



ΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ  
**Α.ΔΙ.Π.**  
 ΑΡΧΗ ΔΙΑΣΦΑΛΙΣΗΣ ΚΑΙ  
 ΠΙΣΤΟΠΟΙΗΣΗΣ ΤΗΣ ΠΟΙΟΤΗΤΑΣ  
 ΣΤΗΝ ΑΝΩΤΑΤΗ ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC  
**H.Q.A.**  
 HELLENIC QUALITY ASSURANCE AND  
 ACCREDITATION AGENCY

## EXTERNAL EVALUATION REPORT

DEPARTMENT OF INFORMATION AND COMMUNICATION  
 ENGINEERING

UNIVERSITY OF WESTERN MACEDONIA



**European Union**  
 European Social Fund



MINISTRY OF EDUCATION & RELIGIOUS AFFAIRS, CULTURE & SPORTS  
 MANAGING AUTHORITY

**Co-financed by Greece and the European Union**



## TABLE OF CONTENTS

### **The External Evaluation Committee**

#### ***Introduction***

##### I. The External Evaluation Procedure

- Brief account of documents examined, of the Site Visit, meetings and facilities visited.

##### II. The Internal Evaluation Procedure

- Comments on the quality and completeness of the documentation provided and on the overall acceptance of and participation in the Quality Assurance procedures by the Department .

#### ***A. Curriculum***

##### APPROACH

- Goals and objectives of the Curriculum, structure and content, intended learning outcomes.

##### IMPLEMENTATION

- Rationality, functionality, effectiveness of the Curriculum.

##### RESULTS

- Maximizing success and dealing with potential inhibiting factors.

##### IMPROVEMENT

- Planned improvements.

#### ***B. Teaching***

##### APPROACH:

- Pedagogic policy and methodology, means and resources.

##### IMPLEMENTATION

- Quality and evaluation of teaching procedures, teaching materials and resources, mobility.

##### RESULTS

- Efficacy of teaching, understanding of positive or negative results.

##### IMPROVEMENT

- Proposed methods for improvement.

#### ***C. Research***

##### APPROACH

- Research policy and main objectives.

##### IMPLEMENTATION

- Research promotion and assessment, quality of support and infrastructure.

##### RESULTS

- Research projects and collaborations, scientific publications and applied results.

##### IMPROVEMENT

- Proposed initiatives aiming at improvement.

**D. All Other Services**

## APPROACH

- Quality and effectiveness of services provided by the Department.

## IMPLEMENTATION

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

## RESULTS

- Adequateness and functionality of administrative and other services.

## IMPROVEMENTS

- Proposed initiatives aiming at improvement.

**Collaboration with social, cultural and production organizations****E. Strategic Planning, Perspectives for Improvement and Dealing with Potential Inhibiting Factors**

- Short-, medium- and long-term goals and plans of action proposed by the Department.

**F. Final Conclusions and recommendations of the EEC on:**

- The development and present situation of the Department, good practices and weaknesses identified through the External Evaluation process, recommendations for improvement.

### **External Evaluation Committee**

The Committee responsible for the External Evaluation of the Department of Information and Communication Engineering of the University of Western Macedonia consisted of the following five (5) expert evaluators drawn from the Registry constituted by the HQAA in accordance with Law 3374/2005 :

1. **Professor Panos Liatsis (President)**  
(Title) (Name and Surname)  
City University London, United Kingdom  
(Institution of origin)
  
2. **Professor Elias Siores**  
(Title) (Name and Surname)  
University of Bolton, United Kingdom  
(Institution of origin)
  
3. **Professor Yorgo Istefanopoulos**  
(Title) (Name and Surname)  
Isik University, Turkey  
(Institution of origin)
  
4. **Professor Nicholas Kyriakopoulos**  
(Title) (Name and Surname)  
The George Washington University, USA  
(Institution of origin)
  
5. **Dr Christos-Savvas Bouganis**  
(Title) (Name and Surname)  
Imperial College London, United Kingdom  
(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.

### 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?

The site visit was scheduled between the dates of 4-6 of November 2013, starting in the afternoon of Monday the 4<sup>th</sup> of November and departing in the morning of Wednesday the 6<sup>th</sup> of November.

The first meeting in the department of Information and Communication Engineering was scheduled for half an hour ( 16:30 – 17:00 hrs Monday ) but it lasted about an hour. During that meeting, the External Evaluation Committee (EEC) met the six faculty members of the department, the newly appointed Dean of the School of Engineering, the vice-chair of the department and the chair of the department who is also the president of the Governing Committee of the University.

Following this introductory session, a presentation of the university was given, narrating its historical transition from the original departments of the Aristotle University of Thessaloniki to its present form of the University of Western Macedonia with two engineering departments, namely the department of Mechanical Engineering, which happens to be adequately staffed and the department of Information and Communication Engineering , which has been understaffed since its foundation, in Kozani and the department for Pedagogical Studies in Florina. It was brought to the attention of the EEC that a third engineering department, that of Environmental Engineering, is scheduled to start next year. The chairman of the department left immediately after this presentation and was therefore unavailable to answer the questions of the External Evaluation Committee (EEC). The vice-chair of the department, who is actually an appointed associate professor in the department of Pedagogical Studies was available throughout the visit.

Next, there was a power point presentation for the department of Engineering Informatics and Telecommunications, concerning the infrastructure of the department, its laboratories, its technical equipment and its facilities. These meetings lasted until about 21:00 hrs.

On Tuesday November 5, the committee was given presentations about the undergraduate program and the doctoral program of the department.

Following that, there was a short presentation of the Erasmus program, which seems to have limited functionality and works primarily for Greek students attending European universities, while the reverse direction of mobility is non-existent.

Next, a presentation about industrial practical training was given. The EEC noted that this is not mandatory but rather optional.

The next presentation was about the research areas of the department and its doctoral students and the research programs in which the academic staff were involved.

Details were also provided about the participation of the academic staff and students in scientific or technological competitions and the awards gained, the participation of members of the department in scientific conferences and the paper awards they have received, and examples of co-operation with industrial and /or social and cultural organizations.

The committee was given a tour of the classrooms, the auditorium, the library and the laboratories in the main building of the department (which, the EEC found inappropriate and unsafe for the purposes of education) and following lunch with members of the department in the student cafeteria, there was a visit to the computer and informatics laboratories located in an annex building some appreciable walking distance from the main building.

The Committee met with all the academic members of the department including the two specialist scientific and teaching personnel who are also holders of doctoral degrees. The vice-chair of the department was also present. The Committee asked and was provided with samples of past examinations, laboratory reports and graduation theses.

Next, there was a meeting with the three administrative staff: the two members of the secretariat and registration services and the one librarian, who unfortunately does not possess suitable qualifications. The Committee appreciated the work and services of the administrative personnel, who give their best efforts to meet the increasing work load of the department, related to servicing both academic staff as well as students.

The following meeting was with the members of the IEC, i.e., the Internal Evaluation Committee, which consisted of two junior faculty members, while the student member was not available to attend. The EEC, while appreciating the efforts of the IEC, feels obliged to point out that the law ( 3374 / 2005) requires that the IEC is formed by senior members, at the level of professor or associate professor. The members of the IEC claimed that at the time of the formation of the IEC, there were no members in the department meeting those qualifications. The EEC strongly believes that junior members of staff do not have the

experience to do this evaluation successfully, and subsequently the Internal Evaluation Report forwarded to our EEC does not provide sufficient and explicit information about the functions of the department, its strategic plan, its formal procedures for different academic decisions and actions.

The next meeting was with three doctoral students who expressed satisfaction for the supervision of their thesis advisors; their availability in face to face meetings as well as in virtual meetings and their valuable guidance.

Following that, there was a meeting with about 15-20 undergraduate students at different years of their studies. The summary of this meeting is reported below:

- (i) Almost all students praised the teaching skills of the staff, their availability, their efficiency in tutorials and laboratory experiments, their fair and timely grading of assignments, reports and examinations. However, the EEC noticed that in the examination samples provided, there was no written feedback to justify the assigned grade in a particular exam question.
- (ii) The students expressed disappointment concerning the discontinuation of the previously existing three different directions of specialization, which had given them the incentive to choose this department.
- (iii) Another point of complaint was the reduced number of elective courses related to information and communication engineering subjects. The administration of the department explained that this was a result of lack of funds for the appointment of new faculty members or the employment of part-time academics to offer those courses.
- (iv) The students appeared to appreciate the benefits of the practical training in the industry or the public sector and they stressed that this training should be obligatory rather than optional.
- (v) A group of students who were active in organizing a workshop and developing a project on innovation and entrepreneurship with the participation of local industrial representatives were rebuffed by the chairman of the department and were refused the use of the facilities of the department.
- (vi) The graduating students working on their graduation thesis praised the guidance and help that they were getting from their supervisors.

Finally, there was a face to face meeting with three graduates of the department and one tele meeting over skype with a graduate, who is presently employed in a company in Holland.

The Internal Evaluation Report was prepared using the following sources and documentation:

- i) The statistical data concerning students provided by the secretariat / registrar's office
- ii) The limited number of questionnaires submitted electronically by the students for each course
- iii) The documents provided by the members of academic staff concerning their teaching and research activities
- iv) The two internal evaluation reports for the department of Mechanical Engineering and the department of Pedagogical Studies which were prepared in the past
- v) The comments of all faculty members of the department with regards to the initial draft report.

The report lacked completeness and the evidence materials provided were judged insufficient, since many issues were presented in a vague and generic fashion. This came to no surprise to the EEC as no senior staff was involved in the preparation of the internal evaluation report, despite the requirements (page 2, 2010-11). The EEC strongly believes that junior members of staff do not have the experience to do this successfully.

## **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?
- 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?

The goals and objectives of the curriculum were stated during the establishment of the department in the presidential decree of the ministry of Education (FEK A'192/2/8/2005). Namely:

- i) To cultivate and promote knowledge in the basic subjects of information and the technology of communications and networks.
- ii) To provide specialized knowledge in the current areas of information and communications engineering such as analysis of data, internet, analysis of signals and images, software technology, mobile and satellite communication.
- iii) To provide the students with the required background and tools for a sound formation leading to a scientific and professional career especially in companies of informatics and communications both in the private or public sector.

The only plan for achieving those objectives is the successful delivery of the programs specified in the Curriculum.

It appears that the objectives were decided through market research at the time of the establishment of the department as well as under the influence of the trends favouring informatics and communications during that period. The combination of those two areas was considered an attractive merger of sought out fields, which would attract incoming students to the newly established department of the University of Western Macedonia.

The standards used for creating the existing curriculum were the standards of the individual programs of information engineering and at the same time those of communication engineering. This unconventional combination of two different programs is almost non-existent in universities abroad, while there is a similar program in a Greek university which was established prior to the Information and Communication Engineering department in the University of Western Macedonia. The curriculum, having been designed for an engineering department, provides all the necessary background in mathematics, linear algebra, probability and statistics, physics as well as in informatics and programming, communications and networks.

There is no evidence that other stakeholders were consulted during the formulation of the objectives of the curriculum.

The curriculum is consistent with the objectives. However, the lack of established directions/specializations may pose a threat in the long term, due to the lack of focus. The program originally was offering three different directions with several supporting elective courses providing for an appreciable degree of specialization. Those directions were:

- i) Computer science, software development, structure and operation of computer

systems , database systems, electronics and theoretical informatics.

- ii) Telecommunication and networks, techniques of communication, design of communication networks and protocols
- iii) Advanced applications of informatics and communications related to signal and image processing, multimedia systems, human-computer interaction, bioinformatics and applications in biomedical engineering

The department was unable to sustain those directions due to lack of appointed academic staff as well as due to lack of funds to support part-time teaching staff necessary for the delivery of the specialization courses. This situation has caused dissatisfaction among students, who felt deceived as far as the opportunities offered by the original curriculum are concerned.

The current version of the curriculum is a modification of the one established by members of the original faculty, the majority of whom have now departed. The modifications done were the result of economical bottlenecks and consist of cases of merging two courses into one, reducing the number of elective courses, discontinuing one particularly important compulsory course, namely the course about compilers, while keeping as compulsory a course about automatic control systems, which may not be absolutely essential to graduates of such a program.

The current version of the curriculum was disseminated to students and the Departmental academic staff, however there was no consensus on the part of the students. There is no evidence that other stakeholders were consulted in this process.

Based on the present curriculum however, it is commendable that the professional rights of the department's graduates were confirmed as professional Information and Communication Engineers by TEE, the Technical Chamber of Greece.

There is no set procedure for revisions of the curriculum. The yearly internal evaluation of the departmental program is used for the minor or ad hoc revisions to improve the efficacy of the curriculum. During such modifications, the universal standards and trends in the specific areas are taken into consideration. This procedure, once again, does not involve consultation with the various stakeholders. The only feedback that is given consideration is the student evaluation questionnaires for each individual course module. However, the number of questionnaires submitted electronically consists only of a small fraction of the total number of the students enrolled in a course and subsequently cannot be considered as a reliable statistic.

#### IMPLEMENTATION

- How effectively is the Department's goal implemented by the curriculum?
- How does the curriculum compare with appropriate, universally accepted standards for the specific area of study?
- Is the structure of the curriculum rational and clearly articulated?
- Is the curriculum coherent and functional?
- 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 contents and structure of the curriculum are both in electronic format as well as hard copy. These records provide information about the courses, laboratories and their sequence

in the curriculum in reasonably good detail. The curriculum is a hybrid combination of informatics and telecommunications. It is an unusual combination that is not commonly found in many schools of engineering abroad. As such, the curriculum cannot be evaluated on the basis of some comparable programs. Nevertheless, since the focus of the curriculum is broad, it does not provide in depth knowledge in neither informatics nor communications. For example, the curriculum does not include a course in compilers, an essential component of a standard informatics curriculum. Although the computer laboratories are reasonably well equipped, the instrumentation laboratories are insufficient. The two laboratories inspected by the committee, namely the electronics laboratory and the communication systems laboratory were well organized.

In addition, the curriculum includes required courses that are not directly relevant to neither informatics nor communications, such as classical control and operations research. Under the circumstances, the curriculum cannot be considered coherent, although the material in individual courses is relevant to the subject matter of the course. A major defect of the curriculum is the absence of pre-requisites. Some upper level courses rely on material taught in courses in earlier stages of the curriculum. However, there is no mechanism of preventing students to register in courses for which they do not have the necessary background. The absence of such mechanism may also explain in part the high failure rate in some of the courses.

The resources available to the department for implementing the curriculum are totally insufficient. There are only six regular faculty members to cover the five years of the curriculum. Consequently, the Department relies on part-time staff on contract-basis for approximately 50% of the courses taught. This is not an acceptable practice. The lack of sufficient regular teaching staff has led the Department to eliminate previously offered options in the last two years of the curriculum. This action caused consternation among the students, who claimed that they were misled after they enrolled in this specific program. A number of students claimed that they chose the University of Western Macedonia because the curriculum in informatics and telecommunications offered them the option of choosing subjects that would allow them to pursue their specialized career objectives.

The lack of a sufficient number of faculty is the least of the inhibiting factors. The Department is staffed primarily with junior level faculty with no experience in curriculum development, who nevertheless have done a remarkable job in delivering knowledge in spite of many constraints. Although the Department was established in 2005, it still does not have a single member at the rank of full professor. The Committee was informed that efforts to recruit full-professors were not supported by the administration of the university.

The office spaces, laboratories, classrooms and the area allocated to the “library” are housed in a space above a supermarket that seems to have been converted from a storage space to university space. The “library” collections are primarily books that have been distributed by the State as part of the officially-sanctioned supplemental material. This is unacceptable. Furthermore, there is no space for the students to study! To make matters worse, due to lack of staff, the “library” hours are 8:00AM-2:00PM. In summary, the current curriculum cannot be implemented effectively also due to the lack of appropriate physical facilities.

## 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?

It is impossible to measure the success of the implementation of the curriculum in achieving the predefined goals of the department, because the department has not established and published such goals and objectives. During the discussions with the faculty, it became clear that the department is still searching for its identity. The current faculty was appointed to the department with a pre-existing curriculum that did not have a clear focus. Due to the lack of a sufficient number of faculty members, the department supplemented the curriculum with courses from the department of mechanical engineering and eliminated a number of popular options within the curriculum causing resentment by almost all students. In searching for a new identity, some faculty members are considering moving the department towards the area of energy with no clear vision of how to combine energy with informatics and telecommunications. At the same time, the students expressed strong concerns about the impact of the curriculum on their ability to safeguard their professional license rights.

With the exception of several samples of graded laboratory experiments shown to the committee during the visit to the Electronics Laboratory, the department did not provide the committee with samples of graded course work. Thus, the committee could not evaluate the outcomes of the courses taught. The department provided the committee with access to the course management system e-CLASS through which the committee was able to inspect some course material developed by the faculty. This mechanism was not satisfactory, because no graded student works were available. The committee expected to have the course material organized in files in a single room for inspection. The committee believes that the major contributing factors for this deficiency are a) lack of experience of the junior members of the faculty and b) the unsettled status of the mission and goals of the department.

The department was unaware of the need to have documented goals as well as procedures and metrics for measuring and evaluating outcomes and achieving the goals. With respect to the change from options to a single curriculum, the department was aware of the problems, but unable to correct them because of lack of resources.

One of the presentations of the department provided data showing the ratio of those passing the course to those taking the examination. These ranged from 13.8% to 100%. The department does not have established procedures for assessing the significance of these results and taking corrective actions where needed.

With respect to using the input from constituents, there is no formal mechanism of soliciting and evaluating feedback from the alumni with respect to the relevance of the program and its utility to the labour market. Nevertheless, individual faculty members maintain informal contacts and receive feedback from external stakeholders.

#### IMPROVEMENT

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

The department does not have a clear plan for improving the curriculum. As stated previously, the major defect of the curriculum is the absence of focus. Unless and until the mission and objectives of the department are clearly identified, improvements are not possible. A major step toward improvement would be to urgently appoint senior faculty members with qualifications in engineering informatics and telecommunications, who would

have appropriate experience in managing the Department and expertise in curriculum development so as to deliver its educational mission.

## ***B. Teaching***

### APPROACH:

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

Please comment on :

- Teaching methods used
- Teaching staff/ student ratio
- Teacher/student collaboration
- Adequacy of means and resources
- Use of information technologies
- Examination system

The Department delivers its curriculum through formal lectures, tutorials and laboratory classes, as appropriate. There are limited examples where lectures are recorded and uploaded on Youtube, which may better support student reflection and revision. Most modules require that students spend approximately 75% of their time in classrooms attending lectures and tutorials, with an estimated 25% spent in laboratories, depending on the nature of the module. Typically, a module has 4 hours of teaching per week, consisting of lectures, tutorials and/or laboratories. The number of laboratory exercises varies depending on the nature of the module.

Formal lectures and tutorials are delivered to the entire cohort. Attendance in formal classes is not mandatory, with an adverse impact on the successful achievement of the modules' learning outcomes. As previously mentioned, due to lack of Departmental faculty members, a significant number of modules in subjects such as mathematics and physics is shared across the Departments of Information and Communication Engineering and Mechanical Engineering, thus leading to large class sizes. This poses a threat to the establishment of a solid foundation in these subjects, by reducing the opportunities for student participation during formal classes and eventually discouraging students from attending. Additionally, this leads to lecture rooms being overcrowded, and potentially reducing the overall student experience. Moreover, faculty from the other department teach those courses from the perspective of the discipline of that department and not from that of informatics and telecommunications.

There is a limited number (six) of permanent academic staff to deliver the curriculum. Thus, the department is forced to rely on two permanent specialist scientific and teaching personnel and the hiring of a large number (twenty) of temporary teaching staff, employed on fixed-term contracts, bringing the total number of teaching staff to 28. In the academic year 2012-3, there were 344 registered undergraduate students (n+2 years of study). When considering the number of permanent Departmental teaching staff and the total number of teaching staff, the resulting student-staff ratios are 43:1 and 12:1, respectively. However, the ECC notes that the lower ratio is deceiving. Students taking courses taught by full time staff have the benefit of access to the faculty outside classroom hours. Part time faculty, typically, following the delivery of their lectures are not typically available to provide help to the students outside the classroom. In principle, the practice of hiring large numbers of temporary teaching staff, while necessitated and justified by the lack of permanent personnel, may impact on the quality of delivery of the curriculum, in terms of lack of uniformity in the style and organisation of the taught material. However, the EEC would like to positively comment on the contribution, efforts and commitment of such staff on the basis

of the feedback it received from the students, the regular faculty and the four temporary staff that we had the opportunity to interview. Nevertheless, the staffing of an engineering programme with a substantial number of part-time personnel has the potential of compromising the quality of the programme.

With respect to the laboratory component, the EEC has identified an imbalance in the offering of laboratory classes between the areas of informatics and telecommunications. There is a dearth of laboratory sessions for telecommunications compared to informatics. Examples where this occurs are the following modules: Introduction to Telecommunications, Telecommunication Networks, Signals and Systems Theory, Digital Signal Processing, Digital Image Processing, Mobile Telecommunication Networks, Optical Communications and Networks. This is a structural weakness, given that the curriculum is expected to deliver expertise and competence equally in both fields. By and large, the vast majority of laboratory classes are carried out using simulation packages, which is appropriate for a good number of information engineering modules; however, students have limited opportunities to receive training in laboratories using real instrumentation. In terms of existing laboratories, the available equipment is considered sufficient. The Department has recently invested in purchasing some additional teaching equipment, which should provide training opportunities and practical work starting in the academic year 2013-2014. The EEC was impressed by the enthusiasm and commitment of the academic staff involved in the laboratory classes. It also observed that the Department makes use of appropriate state-of-the-art software in relevant modules and laboratory classes, for instance, Multisim, MATLAB, Java SDK, ARM IDE, Hypersim, etc.

The number of students per session is determined by the available workstations; however, there is limited support from technical personnel with the bulk of the effort being carried by the module leader (permanent academic/research staff and temporary staff).

There is good collaboration between students and staff. Teaching staff make themselves accessible and available to students. Specifically, the EEC did not have the opportunity to evaluate the interaction of students and staff in actual lectures and labs in person; however, positive feedback was given by students. An exception was the comments towards the Departmental hierarchy, and specifically the self-designated Chairman of the Department, who is the President of the University Governing Committee. The EEC received extensive comments from the students that the President is dismissive and disrespectful towards the student body.

The Department uses the e-CLASS electronic content system; however, the current content of the modules is not uniformly populated, with a number of modules containing basic information, rather than the entire range of learning material for each of the modules.

Grading for each module is done according to its teaching structure, and in the majority of cases, by continuous assessment of course work and a final examination. The diploma thesis grade is determined by a committee of two members of staff and is based on assessing the written report and an oral presentation. The Department did not provide the EEC with neither clear guidelines for the diploma thesis preparation, including a template for the document, nor its grading. The EEC reviewed a very limited number of examination papers and scripts. Based on the information presented, it was felt that the standard of the examination papers was appropriate; however, it was not possible to determine how the particular grades were arrived at because there were very few or no comments, to provide personalised feedback to students. It was noted that there is no reported

methodology/guidelines to evaluate the appropriateness of the examination papers, and no quality assurance system for regards to examination paper marking.

#### 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?
- Linking of research with teaching
- Mobility of academic staff and students
- Evaluation by the students of (a) the teaching and (b) the course content and study material/resources

There is no quality manual to guarantee that universally accepted standards are used in the design of the learning material as well as appropriate metrics for the assessment of learning outcomes. There is no process of peer review of teaching, which could be used to assist junior members of staff and temporary teaching staff to advise on potential improvements in teaching quality. A mentoring system for newly recruited permanent staff and temporary teaching staff could be used to assist in receiving support from experienced teaching staff as well as the means to implement a system for teaching standards improvement.

The Department did not provide the EEC with a representative sample of examined course material; thus, the EEC cannot evaluate the appropriateness, completeness and quality of the material covered in the programme on the basis of the course outcomes. From the learning material available on e-CLASS, some was found to be of good quality and up-to-date. Students receive an electronic copy of one of the books recommended on the reading list of each module. The library has hard copies of the other reading list material. The EEC concluded that this arrangement does not meet even the minimum requirements of a university library. Additional investment is required in terms of reference books and other electronic material. In terms of resources, classrooms are equipped with basic equipment.

The EEC feels that the linking of teaching to research is at low to moderate levels during the teaching semesters. In the final semester, this is intensified through the requirements of the diploma thesis and the associated one-to-one meetings between staff and students. The faculty considers that this situation needs to be improved, but it has not proposed any concrete action for doing so.

There are limited levels of student mobility and moderate levels of faculty mobility, primarily through the ERASMUS programme.

The EEC met a group of 15-20 students who expressed satisfaction with the quality of teaching and the approachability of the faculty. However, they conveyed their frustration in terms of the unilateral decision to abolish specializations after the third year. The Department operates an electronic means of collecting student feedback; however, participation rates are rather low, thus raising doubts about the statistical significance of the results. In addition, there is no mechanism for analyzing the data collected through the evaluations in order to make improvements in the evaluated courses. Departmental staff reported that a number of modules are characterized by low attendance rates, however there is no strategy to analyze the reasons behind this, and subsequently the development of instruments to rectify this. The Department does not have a policy for rewarding excellence

in teaching, which could facilitate further improvements in teaching quality.

## RESULTS

Please comment on:

- Efficacy of teaching.
- Discrepancies in the success/failure percentage between courses and how they are justified.
- Differences between students in (a) the time to graduation, and (b) final degree grades.
- Whether the Department understands the reasons of such positive or negative results?

There are no procedures for evaluating the efficacy of teaching. This could be achieved through the development of a mechanism that measures the degree of achievement of learning outcomes in conjunction with examination grades. Feedback from students indicated that there is good relevance to the learning outcomes in the context of work-based placements, although the sample size is low.

The EEC noted a major lack of uniformity in the reported success rates between modules. The Department does not operate a system of collecting evidence-based information to justify these discrepancies. The collected statistics include students who submit blank exam scripts, thus biasing the presented information.

The average time that it takes for students to graduate is 6,4 years. This is considered quite long, however the Department does not have a means to determine the reasons for this. Individual module exam results could offer a means of kick-starting a reflection process and suggesting means to rectify the long graduation time. The final degree grades varied in the last 4 years in the range of 7,16-7,52. The EEC noted a decreasing trend from 2010 onwards, however overall grades are considered as expected. These results should be interpreted in the context of relatively low numbers of graduates, approximately 15 students per year. The distribution of grades in the last two years shows that there are no students with grades higher than 8.5 (excellent) in 2012 and 2013, as opposed to previous years. The Department does not appear to understand the reasons behind these results. The EEC was not able to determine whether these graduation statistics were due to stricter grading standards or whether they reflect a difference in the quality of the students the Department attracts.

## IMPROVEMENT

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

The Department intends to improve the quality of teaching through: a) the standardisation of objectives and content in the individual modules, b) the reinforcement of the teaching and research infrastructure, and c) the recruitment of additional members of permanent academic and specialist scientific and teaching staff.

The EEC feels that the above suggestions are appropriate, however the Department does not have a detailed action plan to achieve this and to attract the required support from the

hierarchy of the University. In addition, several improvements can be achieved through self-evaluation and acting on the feedback provided by the students, with appropriate reporting of the actions taken.

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

The Department does not have a policy for organising research and has not set any main research objectives. The Internal Evaluation report provides a set of objectives, however the EEC cannot determine the Department's research character and nature.

Academic staff set their own research objectives without any common goal in mind. There is some collaboration between academic staff and staff in other National and International organisations, but these are at the personal level and not at the Department/Institution level. The Committee noticed that although there is a large number of collaborations in place, very few of them show concrete outcomes such as joint publications, grants, etc.

The Department has not set any internal standards for assessing the research performed by its members. The Chairman of the Department is currently responsible for assessing and overseeing research, however the EEC questions the degree that this can be achieved, as the current Chairman is a Professor of Political Sciences and not an expert in the research fields of the Department. Thus, even though a high-level view of the research activities of the department can be obtained, the Committee feels that a senior level expert in the department's research areas would have the potential to better guide/assess the research activities.

### **IMPLEMENTATION**

- How does the Department promote and support research?
- Quality and adequacy of research infrastructure and support.
- Scientific publications.
- Research projects.
- Research collaborations.
- Research studies/lack of PG studies

The department does not have any mechanisms in place to support and promote research. The University, through its Research Committee, has an overseeing role in terms of the operational matters of research projects and provides basic research support, e.g., information on new calls for proposals. The fact that there is a limited number of academic staff in the department as well as a lack of funding prevents them from participating in conferences.

On the positive side, undergraduate students are involved in the research activities of the department to a limited extent (e.g., 10 students over for 2010-2011 academic year). The EEC concluded that the Department does not have a specific action to support the involvement of undergraduate students in research activities.

The research infrastructure in the department is limited. There are no designated research laboratories, hence teaching laboratories are used in research. However, only a limited number of research activities can be supported by the teaching laboratories, and these are

mainly the ones that are based on software simulations. Access to e-journals and e-books is limited due to lack of funding. The lack of office space for PhD students and temporary teaching staff does not support the development of a vibrant research environment.

PhD students are supported by their supervisor and a PhD committee throughout their studies. This arrangement provides a good means of supervising and assessing the students' progress. The EEC had the chance to talk to a PhD student and received positive comments in terms of research supervision (e.g., frequency of meetings, quality of support, etc.).

Over the last 4 years, the departmental faculty produced, on average, 1.4 journal publications /staff/year and 2.2 conference publications/staff/year, which is considered to be above average. However, the above outputs were mainly due to some senior members of staff, who are no longer with the Department (e.g., Dr. M.C. Georgiadis, Prof. I. Dimitropoulos). Thus, the Department's current output is much lower, which also reflects the manning of the department by junior staff.

The EEC noted that the research outputs of the Department lack uniformity. Specifically, the number of research outputs per member of staff varies significantly. A possible explanation could be the lack of infrastructure and senior staff to guide, support and advise junior staff in their research development. There is a lack of coherence in the research interests of the departmental faculty members that acts as an inhibiting factor for developing critical mass. Also, the EEC noted the absence of the Departmental top management staff in the contributions of the research outputs of the department.

There is a good number of infrastructural development projects, however the number of awarded competitive research projects is limited, and the EEC noted that the participation of staff members in those is also limited. Moreover, academic staff participate as co-investigators in funded projects awarded to primary investigators from other institutions.

There are several research collaborations, however the outputs are primarily research publications rather than national and international research projects. Due to lack of research infrastructure, participation is limited to individual staff members, which the EEC strongly acknowledges, however it does not translate to success at university/departmental level.

The Department runs a PhD programme, however PhD recruitment is limited to graduates external to the Department. There is no established route to internal PhD recruitment, due to lack of Masters level studies.

## RESULTS

- How successfully were the Department's research objectives implemented?
- Scientific publications.
- Research projects.
- Research collaborations.
- Efficacy of research work. Applied results. Patents etc.
- Is the Department's research acknowledged and visible outside the Department?  
Rewards and awards.
- Citation numbers and number of best paper awards and participations at international events.

The lack of research objectives and strategy means that there are no clearly defined research targets. However, collectively and indirectly, individual staff members are successful in establishing their own research objectives, through research publications and participation in research and development projects.

The number and quality of scientific publications of the past 5 years, which covers the extent of this evaluation, is considered good. However, recent staff movements, as previously mentioned, resulted in lower research outputs. The few staff at Associate Professor level demonstrate a good academic record with appropriate publications, both in terms of quality and quantity.

The Department has managed to attract a number of National and International competitive research projects in the recent past. However, the Committee noted a significant decline in the award of competitive research projects. The vast majority of current projects are for educational and infrastructural development purposes.

There are two awarded patents, registered with the Greek Patent Office, however they have not materialised into commercial products. Research work is in its early development phase and thus the EEC feels that there needs to be significant investment in terms of academic and research staff (in order to establish critical mass) and infrastructure to successfully deliver in terms of impact to industrial and societal stakeholders.

There is a good number of citations (22.6/staff/year) for the last 5 years, but the Committee feels that the above number is not representative of the current structure of the Department. Following the departure of senior staff members, there is a threat for the Department to lose its current visibility and associated research standing.

Even though, the number of invitations for talks (4 over the past 5 years) and best paper awards in International conferences (3 over the last 5 years) appear to be low, the EEC feels that this is a good reflection of the Department's structure that is heavily based on junior researchers. However, it should be noted that the above results are attributed to only three/four members of staff, and the Committee feels that this further reinforces the urgency for hiring senior academic staff, at Professor level, to help expand and improve the visibility of the department.

#### IMPROVEMENT

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

The department has proposed a list of possible actions that may help to improve research activities. In summary, the department proposes the introduction of a joint Masters level degree in conjunction with the Department of Mechanical Engineering, the hiring of new members of staff that would support teaching and research, and the development of research facilities, which requires investment from the State/University.

The above list is rather limited and does not provide sufficient detail on how each proposed improvement will be performed as well as how it will impact on the departmental research. There are no specific aims on the hiring of new members of staff, no specific plans on what types of research facilities are needed and what is their importance, and finally no details on

the Masters program that the department aims to introduce (e.g., there is no motivation, focus, and/or aim). The EEC feels that it is of great importance for the department to firstly set its research objectives and outline a strategic plan for achieving them.

Since the creation of the department in 2005, no senior level of staff at Professor level has been hired. The EEC believes that the responsibility for the lack of actions at this level lies with the senior management of the University. An indicator of the lack of support by the University management is the fact that although the Public Power Corporation gave to the University 3 funded chairs, none was allocated to the department.

## **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).
- Does the Department have a policy to simplify administrative procedures? Are most procedures processed electronically?
- Does the Department have a policy to increase student presence on Campus?

There are limited services provided in terms of admin support, and library opening times available. Furthermore, any social and sporting activities are close to nonexistent. The available infrastructure facilities are not representative of Higher Education Institutions (HEI) minimum standards and those available are rather questionable in terms of health, safety and security. For example, neither the library nor the main building hosting the Department have any designated fire exit. Despite the repeated warnings from staff and students, the situation has not been rectified and the building continues being used, thus posing a risk to the safety of staff and students.

There is a relatively satisfactory level of administrative procedures. The electronic support services available to the students or staff are insufficient and need further progressive improvements. Areas of potential improvement include teaching loading, timetabling, room bookings, internal evaluation, research outcomes repository, grading, etc.

The department aspires to increase student presence, however there is no policy to achieving this and no associated plan. There is no campus per se and space is limited. Nevertheless, existing space is not optimally utilized throughout the day. Increasing the number of students, as imposed by the Government, under the present physical conditions, will be detrimental to the quality of educational services offered by the department.

### **IMPLEMENTATION**

- Organization and infrastructure of the Department's administration (e.g. secretariat of the Department).
- Form and function of academic services and infrastructure for students (e.g. library, PCs and free internet access, student counseling, athletic- cultural activity etc.).

Support staff to academic staff ratio is adequate, but the increasing intake of students and the frequent staff changes are detrimental to the efficient and effective operation.

Existing library facilities are totally unacceptable. Books offered by the library primarily reflect the indicative reading list of the courses. Reference books and up to date periodicals are missing and access to electronic library facilities has been suspended for the time being with no immediate plans in the near future to rectify this situation. No organized and systematic student advisory services is provided except for the case of supervision of diploma theses. In a department as such, one would expect full WiFi accessibility in all parts of the building. There is a total lack of any student facilities for athletics and other cultural and social activities. Commendable is the student body in its success in establishing the local IEEE student branch, despite the lack of support from the Head of department, as pointed

out by the students. There are no dormitory facilities for students with limited financial means. There is no transport services to and between buildings. The committee did not notice access for students with special needs in all buildings, however there are lavatory facilities available. The liaison / alumni services do not meet expected minimum standards, e.g., there is no systematic collection of data from past graduates.

#### RESULTS

- Are administrative and other services adequate and functional?
- How does the Department view the particular results.

Administrative support staff has been praised by the academic staff and students for their diligence, commitment and good will. However, as per above, such services leave plenty of room for functional improvement, particularly in view of increasing student numbers and require fundamental changes, with financial commitments, for any improvements to have any meaningful effect.

The department is self critical in its approach in the internal evaluation report and has pointed out on page 75 of the internal evaluation report some additional deficiencies that need to be resolved.

#### IMPROVEMENTS

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

The suggested changes, as outlined in the Internal Evaluation report, all revolve around substantial additional financial commitments that need to eventuate, but under the current financial constraints, implementation of any improvements is questionable .

Plans to merge the two departmental libraries (Mechanical Engineering and Engineering Informatics and Telecommunications) were proposed and verbally communicated. Plans for a single campus have been delayed until the implementation of the new ESPA 2014-2020 programme, however there are no concrete plans on how to achieve this.

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

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

There are positive steps to increase the visibility of the department and both academic staff and students are contributing to such activities. Visits to/by schools and industry are sporadic and not coordinated centrally. There are no social or cultural activities organised or supported centrally, which is a pity. It was conveyed by the students that one of their initiative in the area of innovation and entrepreneurship with input from the business community was met with indifference by the Chairman and any further activities ceased.

### ***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 terms of the strategic planning, the EEC has the following comments:

To the Department: There is a lack of identity in the Department, which impacts upon the entire spectrum of its teaching and research activities. This may be explained by the lack of coherent recruitment strategy, specifically senior experienced staff, who would define its mission, set the goals and hire and provide guidance to the appropriate junior faculty in order to deliver the desired outcomes. As a direct result, it comes as no surprise that there is no published strategic plan. However, in the internal evaluation report, there is a list of desired short- and medium- term actions. Nevertheless, there is no mechanism/methodology for achieving those goals. Specifically, in terms of:

- UG studies: The department has stated that it plan to make changes to the curriculum, however it does not have a clear idea what those changes would be, including the focus of the programme, the metrics to measure quality and efficacy and the means of delivery. In discussions with departmental staff, it was suggested that due to the presence of PPC generation facilities, energy could be one of the focus areas of the Department's programme. It should be noted that the expertise of the current members of staff does not support developments in this area, and a clear pathway needs to be identified, including staffing requirements, in order to pursue such an option.
- PG studies: The faculty expressed interest in developing a Masters level programme jointly with the Mechanical Engineering Department without having specified the subject area. Overall, there are medium-term plans to deliver lifelong and distance learning programmes, however the areas of focus and the means to implement these are not defined.
- Research: There is no clearly articulated strategy for research development, including a focused research plan, and the specific resources needed to achieve it. The lack of critical mass and specialist research resources is inhibiting the successful involvement in competitive grant bidding. There is a lack of institutional support in the preparation and submission of research grant proposals.
- Services: There is a lack of library resources (books, journals, e-journals and e-books as well as reading space), coupled with detailed planning for investment in personnel: a) qualified library staff to allow the operation of the library over longer periods of time, b) to support provision of technical services, and c) conduct of laboratory

sessions to meet the rising needs of the student population.

To the Institution: A major inhibiting factor at University level is that the Governing Board of the University does not take any action to ensure that the Department is staffed with appropriately qualified senior academics. There should be a policy to ensure that the strategic planning of the University delivers equitable distribution of funds in a transparent and accountable manner, providing for sustainable growth at departmental level.

To the State: The inhibiting factors are the lack of funds provided by the State for physical premises (campus), infrastructure (equipment and services), and investment in human resources (academic, technical and administrative). At a regional/city level, there is a lack of commitment and support in resolving urgent issues related to the housing of the Department, when more suitable buildings are currently vacant and available, and in addition some contribution/flexibility towards student transport. The EEC recommends that, until the Department has the requisite number of senior faculty to make it self-governing, the external Governing Committee must be composed of senior academics that possess similar qualifications as those who are eligible to be appointed as Professors and Associate Professors in the Department.

There is no mention of a long-term plan, however this is not surprising in view of the absence of experienced senior faculty members who would have the experience and perspective to develop such a plan and to the uncertainty inherent in the present economic crisis.

As mentioned above, the actions envisioned by the department and mentioned in the internal evaluation are general and not well defined.

--

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

In its present form, the Department of Information and Communication Engineering is not a viable university department in terms of delivering on its educational mission. It exists in an entity, the University of Western Macedonia (UOWM), that is not a university in the commonly understood sense of what constitutes a university. It consists of an Engineering School with two departments located in Kozani, a School of Education with two departments, and an independent department of Applied and Visual Arts. The latter two are located in Florina, some 80 kilometers away. UOWM does not have either a Department of Physics or a Department of Mathematics which, in traditional universities, provide the essential scientific and mathematical components of the engineering education. UOWM is managed by a governing board, whose president is a Professor in the Department of Political Science of the Aristotle University of Thessaloniki, the vice president is a Professor in the Department of Agronomy and Surveying Engineering, also of the Aristotle University of Thessaloniki, and only two of the six members of the board are from UOWM, but none from the Department of Engineering Informatics and Telecommunications. In effect, UOWM operates as an appendix of the Aristotle University of Thessaloniki.

The management structure of the department is unacceptable. The general assembly of the department has been appointed by the president of the governing board of UOWM and consists of a president, who is also the president of UOWM, a deputy president who is an Associate Professor in the Department of Primary Education of the UOWM, six regular members of the department, and two Associate Professors, one from the Department of Mechanical Engineering and the other from the Department of Informatics of the University of Thessaly. It is not appropriate for the University to operate an engineering department, managed by officers who are not even engineers. During the site visit, a number of indicators have led the EEC to conclude that the department is de facto managed by the president of the assembly. The EEC condemns the use of a political scientist to manage an engineering department.

Since its formation in 2005, the department has not functioned as an autonomous

department, because, as the EEC was informed during the initial briefing by the president of the departmental assembly, the department has never had a sufficient number of senior faculty members at Professor and/or Associate Professor level to be considered autonomous according to the law. To become autonomous, the department must have at least two Professors and nine permanent faculty. Consequently, over the years, it has been administered by the appointed general assembly that is presided over by the president of UOWM. Regrettably, past and present presidents failed to attract/appoint senior level faculty, which is necessary to make the department autonomous. Thus, to this date, the Department is not staffed by appropriate faculty to help it develop into a viable unit. The fact that the department has been administered in this manner, since its creation some eight years ago is a major failure in management, and responsibilities need to be sought for its status today.

The current faculty is young and enthusiastic but is lacking the experience in efficiently running a department. Even those who were Assistant Professors in the department and were subsequently appointed to the rank of Associate Professor have not had significant experience in developing educational programs. The absence of even a single Professor with experience either in the fields of informatics or electrical and computer engineering with specialization in communications is a major handicap. To make matters worse, the title and mission of the department, as outlined in the law establishing it, were not the result of any consideration of the educational and professional needs of the region of Western Macedonia. The EEC was not able to identify any undergraduate engineering programs in established universities outside Greece of such hybrid nature.

In Kozani, the facilities are spread in three different locations across the city. The physical plant, where the Department of Information and Communication Engineering is housed is unfit for educational purposes. It is located above a supermarket in a space that has been converted from storage space to classrooms, laboratories, library and office space. The EEC was informed and actually noticed that the facilities do not meet safety standards.

The faculty members of the department of Information and Communication Engineering have expressed their readiness to change and improve the academic performance of their department in spite of the obstacles they face. For example, four (4) positions at the level of Assistant Professor were made available in 2007 and qualified candidates were subsequently selected. Yet, to this date, their appointment has not been approved by the Greek Ministry of Education. Two of the candidates have agreed to work with part time appointments in the department, while holding similar part time appointments with other universities, whereas it is not clear whether the other two candidates will be available if and when their appointments are approved.

In conclusion, the department is not sustainable in its present state. It should either be given the resources to develop into a sustainable autonomous engineering department, be merged with the School of Engineering of the Aristotle University of Thessaloniki, or be abolished.



### The Members of the Committee

Name and Surname	Signature
1.	_____
2.	_____
3.	_____
4.	_____
5.	_____