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## EXTERNAL EVALUATION REPORT

DEPARTMENT  
Music Technology and Acoustics.  
TEI of CRETE

Version 2.0

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### External Evaluation Committee

The Committee responsible for the External Evaluation of the Department ...Music Technology and Acoustics of the University/Technical Institution of CRETE consisted of the following five (5) expert evaluators drawn from the Registry constituted by the HQAA in accordance with Law 3374/2005 :

1. Associate Professor      George Tzanetakis      (President)  
     (Title)                      (Name and Surname)  
     University of Victoria Canada  
     (Institution of origin)
2. Assistant Professor      Konstantions Karathanasis  
     (Title)                      (Name and Surname)  
     University of Oklahoma  
     (Institution of origin)
3. Associate Professor      Christos Papadopoulos  
     (Title)                      (Name and Surname)  
     Colorado State University  
     (Institution of origin)
4. Associate Professor Evangelia Kordoni  
     German Research Centre for Artificial Intelligence (DFKI GmbH) and Dept. of  
     Computational Linguistics and Phonetics, Saarland University (Germany)
5. Dr. Gottfried      Schubert  
     (Title)                      (Name and Surname)  
     Freelancer Consultant of Acoustics  
     (Institution of origin)

***N.B.*** The structure of the “Template” proposed for the External Evaluation Report mirrors the requirements of Law 3374/2005 and corresponds overall to the structure of the Internal Evaluation Report submitted by the Department.  
 The length of text in each box is free. Questions included in each box are not exclusive nor should they always be answered separately; they are meant to provide a general outline of matters that should be addressed by the Committee when formulating its comments.

## ***Introduction***

### I. The External Evaluation Procedure

- Dates and brief account of the site visit.
- Whom did the Committee meet ?
- List of Reports, documents, other data examined by the Committee.
- Groups of teaching and administrative staff and students interviewed
- Facilities visited by the External Evaluation Committee.

The visit took place on Monday 22, Tuesday, 23 and Wednesday, 24 of November, 2010. The committee met with the TEI of Crete, administration, regular and seasonal faculty, students and administrative staff of the department. The committee examined the internal evaluation report, the curriculum, some of the textbooks, course notes, and lab assignments. We also looked at examples of undergraduate thesis reports as well as promotional/recruitment materials such as the booklet and the department web-page. We met with 8 out of 9 of the regular faculty, 6 of the seasonal faculty, all of the administrative staff, and several students. We extended an open invitation to anyone who would like to meet with us and discuss. Finally we visited all the existing facilities both teaching and research of the department.

### II. The Internal Evaluation Procedure

Please comment on:

- Appropriateness of sources and documentation used
- Quality and completeness of evidence reviewed and provided
- To what extent have the objectives of the internal evaluation process been met by the Department?

In our opinion the department followed the guidelines provided by the HQAA and supported their responses with thorough information about all aspects of the department. The department used internal statistics collected by student evaluations for assessing teaching, compiled lists of publications and research grants for assessing teaching, and thoroughly described the administrative structure of the department.

The committee was positively impressed by the thorough lists provided describing the courses and textbooks used as well as other quantitative information about the department such as statistics of grades, and graduating students per year. It is important how thorough the internal evaluation report is given that this is the first time the department undergoes external evaluation and the report will provide an excellent foundation for future evaluations. We believe that the internal evaluation process has met the stated objectives and it provides a clear, thorough picture of the department at this particular time.

## **A. Curriculum**

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

### APPROACH

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

The goals of the curriculum is to develop the knowledge and skills of students in the theories and practice of Music Technology and Acoustics. The curriculum is designed in order to be responsive to the needs of the specific marketplace so that the graduates of the undergraduate program may acquire vocational positions corresponding to their level of qualifications.

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

The department established 3 years ago an undergraduate curriculum committee which considered feedback from faculty members and students and proposed a new curriculum which came to practice in 2007.

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

The curriculum is consistent with the objectives stated above.

- 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?

The committee notes the following points here:

a. On the one hand, the curriculum is implemented as designed, but, on the other hand, due to relatively big number of sessional faculty it may not be guaranteed that the free elective courses are always on offer in the semesters they have been foreseen for»

b. The practical training in the 8th semester, which is credited much heavier (20 ECTSs) than the undergraduate thesis report (10 ECTSs), is sometimes difficult to find a placement, since the business liaison officer in the administration has been made redundant and the position is not currently foreseen for replacement, due to central administration financial restrictions.

### IMPLEMENTATION

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

The department's goal is implemented effectively by the curriculum and the design of it follows European recommendations.

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

The committee believes that the curriculum is well informed based on appropriate, universally accepted standards for the specific area of study. The curriculum committee looks into the following institutions when revising the curriculum: Columbia University - Undergraduate Study in Music/School of Engineering and Applied Science, Queens University - BSc Music Technology, McGill - B.Mus. with Honours in Music Technology, University of York - BEng/MEng Music Technology Systems, Stanford University, Department of Music - Music, Science & Technology Major (MST), De Montfort University - Music Technology (BSc).

The degree offers three tracks: Music and Audio Processing, Applied Acoustics & Sound Engineering, and Science. The aforementioned 3 tracks are intertwined in the curriculum through compulsory courses that all students need to attend up to the (best part of) the 5th semester. Specialization, which the committee found to be massively preferred from the side of the students towards audio recording engineering, may be achieved in the 6th, 7th and 8th semesters. This is considered to be a reasonable distribution of the designed curriculum.

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

The structure of the curriculum is rational. The only comment here is that the practice in the 8th semester seems to be counting much more (20 ECTSs) than the thesis report (10 ECTSs). The committee, though, has been re-assured that this imbalance is required by the national legislation. The curriculum is comparable to those offered by reputable international schools, to some extent even going more in depth theoretically than in curricula offered in very good applied schools around the world.

- Is the curriculum coherent and functional?

The curriculum is rationally and clearly articulated in the sense that classroom capacity appears adequate for the delivery of the courses. Moreover, the staff has made it their priority that labs are attended by as small in size groups of students as possible, although this in many occasions has the effect of the teaching day cycle extending from 8am to 10pm in the evening, which is not an ideal situation. More members of permanent teaching staff, as well as a bigger building would have alleviated the aforementioned restrictions.

- Is the material for each course appropriate and the time offered sufficient?
- Does the Department have the necessary resources and appropriately qualified and trained staff to implement the curriculum?

The students are offered books in Greek, although the feeling is that exposing them sometimes to foreign language books, which are objectively judged to be better than the Greek ones, may be advisable. The staff are trying to compensate for this by providing thorough self-prepared/collected notes which accompany the various classes and all the lab sessions. A case course could be offered to enhance the writing and presentation skills of the students. The staff are scientifically very highly qualified to deliver the curriculum.

The issue is that for the whole curriculum to be delivered every academic year without problems, the 9 members of permanent staff need to be assisted by highly qualified sessional faculty, whose time and other restrictions, though, have impact on the delivery of the curriculum, for instance, in the sense of the non-timely offer of topics for these projects, and the long lab hours, which, as also mentioned above, may extend well to 10pm in the evening. The number of obligatory courses offered is rather extensive. We do understand that this is planned by the Department as required by the national legislation, but this restricts the flexibility the students have in order to register for courses beyond the minimum number

required for the degree.

## RESULTS

- How well is the implementation achieving the Department's predefined goals and objectives?
- If not, why is it so? How is this problem dealt with?
- Does the Department understand why and how it achieved or failed to achieve these results?

There is no formal process for following up the placement and career paths after their graduation and this is a priority the department should set. However, the department reports in relevant short-scale reports that they have undertaken on and off over the last few years that there is a sense of appreciation of the degree by the marketplace. The department should pursue further quantification of the effectiveness of the curriculum by closely monitoring graduate initial placement and career progression through an ongoing formal process.

From discussion with students it seems that the majority of them considers the new curriculum of 2007 much better than the old one. This shows that the curriculum design committee took into account issues that the students were facing with the old curriculum.

Another indication of achieving the goals of the curriculum has been the acceptance of graduates of the department for graduate studies in national and international institutions. Examples of international institutions in which graduates of the program have studied or are studying are:

- University of Leeds, MMus Music Technology and Computer Music
- University of Southampton – Institute of Sound and Vibration Research, MSc in Sound and Vibration Studies
- Staffordshire University, MSc in Music Technology
- University of York, MA in Music Technology
- University of Salford, MSc Audio Acoustics, MSc Audio Production
- University of Loughborough, Dept of Aeronautical and Automotive Engineering, PhD thesis title: Reduction of sound radiation from automotive-type panels
- Thames Valley University, MA Audio Technology
- *Université Paris 8*
- Brunel University West London
- University of Glamorgan, MSc Music Engineering and Production, MSc Advanced Music Production
- University of Edinburgh, MSc Sound Design
- Chalmers University of Technology, Sweden, MSc Sound and Vibration

Students of the department have also received international awards in the composition of electro-acoustic music by reputable organizations such Bourges further evidence of the effectiveness of the curriculum in imparting relevant skills.

In addition there are several organizations both in academia and industry that provide practical training placements for the students in the program indicating their is a market interest in the skills taught through the curriculum.



**IMPROVEMENT**

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

The departmental staff members have a very good overview of all aspects of the curriculum they offer. From this point of view, we are re-assured that they can live up to the expectations of regular updates of the curriculum.

The committee recommend establishing the position of the “Program Director” who may oversee general curriculum issues such as content, delivery and student experience on an ongoing basis, and report to the Department. The Program Director may at times initiate changes to the curriculum to keep it up to date.

***B. Teaching*****APPROACH:**

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

Please comment on :

- Teaching methods used

There is not a defined and universal pedagogic policy by the Department with regard to teaching approach and methodology. We observed that the regular faculty has established and observes general guidelines for teaching, which are not followed entirely by the sessional faculty.

- Teaching staff/ student ratio

There is a high ratio of students per instructor if we consider the number of registered students per academic year. Everyday practice has shown that the active number of students is quite lower than the registered ones and the number of the students who participate in theoretical classes regularly is still lower. The reason a quite large number of the students do not participate in the daily activities is that attendance to theoretical courses is not mandatory, the students do not have the necessary basic knowledge/background from high school, and/or they are not motivated and interested. However, if every registered student would actively participate regularly in theory classes, the number of current instructors would be severely low. This is also evident in laboratory classes, where the attendance is mandatory.

- Teacher/student collaboration

The collaboration between the students and teachers is exceptionally good. The instructors are available to the students beyond regular class time to provide extra support lessons without receiving any extra compensation. Motivated students are able to book extra lab hours to further experiment on the realization of their ideas, which typically happens in the upper class division. However, the continuous use of the labs for teaching limits the ability to use lab space for research/creative projects.

- Adequacy of means and resources

The classrooms are not designed optimally for teaching. For example room acoustics can be better and teaching technology is partial, except for the Amphitheater, which is fully

equipped. The space of the laboratories is very small for the number of students and experiments conducted there. On the other hand, laboratories are sufficiently equipped. The committee observed that there are not adequate resources to improve the teaching environment.

- Use of information technologies

There is a fully developed use of information technology during the laboratory courses, which is evident by the technical nature of the research area. The implementation of this technology in theoretical courses is quite low, but the Department is taking steps to deal with this issue (eClass, etc).

- Examination system

The examination system follows standard practices of a midterm and final exam as well as grading assignments and projects.

#### IMPLEMENTATION

Please comment on:

- Quality of teaching procedures
- Quality and adequacy of teaching materials and resources.
- Quality of course material. Is it brought up to date?

The textbooks provided are well known in Greece and of good quality, but we believe that the students should be able to receive books written in foreign languages, mostly in English. The committee is aware of the limiting ministry regulations on this issue, but we firmly believe that these limitations should be amended in order to provide to the students the ability to come in contact with acclaimed reference books and to be familiarized with the international terminology. The additional course materials provided by the instructors are carefully written, comprehensive, up to date, providing in some cases more information than necessary, which does not motivate some students to use the books and other online resources.

- Linking of research with teaching

There is a good connection between research and teaching. Students participate in research-oriented seminars where they learn the most recent developments in their areas. Research in this department includes creative projects, such as electroacoustic compositions, animations, short films, and recording studio productions among others.

- Mobility of academic staff and students

Staff participates in numerous national/international collaborative research projects and conferences. Students participate in study abroad projects such as Socrates/Erasmus.

- Evaluation by the students of (a) the teaching and (b) the course content and study material/resources

The evaluation of teaching materials, and instructors by the students has occurred only once during the internal evaluation process. The committee strongly recommends to the

department to distribute periodically evaluation questionnaires to the students at the end of each semester for each course. This will help the instructors to assess and improve their teaching methods. We have observed that the level of satisfaction of the current students is good but there is considerable variance among courses and instructors. We also recommend to the department to reach recent alumni and poll their opinion on their studies.

#### IMPROVEMENT

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

Although the Department has a thorough knowledge of the efficacy of the teaching methods and their results in their internal report they do not propose any ways of improvement. In discussions, though, between members of the evaluation committee and the faculty efforts to address this issue have been mentioned, such as rewriting notes.

### **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?

It is clear that research is very strongly encouraged in the department. Despite the fact that TEI departments have a primary focus on undergraduate teaching with heavy teaching loads the department shows strong commitment to research and involving undergraduate students in it. It is also clear that there is an open policy of research that encourages the different faculty to pursue their own interests. Although there is no explicitly stated objective, from our reading of the internal evaluation report and discussions with the faculty it is clear that they encourage research, try to publish original work in international conferences and journals, and pursue research grants at national and European level. The committee finds the research objective of the department to be very similar to the objectives set by institutions internationally.

- Has the Department set internal standards for assessing research?

The committee determined that the internal assessment standards set by the department are consistent with other educational and research institutions, namely quality of publications, impact to the community and success in grants.

#### IMPLEMENTATION

- How does the Department promote and support research?

The department has supported research by providing space for research projects that require it, for example the project Diamouses was provided with space that has turned into the Computer Music Lab. This is more notable given the limited space in the current facilities and shows a particularly efficient utilization of space and equipment. The department also supports current projects and research labs by engaging students during their undergraduate thesis and their practical training. Faculty are encouraged to publish, pursue grants and

obtain PhD degrees when they don't have one.

- Quality and adequacy of research infrastructure and support.

The department is housed in buildings that were vacated by a previous academic institution. There appears to have been minimal maintenance done and apparently there is very little in terms of budget for building improvement. As a result, the quality of research infrastructure presents a contrast, where, there is some excellent state-of-the art research equipment obtained through competitive research grants along with some clearly outdated equipment, all housed in facilities that by now are quite old. The effect of this contrast is that visitors may not be appropriately impressed by the quality of the research infrastructure, and the students may not appreciate the research projects. An important issue is the lack of building space to house research equipment at the existing facilities. The faculty have also been creative and efficient in their utilization of the limited space, which is a substantial additional burden to their teaching and research activities.

- Scientific publications.

The committee regards the publication output as very good in both quality and quantity especially given the context of heavy teaching and administrative duties. Members of the department have published in well-known, prestigious international journals. These include the Journal of the Acoustical Society of America, Physics Review, Nature, IEEE Transactions on Speech, Audio and Language Processing, IEEE Transactions on Information Systems, and IEEE Signal Processing Letters. In addition they have presented their work in prestigious international conferences which include the Int. Congress on Acoustics and Vibration, Int. Computer Music Conference, HCI International, EuroSpeech, Int. Conference of Audio, Speech, and Language Processing. The committee observed that some of the research output of the department is in topics peripheral to the main focus areas of teaching.

- Research projects.

The number and quality of past and present research projects is impressive and on par with work expected at a research university department, in both number and size of grants. The projects have strong international impact, and some have brought cutting edge equipment to the department, which will surely stimulate additional projects. The projects have a rich variety of topics with wide ranging impact scope, ranging from the HiPER project dealing with high power experiments to the modeling of local acoustical musical instruments. The projects actively involve many students who benefit greatly, especially in paving the way for post graduate studies. They also provide a fertile ground for conducting undergraduate theses and practical training for students interested in research.

The study using laser holography of the Cretan Lyra is a great example of a fascinating research project that engaged the local community of instrument builders and shows how cutting edge equipment can be used to better understand musical acoustics. The efforts of the researchers involved to make it part of a certification process are a great example of transfer of academic research to industry.

These research projects have greatly contributed to the quality of the research infrastructure of the department and significantly enhanced the teaching of the undergraduate students both by providing state-of-the-art equipment and training opportunities.

- Research collaborations.

The faculty has initiated strong collaborations with many leading international research groups. Project Prometheus, for example, is a widely known and respected research effort. Project DIAMOUSES is an innovative idea, with contributions in the emerging areas of low-latency collaborations over the Internet. Project HiPER houses state-of-the-art laser technology, which is only available in a very few laboratories, which will encourage more collaborations with other groups that need the technology.

Another area of supporting collaborations has been the organization and hosting of conferences both at the national and international level by the department. This has raised their visibility and opened opportunities for additional research collaborations.

- Creative Activities

The committee also wants to acknowledge the creative output of members of the department as evidenced by electroacoustic compositions, animations, short-films some of which have received awards and been presented in prestigious internationally curated music conferences and events. This creative output was not listed in the internal evaluation report but we became aware of it through discussions with the faculty and students.

## RESULTS

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

We believe the department's research objectives have been implemented successfully.

- Scientific publications.

The research of the department has impact as evidenced by research citations, participation of the faculty in program committees of international conferences, and invited lectures.

- Research projects.

There is a good track record of attracting research projects that has contributed significantly to the quality of research and teaching of the department. The total amount of funding attracted which exceeds 2 million EURO is impressive for an undergraduate department of this size and shows the strong commitment to research. These funds have contributed significantly to improving the research infrastructure of the department.

- Research collaborations.

Members of the department have been successful in participating with several research collaborations with other institutions and companies both at the national and the European level.

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

Some of the projects and work done by members of the department has definitely an applied direction. For example the laser study of the Cretan Lyra or the study of the influence of sound in fishes are applied with strong potential to have an impact in society. They have not obtained any patents.

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

The recognition of the Department's research is reflected in their citations, their publications in international conferences and journals with high impact factor as well as their participation in research collaborations. There have not been any significant awards.

#### IMPROVEMENT

- Improvements in research proposed by the Department, if necessary.

An important new asset that will boost research output is the additional research facilities. At the forefront of this effort by the department is the new building nearing completion, which is a state-of-the-art facility and will house existing cutting edge equipment as well as new equipment that are likely to be obtained in the near future through research grants. While the committee believes that the research undertaken by the department is quite good given the constraints of heavy teaching load, no graduate program, and inadequate facilities, the committee believes that new facilities would result in significant improvements in research by providing more research space and freeing the faculty from juggling resources. Currently space allocation at the department favors research groups with more recent and higher funding levels, which by necessity squeeze out other groups, impeding efforts by the latter to develop fundable programs. With appropriate building space and infrastructure more groups will get the opportunity to develop programs that can bring more funding.

Another issue raised by the faculty is the inordinate amount of bureaucracy involved in decision making particularly given the distance of the department from the main TEI campus. There are several examples, but a particularly glaring one is in hiring, where in several cases the regulations have prohibited or hindered hiring capable people that had the right qualifications but did not fulfill misguided regulations. It is clear from our discussions that the department has made every possible effort to attract good people and in many cases lost them as a result of regulations and bureaucracy.

- Initiatives in this direction undertaken by the Department .

The department has proposed creating a new program of study in image technology that would share a common core with the existing department. This would allow efficient utilization of resources and increase opportunities for faculty and students to conduct research. In addition a new building has been planned, land has been acquired and its construction has been approved. It is clear that the main roadblocks to effective research are related to building facilities and the department has made a strong effort to address this issue.

## **D. All Other Services**

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

### **APPROACH**

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

The department and our committee consider the services provided to the teaching staff and students as not adequate. This is mostly a result of under-staffing, and lack of building space. For example, the administrative office has two employees that share the tasks that are better suited for at least four. As a result there is no industry liaison, despite the fact that a graduation requirement is a semester of practical training, preferably in the industry. The lack of a liaison severely constrains matching of students and industry. Additionally, there is no administrative person overseeing student progress during practical training, often resulting in industry not providing an adequate experience to the students. Finally, the lack of staffing means heavily reduced student office hours.

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

The committee was particularly impressed with the resourcefulness of both the academic and administrative staff in coming up with pragmatic, clever solutions to all sorts of problems related to the lack of building space and the under-staffing of the department. This, however, comes at the expense of a fragile system that is heavily perturbed when staff is ill or goes on vacation. Some procedures can be improved by shifting to electronic processes, but the lack of funding to develop such processes prevents this approach from being adequately utilized.

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

The small number and size of teaching and lab spaces necessitates that the students spend a lot of time on campus for example waiting for a lab slot. Unfortunately there is very little space in which this time could be used productively. The only space is a small room with a few computers and slots for laptops that doubles as study/reading space. The room is frequently full and students have to wait for a spot. More library space and reading space with Internet access would go a long way in not only increasing student presence on campus but making it productive.

### **IMPLEMENTATION**

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

The department has a very small administration for its size. It consists of 1 secretary responsible for all secretarial duties and student issues, 1 person dealing with finances and 1 person supporting the IT infrastructure. Additional staff are hired temporarily and payed hourly. The exact composition changes based on budget constraints. During the time of the internal evaluation report there was an additional person dealing with the library and a person that was the liaison for practical training. Their positions have not been renewed due

to budget constraints.

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

There is very small but organized library. It is only open at limited times because of the lack of a full time librarian. Most of the computing facilities are fully utilized for teaching and there is very little availability of PCs for the students to work on outside lab time. There is wireless access but there is no space for the students to work on their laptops. There is no support for student consulting and athletic activities although the students can utilize the resources of the University at Rethymnon which is in a separate site. The performance space in the amphitheater is decent and has enabled cultural activities such as concerts and open lectures.

#### RESULTS

- Are administrative and other services adequate and functional?

The administrative and other services are definitely not adequate. The existing staff work extremely hard, frequently putting extra hours of non-paid overtime, to address the needs of the students but they can only provide the bare minimum to keep the department functioning. Several services such as the library and the industry liaison have suffered greatly due to recent budget cuts. The ratio of administrative staff to students is extremely bad not only compared to international standards but also to other comparable departments/institutions in Greece. The student cafeteria provides excellent food but does not have enough space/facilities for the number of students.

- How does the Department view the particular results.

The department is very aware of the existing issues and has made strong efforts to address them given the resources provided to the department.

#### IMPROVEMENTS

- Has the Department identified ways and methods to improve the services provided?

The department has clearly identified ways and methods to improve the services provided. They have made strong efforts with the resources they have and the main roadblock is the lack of funding for administrative positions.

- Initiatives undertaken in this direction.

The department has clearly described in their internal evaluation report what is needed in terms of positions and what are the budget implications. They also provided a detailed budget in terms of equipment needs, support and maintenance. The committee recognizes the difficulty of taking any further initiative given the lack of funding.



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

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

The Department has developed an impressive network of collaboration with local, national and international social, cultural, and production organizations.

More specifically, the Department has organized numerous events open to the general public such as concerts, hosted festivals and conferences of national and international organizations, provided seminars and lectures on scientific and cultural subjects, invited schools to visit and tour the departmental facilities, supported municipal events with trained personnel and equipment, provided acoustical consultancies for the new Rethymno Town Hall and one new elementary school in the region, and collaborated with local folk musicians and instrument makers for the enhancement and accreditation of the sound quality of the Cretan lyra.

Many of the aforementioned activities received positive feedback and coverage by the local press and media. As a result, the City of Rethymno provided to the Department further financial and material support for the organization of similar events.

The Committee recognizes the quality, originality and importance of the above-stated initiatives and recommends to the Department to sustain and intensify its activities in this field.

### ***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.*

Please, comment on the Department's:

- Potential inhibiting factors at State, Institutional and Departmental level, and proposals on ways to overcome them.
- Short-, medium- and long-term goals.
- Plan and actions for improvement by the Department/Academic Unit
- Long-term actions proposed by the Department.

In their internal report already, the Department have discussed future directions. It is self-evident, though, that the Department will benefit from a concrete setting of vision, aims, objectives and developing plans.

The Department face several factors inhibiting operations and growth:

a. The building situation is extremely pressing. The lack of space is evident. There should be more space for the teaching staff, but most importantly, there should be more classrooms and lab rooms for the students to be able to carry out their academic duties in a manner comparable to international standards.

The building and grounds condition is very poor. All buildings are in some state of disrepair, with apparently very little budget for repairs. Highly bureaucratic state regulations make whatever budget is available very hard to use, requiring large amounts of paperwork that result in long delays before repairs are done. As a result, faculty, often frustrated with this onerous process, often opt to pay out of pocket for some items rather than go through the normal purchasing channels. As regulations do not allow post facto charging, these expenses end up being not reimbursable.

b. The operation of the department is highly dependable on the centralised operation of the TEI in Heraklion, as well as of the state and the high-level of bureaucratic state control. This lack of flexibility in decision-making renders day-to-day operations and long-term planning extremely difficult. For example, the large number of sessional faculty in conjunction with the small number of permanent faculty introduces uncertainty that inhibits medium and long term planning. Research groups need stability in order to mature, which is very hard to achieve when the future of many faculty in the department is uncertain.

In their internal report, as well as during discussions with the evaluation committee, the Department have presented their main long-term goal for the creation of a small dynamic departmental school for Audio and Visual Studies. In their plan, this is connected to a potential extension and revision of the current curriculum, which they foresee as including the same main compulsory courses for all students in the first 4-5 semesters, with specialisation towards Audio or Visual studies taking place in the second part of the studies, i.e., in semesters 5 to 8. A new building has been proposed, designed and approved that would provide the necessary facilities to support this long-term goal.

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

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

Conclusions and recommendations of the EEC on:

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

The department was founded in 1999. During this time it has managed to attract strong faculty, pursue competitive international research grants and graduate students that have continued for graduate studies. Our impression is that there has been a recent push for increased research activity. In 2007 the department initiated a curriculum redesign process followed by the compilation of an extensive internal evaluation report. The department is unique in Greece and there is a clear need for the skills it provides in the marketplace.

Good practices noted by the committee include: emphasis on research, openness to a diversity of research topics, student and teacher research collaborations, good outreach, and the pursuing of research grant that provide funding enhancing the existing infrastructure.

Building infrastructure is a significant weakness both in term of existing building quality and in terms of adequate space. The administrative staff is clearly insufficient. Another important issue is the large number of incoming students and the lack of common background in their skills. The low ratio of permanent faculty to sessional faculty is also a problem.

The committee recommends the following (grouped in the different areas described in the report):

### **CURRICULUM**

The committee proposes that the introductory computer science courses revisit their structure. For example, the use of the Basic programming language to introduce students to programming is outdated. There are more modern languages that better promote good programming practices, such as Java, or scripting languages such as Python. There are also several integrated programming environments such as Eclipse that are easy to master and would offer students a better experience.

The course titled “Programming Languages” has a rather misleading title, as there are similar courses in computer science that deal with a variety of computer languages, whereas in the context of this department the course essentially deals with C. The committee recommends that the course title is changed to better reflect the contents.

The course “Wireless transmission of audio-musical signals” (5th semester) is correctly being phased out. The committee suggests that the department considers replacing this course with one on Internet Multimedia Streaming. The committee believes that this is a very timely topic that would enrich the curriculum with the important area of multimedia Internet technologies. Such a course would have a symbiotic relation with the project Diamouses and the proposed follow-on work.

Building Acoustics is a highly developed area in Applied Acoustics in Europe. In the last years a discussion regarding the unification of the building acoustic requirements and regulations is coming up. Greece is not participating to this discussion. Unfortunately there

are even no applied requirements for the sound insulation in buildings in Greece. The actual education level in the field of Building Acoustics is very low and it is of major interest to enforce education and research.

Building Acoustics is only a small part of the course Applied Acoustics II. It is necessary to enlarge this area and to create an independent course and laboratory. The course content and all measuring procedures have to be adapted to the EN Regulations.

It is not necessary to start the work of the Building Acoustic Laboratory with expensive test facilities. Useful results can be achieved also with field measurements. Of course for good research it is necessary to realize (long term planning) the following test facilities:

- Test rooms for the measurement of the airborne sound insulation of walls, doors, windows and floors
- Test rooms for the measurement of impact sound insulation of floors
- A reverberation room
- An anechoic room

The committee recommends that the three directions of 1) music technology 2) acoustics, and 3) sound engineering and recording, are more emphasized by specifying but not requiring which elective courses should be taken in each direction.

The committee observed the absence of a sequence of courses based on ear/sound training, which is typically offered in most of the reputable international music technology programs. These courses help students sharpen their listening skill, which is the primary tool for a successful career in fields such as recording techniques, mastering, sound design, sound synthesis, and composition of electro-acoustic music among others. Although some ear/sound training is offered during the music theory courses, the plethora of other musical topics covered in these courses limits the time that should be dedicated on this form of training. We believe that the Department should consider offering two semesters of ear/sound training for those students who wish to specialize in the aforementioned fields.

Music notation software is taught during the music theory courses. Since these courses cover other topics such as harmony, morphology, history, styles, etc., students cannot study thoroughly and in depth music notation software. By introducing one semester of studies of music notation the students will be sufficiently trained and prepared for an important job market (that of the music editor), and there will be more time in the music theory courses to focus on music topics.

Most of the incoming students have training in English in high school. We believe that it would be possible to reduce the number of English courses from 3 to 2 which would open the possibility of a course that is more relevant to the specific department. The issue of students with no or limited English training could be addressed by the creation of an optional remedial course/seminar that would not be part of the regular curriculum.

#### TEACHING

The teaching evaluation that was conducted as part of the internal evaluation process needs to become part of the regular teaching process and take place every time a course is offered. The evaluation should follow the European recommendations such as taking place 4 weeks before the exam and being handled by students or online rather by the instructor. The initial work in teaching evaluation done as part of the internal evaluation report provides a good starting point for this process.

Courses that create roadblocks in student progress need to be carefully examined and redesigned. This process should be informed by the ongoing teaching evaluations.

The committee was concerned with the grade distribution statistics that show that even the best students receive relatively low grades. Given the high quality of student theses and acceptance (and progress) of a number of students to graduate studies we would expect to see better grades for these particular students. The department should reflect on this and re-examine its grading policy and standards.

The course materials and notes should be regularly revised and updated informed by the teaching evaluations.

More permanent faculty are required in order to provide continuity in teaching and planning.

The department needs to have more control in determining which students are accepted and what skills they require. The current regulations provide no control of the department to the students it receives making effective teaching difficult.

The number of incoming students is too high for the existing faculty. Either the number of incoming students needs to be lowered to approximately 80 or the number of faculty positions needs to increase.

#### RESEARCH

The committee suggests that the department tries to emphasize and encourage research that is more directly linked to the directions and teaching topics of the department.

Due to the unique nature of the department, creative activity and production should be acknowledged and promoted even if it is not officially recognized by legislation.

#### ALL OTHER SERVICES

The lack of space is really acute. More and better space for teaching and research is urgently needed. A new building is the most appropriate solution.

The department's urgent needs for more educational administrative support should be directly met with a full-time librarian, as well as more funds for the library function.

Moreover, the industry liaison officer position in the department's administrative office should be filled immediately. This has an impact on the students' practical training and their final theses reports. This is very critical for connecting the graduates of the department with the marketplace.

More budget for building maintenance and equipment supporting teaching and research is urgently needed.

Existing regulations in hiring are extremely centralized and inflexible. The department, especially given its specialized nature, needs to have more flexibility in making hiring decisions.

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

The department is eager and capable to change and improve. However it is hindered by factors beyond its control such lack of funding, uncertainty in budget, small number of permanent faculty, and inadequate facilities.

- the Department's quality assurance.

The internal evaluation report serves as a good tool in quality assurance. We hope that the department continues to reflect on its practices and follows a regular process of self assessment and quality assurance.

