modules. This planned structure addresses the wide spectrum of subjects to be covered and also offers the ability for a UG studies specialization in one of three application areas; namely, Technology of Software and Intelligent Systems, Network and Computing Systems, and Information Systems.

An integral part of the Department's UG programme is a final year project that exposes students to important applications and R&D activities.

- *How were the objectives decided? Which factors were taken into account? Were they set against appropriate standards? Did the unit consult other stakeholders?*
- *Is the curriculum consistent with the objectives of the Curriculum and the requirements of the society?*
- *How was the curriculum decided? Were all constituents of the Department, including students and other stakeholders, consulted?*
- *Has the unit set a procedure for the revision of the curriculum?*

It seems that the UG programme objectives were mainly defined by the Department's academic staff in accordance to their knowledge, experiences, and understanding of what is considered to be the norm of offerings nationally and internationally from similar programmes in similar departments. The EEC did not find evidence of a wide consultation process taking place that involves all internal and, especially, external stakeholders (e.g., potential employers). However, it was stated, within the Department's internal report and also during presentations, as well as in the answers provided to questions from EEC members, that the programme is reviewed and updated on a biannual basis. In this process, effort is made to use and follow guidelines offered by international professional organizations (e.g., the IEEE and ACM). The EEC stresses the importance of these reviews as a tool for achieving excellence in providing students with a complete and valuable educational experience, for the advancement of both the individual and the Society at large.

- Postgraduate Programmes

Two postgraduate (MSc) programmes are offered by the Department, one in Advanced Computing and Information Systems and a second, a Conversion Course, in Informatics. Both programmes are in harmony with the general educational aims of the Department, as was mentioned above in the UG Section. The first programme offers a truly advanced level of

knowledge and specialization in Computing and Information Systems, which is often required by certain parts of the R&D-related industry and other employers. The second MSc program makes accessible the area of Informatics to individuals from other science/technology-based backgrounds. Both programmes have been designed to reflect the research expertise of the staff in the Department and are also feeders to PhD and other research projects supported by the Department. Evidence related to admission statistics is indicative that both programmes are selective, nationally recognized, and enjoy a growing international exposure.

Due to obvious differences in background knowledge between students from the above two programmes, the course structures differ in the percentages adopted between Core and Elective modules; i.e., in the Conversion Course, 75% of modules are Core, whereas in the regular programme, the Core modules percentage drops to 45%.

No detailed information could be found regarding the processes used and frequency of curriculum review and updating of these postgraduate courses.

A set of well-defined objective criteria are employed by the Department for the selection of post graduates. This ensures a high quality of student intake and allows the Department to effectively achieve its postgraduate teaching objectives.

The depth and spread of PhD activity was found to be impressive. The approach of having MSc courses as a source of students entering PhD programmes works very well, particularly as staff in many cases get to know PhD candidates from their MSc project work.

PhD activity in the Department is well established, with a volume that provides a good student/staff ratio somewhat in excess of three PhD students per academic staff member. Note that certain subfields and research laboratories have the tendency to attract more researchers and much needed funding to support students. Also note that most of the Department's PhD students do not receive scholarships and rely on part-time jobs and/or parental assistance for financial support. A direct side effect of this is a prolongation of the average time that students require to complete their PhD studies (i.e., more than 5 years).

IMPLEMENTATION

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

There is a clear separation between the mandatory mathematics and core computer science modules and the elective modules. The first four semesters of the program involve mostly core mathematical and core computer science modules while the remaining period is heavily populated with electives that depend on the area of specialization. The number of electives being offered in the different areas is sufficient (the ratio between offered electives and taken electives is 3:1). Additionally, a good balance exists between the elective modules offered in the different specialization areas.

However, the observed duration of UG studies does not match sufficiently well with the specified duration of the curriculum. Indeed, the observed average duration of studies (that is, between five and (towards) six years) significantly surpasses the expected duration of four years, though this is a phenomenon in the Greek Higher Education system that is commonly encountered in almost all disciplines.

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

The implementation of the curriculum falls short with respect to certain processes when measured against International standards in general and the requirements of the European Credit Transfer system in particular. The implementation issues that require attention are: (i) the lack of clear admissibility criteria across academic years to govern student enrolment in courses, (ii) lack of module prerequisites, and (iii) lack of formal enrolment processes for the core and elective modules. In particular, it was noted that students in a given semester can enrol in any of the modules of the previous semesters, and once past the 8th semester, students can enrol in any of the modules offered. It was also observed that the Department does not have the ability to impose module prerequisites. Last but not least, the number of enrolled students per mandatory module is generally unknown to the instructor, while the number of students in the electives can change during the semester. These problems are mostly a legacy of the Greek Higher Education System and, thus, they cannot be controlled by the Department. Nevertheless, they should be resolved at the earliest opportunity.

- *Is the structure of the curriculum rational and clearly articulated?*

The structure of the curriculum is rational and well articulated, and it is strongly inspired by the research interests of the academic staff. The separation between mandatory and elective courses is done chronologically (structural modules are offered mostly in the first two years, while the elective modules are offered in the last two years). Furthermore, the number and the themes of the electives modules offered reflect the current trends in computer science. That said, there should be an effort to associate/link the specialization areas with the current trends and needs of the employment sector.

- *Is the curriculum coherent and functional?*

The curriculum is coherent, but not entirely functional. As mentioned earlier, students are allowed to mix modules from different semesters and enroll in modules without having satisfied the associated mandatory or elective prerequisites. These liberties have the potential to generate significant difficulties to both students and teaching staff.

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

The vast majority of course material is appropriate and of high quality. In some cases, however, the syllabus should be updated to reflect the latest standards in the core areas of computer science (e.g. programming languages). Moreover, students are generally provided only a limited exposure to laboratory work and programming exercises. This seems to be a consequence of the limited use of Teaching Assistants as well as the shortage of laboratory space and related hardware/software facilities. In meetings with EEC members, students commented that the curriculum contains certain mathematical topics at an unnecessarily advanced level for an applied, technology-driven Computing UG degree course.

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

The department has the academic personnel needed to successfully execute and implement the curriculum. This is particularly observable in the specialization areas where highly qualified personnel teach elective courses. In contrast, the student comments provided in meetings with EEC members indicate that there is “room for improvement” regarding the teaching of certain core computing modules. These and other teaching/curriculum related issues should be attended to on a regular basis in staff/student meetings and also from module

related student feedback questionnaires. Their solution can be as easy as (i) involving in laboratories and tutorials more appropriately selected teaching assistants and (ii) reducing the level and or teaching load of certain mathematical modules.

RESULTS

Undergraduate Programme

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

The curriculum is well defined, but there is room for improvement. It is important to revise the material of core courses and to provide, in certain instances, a more up to date content. It is also important to pay attention on the student's workload across semesters and make an effort to evenly distribute it within the four-year study period. Also, the excessive material packed into the program, the large number of courses, and the effort required, along with the lack of prerequisites and Departmental control on students' progression and admission to upcoming semesters apparently contributes to the increase of 50% on average in the duration of the UG programme.

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

The Department is aware of the need to improve further the current UG course curriculum. Work on a new curriculum has already commenced and its development is at an early stage.

Graduate (M.Sc. and Ph.D.) Programmes

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

The curriculum of the two MSc programmes is well defined and the results show that excellent work is performed. The academic staff works closely on the two programmes and offers a competitive course structure. The observed one year extra time that students spend in the program on average, relates to the substantial MSc project work and subsequent preparation of the thesis.

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

The Department and the MSc programme committees are working diligently on the structure and implementation of the two curricula. It is obvious that the academic staff has full control of the programmes and that new improvements are already underway.

IMPROVEMENT

- *Does the Department know how the Curriculum should be improved?*
- *Which improvements does the Department plan to introduce?*

Based on the Internal Departmental Evaluation Report, the suggested improvements for the Department's Curriculum are as follows:

1. Enrolment of high quality academic staff in new scientific disciplines and the offer-

ing of new courses.

2. Presentation of a new curriculum based on feedback from academic staff, students, and industry stakeholders.
3. The development of a new Life-Long Educational Programme.

B. Teaching

APPROACH

Does the Department have a defined pedagogic policy with regard to teaching approach and methodology?

Teaching in the Department follows conventional international guidelines, where lectures are combined with laboratory exercises offered by Teaching Assistants. Furthermore, the Department offers a collaborative e-learning platform that is used to share and exchange information between the students and the faculty members. The use of modern means of interaction with the students through e-learning is one of the pillars for the further development of the Department.

The student to staff ratio is well above the typical values observed in research-oriented European and other International Higher Education Institutions. The number of active students is currently 891 (students that have been registered for 6 years or less) while the number of faculty is 25 (approximately a 36:1 ratio). This ratio is aligned with those found in competing departments in the same discipline in Greece.

The interaction between faculty lecturers/teaching assistants and students occurs in an appropriate and efficient manner and students do appreciate the availability and readiness of the staff to offer help. Furthermore, the evaluation of student performance in several elective classes is done on the basis of project work, practicals, and assignments, which enforce contact between the students and the teaching staff. This is further reinforced during the diploma project work/thesis, which is mandatory and involves a research project.

The Department provides to students access to two general computing laboratories, which are well organized and modern with adequate infrastructure. However, the size of these laboratories seems to be inadequate given the number of enrolled active students (891 students for approx 50 lab machines or a ratio of approximately 20:1). Students have lab access throughout the day and there is also on demand (i.e., with permission) remote access to computing facilities. Laboratories are fully supported by teams of undergraduate students working on a volunteer basis during normal operating hours.

The University library also provides reading room space as well as access to books in the form of hard copies or electronic versions. The ability to get books that are not among the library stock is also offered to the students through an inter-library book exchange program.

Class evaluation/assessment is done through laboratory exercises, mid-term and final examinations, and occasionally project work/assignments. The use of examinations is predominant in the Department's assessment policy; however, the choice is left to individual instructors/teaching staff based on their judgement of the nature and content of the instructional material. Laboratory exercises are mostly prepared by PhD students. A consensus exists among UG students that laboratory exercises should be strengthened and generalized to cover a broad spectrum of computer science classes, when feasible. However, the high student to staff ratio and the shortage of technical and teaching assistants renders problematic the further development of the laboratory exercises, which is critical for any successful, highly-ranked computer science department.

Textbook assignment is done through the EVDXOS, a system that allows the selection of texts for each course. Book recommendations from the students are generally appreciated with some notable exceptions where Greek translations of outdated textbooks are preferred over more recent textbooks written in English.

IMPLEMENTATION

The overall quality evaluation of teaching procedures is positive from the students' point of view (high overall satisfaction). The balance between mandatory and elective modules seems to be reasonably well aligned with international standards and practices. This is not the case when considering the distribution of theoretical versus practical modules, however, since the current curriculum is oriented towards more theoretical content, presumably due to the shortage of teaching assistants and laboratory facilities. Departmental academic staff deliver lectures and coordinate activity and supervision arrangements during laboratory work/exercises. In most cases, modules are offered by academics according to their research interests and this improves the quality of the lectures. Furthermore the content of modules is updated on a regular basis according to the latest technological trends of a given subject area. This can be viewed as a departmental strength, but also as a weakness particularly for the core computer science modules if there are no academics available with research interests in some particular core area. Thus, an effort should be undertaken at the individual faculty member and departmental management levels to align with international standards the content of certain modules and also to define the appropriate trade-off between lectures versus laboratory-based teaching.

The Department is in the process of investing a fair amount of effort towards internationalizing its image either through exchange programs or international agreements. In particular a number of ERASMUS agreements have been signed—some of them with top European schools like KTH—and the flow of international students applying to these international programs continues to grow, as well as the number of domestic, out-going students. In this context, educational student trips are encouraged by the Department and recent activity in this area was reported at the postgraduate level. The Department is encouraged to further pursue such teaching/collaboration activities and to increase the flow of students spending time from their studies abroad and at top European computer science departments and schools. The number of incoming students is important, but it is not currently in equilibrium with the out-going students and student exchange numbers are relatively low. This is mostly due to language issues, although the Department is responding to this by undertaking a series of lectures and seminars offered in English, initially at the MSc level.

Furthermore, the mobility of faculty members should be encouraged, although evidence of staff taking sabbatical time abroad was presented during the visit. The Department is also able to attract top quality international scientists for the delivery of invited lectures.

No evidence of regular staff changes in the delivery of modules was reported and lecturers seem to carry on teaching the same subject even when there were valid reasons for change, often raised by the students.

Student satisfaction is measured using traditional means, whereby hard copies of questionnaire forms are distributed to the students at a given time in any given semester. The results of such evaluations are generally positive. However, the sample of students contributing to them is fairly low, mostly due to the requirement of the physical presence of participating students in the lecture room at a specific time. Given the expertise of the Department in e-learning and the associated platforms, there is consensus among the students that anonymous, on-line feedback schemes should be investigated. This will enable broader participation and much larger sample sizes, which would be beneficial for reliable module assessment, both in terms of content and delivery.

RESULTS

Departmental practices are overall satisfactory. There is a good balance between mandatory and elective courses. The Department offers three specialization options as a way of meeting students' interests and goals. The consensus among students and also of the EEC is that better effort should be made towards achieving an appropriate equilibrium between the amount of time studying theory and time devoted to practical work, particularly during the first and the second year. In addition, consultation with students revealed that excessive emphasis is placed on mathematics in general and that the level of mathematics presented in certain modules is unnecessarily advanced for a UG programme in informatics.

Thus, laboratory-based teaching as well as laboratory assignments should be strengthened, particularly for the core elements of computer science where laboratory exercises are required and are essential for mastering programming techniques (C++ for example). Of course, this has implications on the availability, or lack thereof, of laboratory space and associated hardware and software facilities, particularly as the number of registered students (who have the right to attend laboratory classes) is very high in part due to the relaxed academic progression rules and a maximum number of years of course attendance regulation, as dictated by the Ministry of Education.

This in turn necessitates a drastic reduction of the graduation queue, since the number of stagnant students (1.5 times the average expected duration of studies, which is 6 years) is approximately equal to the number of active ones. The Department argued that the reasons for such a large number of inactive students are (a) the generally low quality of the students transferring into the UG programme with lower than normal admission criteria/entry points—these are students who find it difficult to cope with the course content—and (b) the inability of students to focus and to study immediately after the heavy work load associated with the University Entrance Examinations.

IMPROVEMENT

Based of the Internal Departmental Evaluation Report, the suggested improvements for the Department's teaching approach are as follows:

1. Continuous improvement of the e-learning tools and their in-house implementation based on course needs.
2. Expansion and improvement of the Practice Programme in Industry.
3. Assessment and improvement of the coherence between modules.

C. Research

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

APPROACH

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

The Department's objective is to become an internationally-recognized centre of Informatics research. It engages in innovative research in informatics through synergistic collaborations between graduate students, research staff, and academic staff. The objective of this effort is to advance the state-of-the-art in the field and to document significant advances through the publication of technical papers in premier archival journals and conference proceedings in Computer Science, as well as in the publication of monographs and textbooks written in the Greek and English languages. The Department's research activities are organized around eight laboratories that reflect the thematic research interests and strengths of the academic staff.

- *Has the Department set internal standards for assessing research?*

The Department adopts international standards for assessing research quality with respect to (i) faculty appointment, and (ii) staff performance evaluation in career advancement procedures. These procedures employ widely accepted metrics of research productivity, which include publication counts, impact factors of publications, publication citation indexes, editorial activities, and service to the scientific community (esteem factors) .

IMPLEMENTATION

- *How does the Department promote and support research?*

The Department promotes research through summer schools, conference organization and participation, top level international guest lectures, and through its advanced computer science MSc program. Research efforts—in particular, the Department's PhD program—are supported primarily through tuition revenues produced by the sizable MSc programs and, secondarily, through national and international competitive grant schemas. This effort is successful, distinguishes the Department, and is therefore commendable.

- *Quality and adequacy of research infrastructure and support.*

The philosophy of the University, as articulated by its administrators, is for researchers to strive to accomplish the most that they can, given a minimal amount of research support, due to fiscal constraints imposed by the educational infrastructure in Greece. In particular, the research infrastructure of the Department is hampered by a shortage of lab space.

- *Scientific publications.*

Part of the departmental strategic plan is to encourage its faculty members to publish their research work in the scientific literature, favoring publication venues with high impact factors. The Greek academic system does not provide to the department effective merit mechanisms to directly encourage publication (e.g., salary incentives, teaching release).

- *Research projects.*

The research projects are organized around the themes of Software Engineering, Computer Systems, Internet Telecommunications and Security, Information Systems, etc. The majority of the projects are funded by tuition fees from the MSc programs and competitive Greek Research programs (such as PENED). Although there is a marked non-uniformity, in terms of volume of activity and income, across research areas, the Department is making a considerable effort, and to certain extent it succeeds, in securing funding from the European Union through highly competitive grants (IP, STREP, etc.).

- *Research collaborations.*

Research collaboration among academics is enabled by staff sharing research interests and being members of more than one departmental research laboratory. As a result a number of joint proposals between faculty members were funded in previous years. There also exist fruitful collaborations between the faculty members and researchers outside the University, both nationally and internationally.

RESULTS

- *How successfully were the Department's research objectives implemented?*

The Department boasts a certain number of successful research initiatives which produce high quality demonstration outputs and publications. Research in these areas is led by staff and often carried out by very high-quality (by Greek and international standards) postgraduate students who are being mentored to become promising junior researchers.

- *Scientific publications.*

The scientific publication record of the Department is spread in terms of quality and quantity, depending on the area. The EEC observed several examples of world-class research in conjunction with remarkable scientific publication productivity.

- *Research projects.*

The Department has been successful in partially supporting research activities from revenues derived through the MSc program. This funding mechanism is insufficient, however, to support and sustain world-class research (which is the Department's ambition) and it does not encourage investment in long term cutting edge research topics. The committee also observed an increasing number of efforts made in securing funding from national and international competitive grant sources, and certain notable successes.

- *Research collaborations.*

Collaborative activities between academics are fostered by common memberships in the research laboratories and the participation in joint proposals, as well as formal joint PhD project supervisions. Existing collaborations tend to be very solid and fruitful and they should serve as exemplars for developing new collaborations.

- *Efficacy of research work. Applied results. Patents etc.*

The patenting of research is apparently not one of the priorities of the Department. This is not necessarily a bad thing in the computer software area; however, the Department should explore avenues of industrial exploitation of their results, particularly when considering the importance of its relationship with Industry and employers nationally and internationally.

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

Certain research activities of the Department have outstanding visibility nationally and internationally, which is reflected by best paper awards, editorial activities, publication quality and volume, etc. Substantial progress in this direction is observable in past years and the Department should continue advancing along this path. Overall, in terms of research, the Department is performing well with respect to competitors and observed Greek standards.

IMPROVEMENT

- *Improvements in research proposed by the Department, if necessary.*
- *Initiatives in this direction undertaken by the Department.*

Based of the Internal Departmental Evaluation Report, the suggested improvements for research output and impact are as follows:

1. Improve the participation in proposals and projects from competitive EU programmes.
2. Pursue a closer cooperation with R&D institutions and companies interested in research activities.
3. Consolidate activities and forums with invited speakers from foreign universities, SMEs and industry/employers in general.
4. Provide motives to improve research impact and policy for the submission of high quality material to the best scientific journals and conferences.
5. Provide a focused enrolment for high quality academic/research staff working on new disciplines and technologies, and in relation to the needs of the Department.

D. All Other Services

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

APPROACH

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

The secretariat for student services is located on the ground floor and the available space is shared with the office responsible for student living concerns (accommodation, insurance, nutrition). Also, the Department has an office (President's Secretariat) responsible for academic staff and the Department's assembly support (located at the 4th floor of the same building). The former secretariat has 4 positions covering different administrative skills and qualifications (two of them are public sector personnel and the other two are funded through the tuition revenue of the two MSc Programs). The latter office is staffed by one position (the only ETEP/technical personnel of the department).

The Department takes care of accessibility of students with special needs. All the facilities have the proper infrastructure to access and attend lectures.

The Department offers free wireless internet access in all places. Because of the shortage of space, each graduate student has a mobile computer in order to support the idea of a "Virtual Lab". The Department has an official site license of the Microsoft Alliance Program and all the students have free access to the Microsoft Windows operating system, software programs, and software development platforms.

The Department's quality assurance team (OMEA) is well organized and informed of the latest guidelines. They follow the templates of the H.Q.A.A. for collecting information for academic staff, academic courses, and student evaluation. The cooperation with the QA University unit (MODIP) is well established.

IT support is partially managed and provided by the university computer center.

The Department informs new students of other services/facilities and is encouraging students to undertake non-academic activities (e.g., cultural activities, sports).

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

The e-services provided by the Department's secretariat work appropriately. The secretary uses software for most procedures and digitally archives documents and forms. The online system also has a web interface for students and all procedures related to courses are supported from this web-based service (applications for certificates, grade reporting, course selection, etc.).

The Department also offers a program for "Practice in the Industry" and uses an electronic system to advertise all the available job vacancy information provided by companies. The Departmental policy to simplify its operational procedures is based on the general guidelines of the Ministry of Education.

IMPLEMENTATION

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

The Secretariat supports the 3 available academic programmes, students, and academic staff. Administration personnel have a clear understanding of procedures and associated services on offer. However, the job descriptions of the Department's administration staff were not clearly specified. Instead a "collaborative" type of work model is used where certain tasks are allocated according to prevailing work load conditions. This allows for operational efficiency and can easily coexist with the formal specification of duties.

The Secretariat is open daily from 08:00 to 18:30. For undergraduate students, it is open only three days in the week from 11:30 to 14:00. Students reported that this can be problematic and suggested that the Secretariat should be available on all the days of the week. Also, the University administration offers Student Services, including the provision of several kinds of certificates (applications are submitted to the Department's Secretariat using the online systems). This e-office facility is open daily from 8:00 to 13:00.

The Secretariat does not have a system in place to collect feedback from students about the provided services.

- *Form and function of academic services and infrastructure for students (e.g. library, PCs and free internet access, student counseling, athletic- cultural activity etc.).*

The Department and its students use the University library, which is well equipped. As was mentioned earlier, students have full wireless access throughout the Department and each graduate student also is issued a mobile netbook computer, thereby implementing the Department's "Virtual Lab" facility.

Also, for graduate students the Department has adopted and uses student tutoring. Students are requested to meet with their advisors at the beginning of each semester. Graduates use this service in order to obtain advice and select elective modules.

The Office for Athletic Activities is in the main building, but the sport facilities are available in the surrounding area of Piraeus. University buildings were in general clean, and provided clean and adequate toilet facilities.

RESULTS

- *Are administrative and other services adequate and functional?*

Administrative and technical services are highly adequate and functional.

- *How does the Department view the particular results?*

The results of the implementation of "Virtual Lab" are excellent.

IMPROVEMENTS

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

Based of the Internal Departmental Evaluation Report, the suggested improvements for

other services are as follows:

1. Provide more space for the Secretariat and supporting facilities.
2. Hire new highly-educated personnel.
3. Make a greater effort to support individuals with special needs.

Collaboration with social, cultural and production organizations

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

The Department's academic staff participates in a variety of professional organisations, associations, and governmental bodies. They participate in various programs throughout the Greek territory concerning the adoption of broadband infrastructures, services, and the health safety issues related to wireless networks and electromagnetic radiation.

The Department organizes summer courses and educational trips abroad (conference participation and University site visits). Academic staff has close cooperation with the public sector and they participate in the publication of books for secondary education. Academic staff also participates in e-business forums and supports the development of new commercial markets.

The overall participation of the Department on this topic of interest is excellent.

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.

During the EEC's visit, one of the review sessions focused on Strategic Planning. The Department presented an extremely ambitious strategic plan, but the path towards meeting its objectives was not clearly documented. The Department aims both to improve its teaching curriculum and its research performance. The EEC observed the following inhibiting factors:

- In terms of educational objectives, the excessive number of regular UG admissions and the extra number of students admitted in addition to those gaining access through competitive examinations (transfers, special cases), in conjunction with the relatively small number of faculty is an inhibiting factor towards improving the quality and delivery of the undergraduate curriculum. The shortage of laboratory spaces as well as teaching assistant support, in conjunction with the absence of an up-to-date regular mechanism for modules/content selection, is also an inhibiting factor that the Department should address. In particular, reducing the course load, shifting towards modules focused on core and modern computer science topics while enriching the laboratory/programming teaching component should be encouraged by the Department. Departmental policy, which is also standard policy in most computer science departments in Greece, is that the faculty teaches modules in their perspective research areas, which can be detrimental to the goal of effectively covering the core areas of computer science, especially in smaller departments. A byproduct of the aforementioned inefficient policies is the lengthy graduation queue currently observable in the Department, which further undermines its educational objectives.
- In terms of the shortage of research funding, the inadequacy of the State (public national funding is irregular, granting procedures and reviews are questionable, and State investment in higher education and, in particular, research initiatives continues to diminish over the years) along with the current non-uniformity of the Department's research activities, are limiting the research perspectives of the Department. It should be part of the strategic plan of the Department to seek solid external funding and to better structure its research activities such that attention is given to priority areas where the Department can make a difference relative to its competitors. This should be taken into account with regard to future faculty position openings, with the aim of either reinforcing ongoing activities or opening new areas only when exceptional individuals are appointed.

Last but not least, the articulation of the Department (at least based on the presented material) with respect to peer departments in the University ecosystem is an issue that should be seriously considered in the Department's long-term strategy. Synergies with regard to the undergraduate curriculum, graduate offerings, and research activities with the Digital Systems Department of the University of Piraeus should be seriously discussed and taken into account by both departments. A brief analysis of the undergraduate curricula of the two departments—at least over the first two years—suggests that teaching activities could be amalgamated to better serve their respective undergraduate curriculums. This is an issue that should be addressed by the University, Leveraging joint graduate programs, as well as paying attention to the expertise and strengths of other Departments should result in the gradual shift of faculty appointments in favor of core computer science disciplines.

F. Final Conclusions and recommendations of the EEC

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

Recommendations for Curriculum – Undergraduate Programme

To the Department

The EEC recommends that the volume of background mathematics modules be reduced in favour of fundamental computer science courses. Furthermore, an effort to better distribute them over the duration of studies should be undertaken. It might be appropriate to associate these modules with programming laboratory activities when feasible.

The EEC recommends that the curriculum be updated more regularly with an eye towards the trends of computer science. International standards should be adopted (IEEE, ACM). In particular, modern programming languages related with core components of computer science should be introduced and employed in course work, as necessary.

The EEC recommends that the Department consider reducing the overall degree course teaching load, and thereby aim to align with international standards. The expected by-product of this action will be a decrease of the average time taken by students to graduate.

The EEC recommends a substantial increase in the number of laboratory based modules. Students indicated that several laboratory-related modules are used by lecturers to cover theoretical foundations, thus undermining the practical aspects and objectives of these modules.

To the University

The EEC recommends that the University develop a long term strategy for the Computer Science Discipline that should be a pillar of its modern development. Within this framework the mutual relationship of this Department with that of the Digital Systems Department should be clarified. Fragmentation of the Computer Science Discipline towards small units is neither productive nor appropriate within the socio-economic context of Greece.

To the Government

The EEC recommends that the Government provide the Department with the ability/liberty to update its undergraduate and graduate programs. Computer Science and Informatics are rapidly evolving disciplines and, therefore, the Department should be able to frequently adjust its teaching activities according to the current technological trends and the needs of society.

The EEC recommends that the Government align undergraduate/graduate curriculum regulations with the Bologna system (3+2+3). Greece is a unique exception where undergraduate studies at university departments have an average duration of six years and at engineering schools seven and a half years.

Recommendations for Teaching

To the Department

Improvements can be accrued through the adoption of curriculum-designing procedures that effectively and fully take into consideration the interests of all stakeholders, particularly those of current and alumni students, as well as those of potential employers of students. There is definitely a need for more practically-oriented course work and a better match of the presently unnecessarily advanced level of mathematical content of certain modules to the actual needs of graduates and their destinations of employment.

The EEC recommends improvement of the course evaluation method. The Department should consider evolving to an anonymous web-based system that all enrolled students can use without the requirement that students be present in the classroom on the day that evaluations are solicited. A suggestion is to work closely with the University's QA Unit in order to be a pilot user of any new online system for student evaluation. Furthermore, student feedback should be seriously taken into consideration, leading as necessary to the modification of course materials and teaching methods.

The EEC recommends that the students be better informed when the time comes to choose their specialization in the third year of study; in particular, more information should be provided to students about the overall objectives of the three different specializations along with their associated teaching modules.

The EEC recommends that advanced computer science courses offered at the MSc level be opened to undergraduate students as elective modules.

To the University

A new policy for classroom management and assignment must be considered, as many departments have space problems.

To the Government

The EEC recommends that the Government allow Universities to operate with greater academic autonomy that is commensurate with international standards. In particular, the EEC recommends that the Government allow the Departments to control the number and quality of students that they enrol each year. The Department can maintain the quality of teaching only if it can limit its enrolments to levels that are appropriate in view of its faculty headcount and classroom/laboratory space resources.

Recommendations for Research

To the Department

The EEC recommends the consolidation of the research laboratories into clusters of excellence (e.g., the Corallia Clusters Initiative). The Department has a significant number of research laboratories (greater than 10) and there currently are several laboratories operating with insufficient faculty personnel and limited critical mass to achieve an international post-

ure.

The EEC recommends to the Department to sustain and increase its efforts to obtain competitive funding from national and international research programs, thereby reducing its dependence on graduate program tuition fees. The balance between these two components—i.e., research versus MSc teaching—should be carefully defined within the framework of achievable departmental mission objective(s).

The EEC recommends that the Department consider hiring “internal” academic staff only as a rare exception. It should improve its attractiveness by recruiting junior faculty members from the pool of candidates outside the Department with established scientific credentials, while taking into account their integration potential with ongoing research activities.

The EEC recommends to the Department to establish further its relationships with National and International research institutions (e.g., Demokritos, INRIA, Fraunhofer) with an eye towards providing mobility possibilities to its graduate students and faculty.

The EEC recommends to the Department to continue its current efforts and accelerate its internationalization/collaboration activities, particularly at the MSc/PhD levels, through prestigious European mechanisms (e.g., ERASMUS, Mundus).

To the University

The University must start working towards more effective technology transfer to society by exploiting the results of current and future research and creating mechanisms and culture for the easy establishment of spin-off or start-up companies.

To the Government

The EEC recommends to the Government to increase research funding both in terms of competitive grants as well as in terms of PhD individual merit scholarships.

The EEC recommends to the Government to establish a research office (in the philosophy of the National Science Foundation in the USA) with an annual budget, with the mandate of distributing research support through competitive calls for grant proposals. Such an office should have a strategic board consisting of prominent Greek and international scientists to determine the research perimeter and to generate calls for proposals. This office should also administer its grants and conduct grant reviews and funding distributions in a transparent fashion based on peer input from scientifically established expert researchers at all levels.

Recommendations for All Other Services

Administrative

1. Evaluation of secretarial personnel and services.
2. Evaluation of technical support personnel and services.

e-Services

The Department’s website is not “designed for all”, especially for people with special needs. The EEC suggests that the Department’s website conform to the W3C - Web Content Acces-

sibility Guidelines.

Recommendations for the Strategic Plan

The EEC recommends that the Department strike a committee to review and document the current condition of the Department (using all available data, internal-external evaluations, questionnaires, etc.), with the objective of investigating its weaknesses and strengths, and to submit the review document, which would also articulate the objectives and the goals of the Department for the next 8 years, to the scrutiny of all its stakeholders. The results must be measurable and the goals must be affordable. This process and material will help the Department to implement an operational plan that successfully follows future technological and economic changes.

Commendations

The EEC commends the perceived high level of enthusiasm and commitment of the departmental staff in carrying out their academic and administrative duties.

The EEC commends the progressive attitude and thinking of departmental staff towards new educational schemes and methods while striving for academic excellence.

The EEC also commends the quality of the documentation and the support provided to the Committee for the purposes of this evaluation.

The Members of the Committee

Name and Surname

Signature

1. Dr. Demetri Terzopoulos (Chair), UCLA, USA

2. Dr. Dimitrios Karampatzakis, Expert, Greece

3. Dr. Nikos Paragios, Ecole Centrale de Paris, France

4. Dr. Costas Xydeas, University of Lancaster, UK