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**A .T.E.I.Θ.**  
ΤΜΗΜΑ ΗΛΕΚΤΡΟΝΙΚΗΣ

ALEXANDER TECHNOLOGICAL  
EDUCATIONAL INSTITUTE OF THESSALONIKI  
**A .T.E.I.Th.**  
DEPARTMENT OF ELECTRONICS

## **Report of Internal Evaluation**

ALEXANDER T.E.I. of THESSALONIKI  
School of Technological Applications  
Department of Electronics

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## Prologue

The process of internal evaluation in the Department of Electronics of the Alexandrian Technological Institute of Thessaloniki took place for the first time in the period 2007-09 and it will be repeated every four years. The internal report was prepared by the Board based on the instructions of the Principle of Quality Assurance (P.Q.A.) for higher education in 2008-09, preceded by a lengthy debate between the educational staff of the department during the academic year 2007-08. This report records the self-assessment section by the permanent and temporary teaching staff and the students. The goal was to be reflected in the most objective way the characteristics of the department, related to the structural, administrative, educational and research strengths and weaknesses. The strengthening of the positive points of the department and the solution of the weaknesses, combined with the increase of teaching staff and funding will mark the further evolution of the department. The consequence of these facts will be the improvement of service knowledge to the students, the participation in a larger number of research programs, and the increase of publications in international journals and conferences.

The structure of the evaluation report was based on the model of the P.Q.A., while the questionnaires for students and the inventory sheets of the educational staff were adapted to the needs of the department, by unanimous decisions of the Internal Evaluation Group.

The team of the internal evaluation (T.I.E.) in the Department of Electronics would like to thank the teaching and administrative staff of the department and its students for the crucial contribution to the evaluation process and the writing of the report. The team hopes and expects that this report will trigger the full advancement of the department.

## **1. The process of internal evaluation**

*This section includes a brief description, analysis and critical evaluation of the internal assessment process and suggestions for further improvement.*

### **1.1. Description and analysis of the internal assessment in the department.**

#### **1.1.1. What was the composition of T.I.E.?**

The Team of Internal Evaluation (T.I.E.) consisted of the following teaching staff (T.S), members of the department:

1. Chatzigkaidas Athanasios, Professor
2. Bamnios Georgios, Professor. Replaced by Professor Marmorkos Ioannis, at the stage of writing the internal evaluation report.
3. Kioskeridis Iordanis, Associate Professor.

#### **1.1.2. How and with whom the T.I.E has worked in shaping the report?**

The T.I.E worked with all the permanent members of the scientific staff, and also with all the scientific and laboratory partners in the department. The team also worked with all the members of the administrative and technical staff in the department. All the associates in the report took into account the criteria of P.Q.A and the recording of all the required data, while many frequent meetings were held for sharing and controlling information and data.

#### **1.1.3 What sources and procedures were used to obtain information?**

For extracting information it is used:

- The files of the Department.
- The records of the scientific members related to laboratory equipment.
- The views of students on the teaching staff, through the completion of the appropriate questionnaires.
- The website of the department.
- Sources on the Internet (Web of Science, Scopus, etc.) in order to reveal the research activity of the department's teaching personnel.

#### **1.1.4 How and to what extent the report was discussed within the Department?**

Throughout the academic year 2007-08 the process and the details of the internal evaluation were discussed in the general meetings of the department's Board. All the scientific staff of the department participated in the writing of the report by exchanging views and information.

### **1.2. Analysis of strengths and difficulties has arisen during the process of internal evaluation.**

During the process of internal evaluation, it was recorded the educational and research activities of the academic staff, the efficiency of the administrative staff and the department's technical & logistical infrastructure. Thus, it was highlighted the positive aspects of the department and elements that still require improvement. In the difficulties during the evaluation someone should include the thoroughly research into old records of the department. These old records were not informed at an optimal level, since in the past it was impossible someone to predict the utility of the updating administrative files for future assessment.

### **1.3. Proposals to improve the process.**

The Board considers that the process of internal evaluation has been covered adequately and efficiently by the Principle of Quality Assurance. In a future evaluation process, the department is determined to show greater readiness to ensure that the questionnaires will be given to the student's quite earlier, while the members of the internal evaluation team shall have sufficient processing time.

## **2. Presentation of the Department**

*This section outlines the department and its main operating parameters.*

### **2.1. Location of the Department.**

Since June 2001 the Department of Electronics has moved to a new building which is located at Sindos, Thessaloniki, in the area of the Alexandrian Technological Institute (ATIT). The best way for someone to arrive at the department is to follow the National Road Thessaloniki - Athens and turn right at the 9<sup>th</sup> km to the industrial district of Sindos. The ATIT area is located 1 km after the turn, on the driver's right side. The organisation of Bus Transport in Thessaloniki Urban serves the ATIT area with the No. 52 buses that leaves from the Railway Station and ends in the ATIT area. In order someone to reach at the building Electronics department, he/she should cross the long corridor to the main building of the ATIT, go out of the building, turn left and proceed parallel to the road. The building is located in the end of this road, after the basketball court.

### **2.2. Historical Evolution of the Department.**

The story of Department of Electronics starts the year 1936. That year was established in Thessaloniki the private school 'Euclides' in order to provide secondary and higher education to a large number of technical students. Among these technical studies, the section of Radio Electronics was considered as pioneer for the era and was attended by High School graduates. The study lasted one year and the graduates were able to continue in Radio Electronics School for another two years. In 1965 the above studies were consolidated into a new school with three years of study, called 'Higher School of Electronics'. In 1981, this School became public and it was characterized as 'Department of Electronics', part of the School of Engineering Technologists. Finally, from 1983 till today, the department is part of the Technological Institute of Thessaloniki, and belongs to the School of Applied Sciences. It should be noted that for a long time the School of Electronics with its previous structures, was the only educational institution providing education in the field of Electronics in Northern Greece.

#### **The Department of Electronics Today**

The Department of Electronics belongs to the School of Applied Sciences of the Alexandrian Technological Institution in Thessaloniki. Today, the Department of Electronics has developed a broad program studies with a large number of laboratory courses. The program lasts eight semesters, the last of which includes mandatory supervised practice in the profession and the preparation of a thesis.

#### **2.2.1 Teaching, administrative and laboratory staff of the Department during the last five years.**

The teaching staff consists of 84 members of the Department (Table 11-1). Sixteen (16) of them have a permanent position (tenured or tenured track), while 68 are laboratory scientists under fixed-term contracts. The administrative staff consists of 2 persons. For other services the Department is served by the central administration of the technological Institute.

#### **2.2.2 Number and distribution of students by level of study (undergraduate, graduate, doctoral) in the last five years.**

Approximately 1500 undergraduate students (Table 11-2) study in the Department. This number remains fairly constant over the last five years, with variations of 50 students each year. Since 2008, the Department of Electronics has conducted a postgraduate program in collaboration with Brunel University in Britain. This program serves 25 people each year. The department cannot host PhD students, because this is not allowed by the national laws.

## **2.3. The goals and objectives of the Department.**

### **2.3.1 Aims and objectives of the Department.**

The long history of the department is due to its graduates' excellent training skills. The graduates of the Department of Electronics were and still are those who introduced, consolidated and continue to develop the field of Electronics in Northern Greece, both in private and public sectors. The Department of Electronics aims to provide complete theoretical and technological education to its students. Thus, it has been developed a broad course program, including a large number of laboratory courses.

### **2.3.2 Academic community, aims and objectives of the Department.**

When forming the course program, the academic community in the department, aims to cover the scientific subjects of Electronics and their application in the fields of industrial automation, telecommunications, information technology and services.

### **2.3.3 Is there any deviation between the officially drafted targets of the Department and those that the Department is currently pursuing?**

There is no deviation.

### **2.3.4 Targets the Department considers should be pursued.**

The purpose of the department is to provide integrated and specialized knowledge to its graduates, so as to be able to work either independently or in collaboration with other scientists. The area of study is the research and its applications on modern and specific areas of electronics. These objectives are met in full.

### **2.3.5 Is there any reason for reviewing the officially drafted objectives of the Department?**

Studies in the department include courses of general scientific infrastructure, and courses of specialized infrastructure which provide students with specialized knowledge. Also, it is taught elective courses in more expertise scientific areas. The syllabus and course content, and the supporting logistics, are regularly updated and adapted to modern educational and technological developments.

## **2.4. Management of the Department.**

### **2.4.1. Committees which are statutory and operate in the Department.**

The Department has the following committees, which assist and control the work of the Chairman of the Department, the General Assembly of the Department staff and the Assembly of the various Department Sectors:

- a. Curriculum
- b. Editorial Syllabus
- c. Courses Timetable
- d. Program of Examinations
- e. Socrates Program
- f. Leonardo Programme
- g. ECTS
- h. Practice Exercise
- i. Thesis Work
- j. Selection of Scientific Partners
- k. Selection of Laboratory Partners
- l. Students' Transfers
- m. Classifications
- n. Building Facilities
- o. Ethics Board website

### **2.4.2 Internal regulations that exist in the segment.**

The Department has internal regulations for its program of study and rules for Postgraduate Studies. The issues covered by these internal regulations concern the registration and renewal of students' registration in the department, the starting and ending date of the courses, the courses' registration by the students, the organization and the program of study, the planned teaching hours during semester, the examination program and periods, and finally the students' marks and their finally degree.

### **2.4.3 Sectors of the Department.**

The Department of Electronics has established two Sectors. The forming of these Sectors is based on dividing the courses taught in the Department in two groups, taking into account the scientific area each course covers. Every Sector has an independent administration, which is responsible for submitting proposals to the Council's Board on issues related to the educational process. In the sectors' General Assembly meetings participate the permanent teaching staff members, which belong to the Sector and two student representatives. Each sector elects a Director for an annual service. Specifically:

#### **1. Sector of Infrastructure Courses**

Head of Sector: Kioskeridis Jordan, Associate Professor.

Members of Scientific Personnel: Papakostas Dimitrios, Alexandros Alexandris, Kyrtopoulos Stavros, Laftsis Ignatius, Spasos Michael, Tzikas Christos.

Representatives of Students: 2 students are determined by the Student Association.

The sector of Infrastructure Courses covers the following scientific areas:

Mathematics, Physics, Physical Electronics, Electrical Structures, Analog and Digital Electronics, Electrical and Electronic Measurements, Optoelectronics, Circuit Theory, Power Electronics, Theory of Probability and Statistics.

#### **2. Sector of Specialization Courses.**

Head of Sector: Marmorkos Ioannis, Professor.

Members of Scientific Personnel: Chatzigkaidas Athanasios, Marmorkos Ioannis, Ioannidou Melina, Kazakopoulos Aristotle, Kanatas Nicholas, Manavis Christos, Sitaridis Stefanos, Bizopoulos Aristotle.

Representatives of Students: 2 students are determined by the Student Association.

Sector of Specialization Courses covers the following subjects:

Computer Programming, Microprocessors, CAD and Electronic Manufacturing, Telecommunications, Automatic Control Systems, Antennas and Transmission Lines, Microwave Technology, Media Technology, Digital Signal Processing, Microprocessor Applications, Visual Communications, Audio Systems, Microelectronics VLSI, Radar & satellite systems, Propagation of Electromagnetic Waves, Computer Networks and Multimedia networks, Digital Control Systems, Mobile and Satellite Communications, Broadcasting Production, Technical Studies and Law.

The structure of the Board is fully in his current mission.

### 3. Course Structure

*In this section, the department's Board must critically analyze and evaluate the quality of courses (undergraduate, graduate and doctoral), in response to a series of questions that correspond exactly to the criteria described in the publication 'Quality Assurance in Higher Education: Analysis of assurance criteria Credit Quality "Version 2.0, July 2007, Athens, (<http://www.adip.gr>).*

*The answer in each of the questions should at least include:*

*a) Which are the main pros and cons of the department to the corresponding criteria (according to department's opinion)*

*b) What opportunities of its strengths should the department exploit, and which are the risks related to the cons of the department.*

#### 3.1. Program of Undergraduate Studies.

##### 3.1.1 How do you judge the response of the Undergraduate Program in the objectives of the department and in the demands of society?

The program of undergraduate studies (P.U.S.) covers the subject of Electronics and its application in the fields of telecommunications, hardware and software of computers, networks, automation, energy technologies and services.

The last reformation of the P.U.S. was in 2004 and had in mind that the graduates of the department, upon completion of their studies, should have acquired the general and specialized knowledge required in the job market in order to be employed. Specifically, the P.U.S offers to its graduate's employment opportunities as follows:

- In the study, design and manufacture of electronic components, devices, appliances and systems.
- In studies, design, production, monitoring implementation, maintenance, assembly and handling control in the fields of:
  - Telecommunication systems.
  - Computers and networks.
  - Electronic instrumentation and control.
  - Medical appliances.
  - Industrial electronics and automation.
  - Power electronics and energy systems.
  - Media and broadcasting.
- In the elaboration of technical and economical studies in these areas.
- In the standardization and quality certification of devices, instruments and devices in these areas.
- In the organization and management of companies operating in these areas.

The current undergraduate program of study in the department of Electronics includes 40 courses covering a wide range of disciplines. Depending on the content, the courses are divided into courses of general infrastructure, of specific infrastructure, in specific science section courses and into courses in Economics and Management Humanities. There are 34 mandatory courses, while students may choose 6 more specialized courses according to their particular interests, from a group of 18 courses offered. In addition to the 40 compulsory and compulsory elective courses, students should successfully attend at least 4 "optional" courses, from a group of 12 subjects. The optional courses provide expertise in advanced technologies of Electronics science.

The duration of study is eight semesters, of which the latter involves practical training of students to Electronics related professions and the preparation of an undergraduate thesis. The first seven semesters include teaching courses which are organized into theory lectures and laboratory exercises. Students' attendance in laboratory courses is mandatory. Each student can shape his

curriculum in each semester, choosing courses that correspond to 36 educational credits. The courses in each semester typically cover 30 credits, so students have 6 credits available to cover previous semester courses, which have not been successfully completed. For obtaining the department's degree 240 credits is required, of which 210 come from the courses and the remaining 30 from the practical training and the thesis.

The first two semesters of study include courses of general science infrastructure such as maths, physics, basic electronics and computer programming. In the next two semesters courses of specific science infrastructure are taught, such as analog and digital electronics, electrical and electronic measuring equipment, micro computers. From the fifth semester the curriculum includes more sophisticated, specialized courses, such as telecommunications, microwave, microcomputer applications, networks and networked multimedia systems, automatic control, industrial automation, power electronics, radio and television production.

The teaching hours per semester are on average 24 per week, while the total workload is believed to contribute decisively to the active participation of students in the educational process, and also into the transfer rate of learning from the classroom to the students themselves, as far as study, consultation and drafting work are concerned. Moreover, the Undergraduate Study Program pays particular attention to laboratory exercises, so that students of the department may acquire special skills, which are usually not offered by other tertiary institutions. Since laboratory rooms have modern equipment which is constantly updated and renewed, students gain valuable skills which will ensure their access to labor market segments which are continuously evolving and already hold a large share.

The Department of Electronics provides modern electronic training services through e-learning website, which covers 58 subjects, providing e-learning materials, databases of terms, concepts and components, and two-way communication between students and the teaching staff.

The curriculum also provides students with the possibility to undertake individual or group work, as subsidiary to the various specialized courses in theoretical or experimental approach. From the preparation and presentation of work, students gain additional skills. The involvement of teachers, not only in providing academic knowledge, but also in developing these skills, is crucial to the successful job placement of graduates.

After completion of the seventh semester, students of the Department of Electronics are required to complete their internship, with duration of six calendar months, in a body of employment of private or public sector. This work body must be relevant to the subject of studies in Department of Electronics, must provide staff with training and experience in the subject section and, additionally, high technology equipment for the comprehensive education of students and fulfilling the goals of the practical stage. In the process of training, which is supervised by the education department staff and the employer's working party responsible, the professional competences of graduates are greatly enhanced.

Preparing the thesis enables the students to gain important experience from the integrated study of a subject of specialization. This thesis has design, research, development and applied nature, and is prepared individually or in teams of two people. The results of these dissertations are presented publicly by students, in special events scheduled in the auditorium of the department, which last for two or three days and is repeated three times each academic year.

The Department of Electronics has developed partnerships with educational institutions in several European countries, which allows its students to attend relevant courses, to prepare their graduate thesis, or carry out their internship in European Union countries. Thus, students form an opinion about the European working environment, in comparison to the Greek one, in which they are likely to be active in the coming years.

Over the last five years mainly, we have observed a continuous increase in the number of graduates who successfully attend postgraduate programs in the broader academic field of electronics, which are provided by higher education institutions in Greece or abroad. Note that since 2008, the Department of Electronics, in collaboration with Brunel University in Great Britain, offers a postgraduate curriculum in the subject of wireless communications, which involves several graduates of the department. The large participation of graduates of the Department to postgraduate programs with great success, demonstrates the soundness and completeness of the knowledge provided by the Undergraduate Study Program.

It is noted that the course curriculum, although it is quite up to date, must be in a constant process of reform, following the rapid technological developments in electronics. For this purpose, a three-member committee was set up to reform of the Undergraduate Study Program, in accordance with the instructions of Law no.3404/17-10-05, published in the Official Gazette no.260 vol. A, and of Ministerial Order no. 46350/E5/18-05-06, published in the Official Gazette

no. 625 Gov. T. B. (νόμου 3404/17-10-05 ΦΕΚ 260 τ. Α και της ΥΑ 46350/Ε5/18-05-06 ΦΕΚ 625 τ. Β.)

The spring semester of 2008 the Department of Electronics conducted a systematic evaluation process, in which students assessed all classes of the Undergraduate Study Program, with common questionnaires regarding all the theory and laboratory courses, respectively. The responses of students to questionnaires, after processing, will form the basis for reforming the curriculum and for the possible redefinition of some educational objectives and procedures of the department. Particularly useful would be the evaluation of Undergraduate Study Program from alumni who participate in the production process to test the degree of training that copes with their professional obligations. Furthermore, we are interested in the assessment of knowledge of graduates of the Department from their employers, both at the scientific level and at the level of professional conduct.

Valuable information will have resulted if the Department had developed a systematic process, either independently or in collaboration with professional bodies, to record and monitor the professional careers of its graduates. In the near future, as competition in the labor market becomes ever more intense, the Department should develop an appropriate mechanism to collect information on graduates, which will be useful for improving knowledge and skills provided to its students.

### **3.1.2. How do you assess the structure, consistency and functionality of the Undergraduate Study Program (USP)?**

The USP of the Department of Electronics is designed to prepare students in the whole range of contemporary fields of electronic science and especially in the telecommunications, hardware and software of computers, networks, automation, energy technologies and services.

The USP does not include directions, as in several faculties. The positive of this system is that all students are trained in all the subjects of electronics, but cannot provide specialized knowledge and skills. So within the USP students are not provided with the possibility to develop a special interest in a field of the electronic science, which would be achieved at postgraduate level or through self-education. The USP, during redeployment, could be configured so that the courses covering a particular subject area to be a specialization / direction, which the student will follow in its entirety.

Students with existing USPs must attend a total of 44 courses in seven semesters. Of the total of 44 classes, 34 are compulsory, 6 are optional-compulsory and 4 are optional.

Optional classes (OC) do not belong to a particular semester and their grade will not count towards the final degree grade. However, students are required to successfully completing 4 of 12 totally available OC. Students choose the OC in whatever semester they wish, provided they have the background knowledge required to attend them. The OC are taught two hours a week, covering peak technologies of the electronic science. The OC includes the teaching of foreign languages. This was decided since the vast majority of students of the department know a foreign language, usually English. Thus, in the sixth semester, with the choice of subject "Terminology in foreign language", is intended to familiarize students with the special terminology of electronics, which is quite extensive and necessary for the study of foreign language bibliography.

The general problem that arises from the specialized courses, such as OC, is that some of them become obsolete quickly others are extremely difficult to understand by students, while some are likely to repeat part of the material which is taught in other courses. The experience gained from five years of teaching the OC is that students have very little involvement in them, while the interest is not the expected, possibly because the degree does not count towards the final degree grade.

The optional-compulsory classes (OCC) are in number of 18 and are organized into six groups of three subjects each. The OCC are integrated into the sixth and seventh semester, three per each semester. The student may choose one course from each group of six that is a total of six OCC of the 18 available. With proper selection of the OCC, the student receives additional knowledge in the disciplines of:

- a) telecommunications,
- b) computer-networking
- c) measurement and industrial automation
- d) multimedia.

Compulsory courses (CC) are 34. In the first five semesters the 28 CC are taught, while in the 6<sup>th</sup> and 7<sup>th</sup> semester three CC. For the CC the prerequisite courses are in order, which aims at better educating students and the optimum use of resources section. However, restrictions set by the regulations of the TEI often act negatively on the institution as far as the prerequisite courses are concerned. In particular, many students choose six month-courses, which have no prerequisites, but also require the knowledge provided by lessons from previous semesters. Thus, these classes are overcrowded at the beginning of the semester, which are subsequently abandoned by students, showing high rates of failure, as a result.

The 52 subjects of the USP are distinguished by their content of courses in general knowledge courses (GKC), in specific knowledge courses (SKC), in specialty courses (SC) and economic management and humanities courses (EMHC). The GKC are 8, the SKC are 14, the SC are 26 and the EMHC lessons are 4.

The number of credits for each course ranges from two (2) to eight (8). 30 credits correspond to each semester. Of the 52 courses offered in the USP (34 CC and 18 OCC) the 36 include theoretical and laboratory teaching, one (1) has only laboratory teaching, and the remaining 15 include only theoretical teaching. Excluding courses as the EMHC, and some GKC such as mathematics, which by their nature have only a theoretical part, results that the USP of the Department aims to combine theoretical knowledge with full practical training of students.

**Table 1.** Number of theory and laboratory courses and corresponding teaching hours

Semester	Number of courses			Teaching hours		
	Total	Theory	Laboratory	Theory	Laboratory	Total
1 <sup>st</sup>	5 (G)	5	4	17	8	25
2 <sup>nd</sup>	6 (G)	6	4	19	8	27
3 <sup>rd</sup>	5 (G)	5	4	15	8	23
4 <sup>th</sup>	6 (G)	5	5	13	11	24
5 <sup>th</sup>	6 (G)	6	4	16	8	24
6 <sup>th</sup>	12 (3G+9SG)	12	8	14	8	22
7 <sup>th</sup>	12 (3G+9SG)	12	8	14	9	23
<b>Total</b>	<b>52</b>	<b>51</b>	<b>37</b>	<b>108</b>	<b>60</b>	<b>168</b>

The total hours of instruction in seven semesters of study is 168, of which 108 correspond to theoretical instruction and 60 to laboratory practice. Therefore, the teaching hours are divided into: theory 64.3% of the total and laboratory 35.7% of the total.

In the theoretical teaching of courses the teaching staff follows the classical technique of lecture, while methods based on the student-led learning, such as the preparation and presentation of work, is used in a very small percentage of courses.

However, in the teaching of theory, teachers attempt to stimulate the active participation of students with questions and answers, discussion groups and by evaluation tests. The main problems in theoretical instruction are identified as: the lack of basic knowledge by students, with emphasis on mathematics; the vast area of the curriculum; and the highlighting of the important knowledge from the multitude of information provided.

Teaching in small groups of students, in the form of tutorial delivery, lags dramatically in relation to lectures addressed to all students. Tutorial teaching applies to a small number of courses, which vary each semester, depending on conditions.

The participation of students in the lecture theory is overall very reduced. This creates major problems in laboratory exercises, where student participation is mandatory. As a result, many students arrive at the laboratory without the knowledge of the theory, thus shifting the basis of the laboratory from the acquisition of practical skills in teaching the theoretical background. It is noted that many students, since the studying regulations allow it, choose only the laboratory part of courses, without a corresponding theory.

As the number of laboratory courses in the department is very large, as is the number of teaching hours, the training staff must guarantee the relationship between the theoretical material and laboratory part of each lesson. The correlation does not apply to a large number of

courses, since the responsible of each lesson has autonomy in deciding the subject matter being taught. This has the additional effect of overlap in different material classes. It is estimated that these problems will be dealt with by drastically reforming the curriculum, but must be accompanied by amending regulation studies as well. The new USP might achieve even the elimination or the reduction of some courses, the absorption of some other courses and the introduction of new courses adapted to modern trends of electronic science.

By the spring semester of 2009 in all courses lecture notes or books were distributed. Unfortunately the number of books was very small, that is to say 17 for 52 lessons. Moreover, few of these books had as a writer a member of the teaching staff of the department. Often the lack of proper Greek books and the limit of 20 € per book, imposed the distribution of books that were not the first preference of the instructor. Many of these problems will be solved by implementing the new legal framework, which require the distribution of books in all subjects without restriction on costs. Teachers should use the opportunity provided to them for distribution of foreign language books, along with Greek. Please note that due to the special nature of the laboratory part of the course teaching notes, which must be updated regularly, will still be distributed to students.

Moreover, the e-learning section of the site should also be upgraded, as it already offers extensive educational material to students. The upgrading refers to the interactivity of the offered information, the use of audiovisual material, virtual laboratories, self-assessment tests and, more generally, to the integration-driven forms of learning which do not require the presence of students in the classroom.

### **3.1.3. How do you assess the examination system?**

The testing system of the Department of Electronics, TEI of Thessaloniki follows the general rules of all higher education institutions in the country.

For the theoretical lessons, the examination of students' knowledge is made through written examinations, during the specified period within the academic year and occasionally supplemented by alternative assignments to students.

The written examination of a course has been established internationally as a reliable method of assessment. It allows the teacher to rank students according to the rate and quality of their knowledge. Also, the results of written tests have proven to provide very useful conclusions about the points of difficulty of each course, allowing the instructor to continuously improve the way of teaching. Besides, the written test ensures, to a large percentage, the fair and objective evaluation of students. Finally, it should be noted that in recent years all teachers of the department give the opportunity for students diagnosed with difficulty to participate in the written examination to be examined through interviewed in either a theoretical or laboratory course.

The reason which combats written examination includes arguments on individual assessment, but they are disproved either by repeated examination periods, or the existence of alternative methods of assessment such as assignments during the semester. The second negative feature of written tests is that they offer fertile ground for some students to manifest their copying mood. This behavior, apart from the undeniable injustice for their colleagues, has led to a rift between students and the observing teachers who undertake to play the thankless role of punishers.

The written test of theoretical courses takes place four times during the academic year. Each course is examined both during the summer and during the spring semester. The large number of examination periods increases the chances of students to succeed and prevents the accumulation of large numbers of unsuccessful students in subsequent semesters. Moreover, in this way, the time needed to take a degree is not significantly increased.

The existence of so many examination periods, however, seems to pose some difficulties. Because all the subjects are examined in each period, the number of days required is quite high. In combination with the large number of exam periods the phenomenon of accumulated and ongoing examinations was created. This leads to tired students, examined in two and three lessons a day, but also dramatically reduces the time allowed for studying. Indeed, during the examination period in February, this phenomenon is even more intense, as we have to squeeze two exam periods in four weeks time, in order not to affect the teaching period. Also, many exams in a row and many testing periods, in some cases, appear to have resulted in complacency of students who believe they have many chances to pass an exam and either do not come to the examination or are not prepared properly. Finally, the large number of examination periods restricts originality of relevant subjects, in some cases creating inequality and injustice among students.

In each case, the written examination of the course has proved to be the most effective and reliable method for assessing students. It is the responsibility of the teacher's part to preserve this method with constantly renewed examination subjects, which would actually be able to discourage copying. Furthermore it is the responsibility of all educators to instill in students the moral rejection of copying.

The assignments during the academic year, as a supplementary method of evaluation of students, also have a number of advantages. Students are 'forced' to be in constant contact with the studied object, they learn to be self-reactive, they acquire an interest in the research topic of the course and its development and, finally, come in contact with the modern methods of writing technical documents, which is required knowledge for their professional establishment and development. Unfortunately the number of teachers who choose this method of assessment is rather limited; it is definitely much higher for later semesters' courses, which are more specialized and are offered for research assignments. Moreover, the maturity that comes after the first years of study is necessary for this method to fulfill its goals.

The assessment of students in laboratory courses consists of written examination and, to a large percentage, of continuous assessment during the course. The written examination takes place either once at the end of each semester, or more times during the course in the form of progress assessment. The positive and negative aspects of the written test coincided with those reported for the theoretical lessons. The most important point, however, the examination system of the laboratory course is that a continuous and comprehensive evaluation is possible, due to the obligatory presence of students in these courses. Students are assessed based on their preparation, their participation and presence in the classroom and the rate of successful completion of the laboratory exercise. In this way the chances of errors in the evaluation of students are significantly reduced, while ensuring a minimum level of knowledge to students who successfully complete the course. Finally, in many cases students are asked to return a written paper after each laboratory session, completing this way the evaluation.

#### **3.1.4. How do you assess the international dimension of Undergraduate Study Programs?**

The curriculum of the Department of Electronics covers the main topics that are covered by related departments abroad, as it readily appears after a check in the curricula of the latter. This view is reinforced by the participation of the department in international student exchange programs, where it is necessary to have relevant courses for further studies in the hosting institution.

However, the low turnout of foreign students and the even lower participation in exchange of our students are probably negative elements in the international dimension of the Undergraduate Studies Program. Nevertheless it is not easy to assess the causes of this phenomenon. There are strong indications that the language of instruction is a more serious deterrent than the actual curriculum.

Also, the rather limited cooperation of the department with corresponding foreign departments at research level and in terms of visiting teachers is not very helpful in enhancing the international dimension of the Undergraduate Studies Program. In recent years, however, serious attempts were made to refute all these inhibitors, especially by investing in the research field, with the advent of new notable scientists to the teaching staff department.

Generally, we feel that a more outward-looking research behavior of the teaching staff, in conjunction with the ongoing adjustments and improvements in physical infrastructure will help the international course of the Department of Electronics, and we are moving in this direction. It is believed that this would create a two-way relationship of improvement and recognition of both the Department of Electronics and the supplied Undergraduate Studies Program.

#### **3.1.5. How do you judge the practical internship of students?**

The practical internship of the students has traditionally been an important part of the studies in institutes of technology and has proven to be one of their most positive elements. The studies are not considered complete until after the end of the 6month internship in a private company or public service, related to the object of study for students. Companies that recruit students for internships must have in their staff at least one qualified Electronic engineer to ensure the education of the student. On the part of the department, each student making an internship has a designated member of the teaching staff as supervisor of training, who tracks his/her evolution and ensures its smooth completion. Finally, it is not possible to undertake practical training unless the student has successfully completed most of the curricula.

On the whole, the practical training has only positive effects on the students of the department. Even before the start of the internship, it is a positive incentive for the completion of academic requirements of students. In undertaking the traineeship the student comes into contact with actual conditions and understands the knowledge and skills acquired in previous years of study, gaining confidence and certainty about his future career. Indeed, this transition from student to professional real life takes place smoothly, with the care and supervision of the department. But mostly, the internship is a first class career opportunity for the students of the department. It is extremely common for companies where the internship takes place to offer the opportunity to continue their cooperation with both students and the department of Electronics, offering new traineeships. This can only be seen as a sign of good and efficient cooperation between students of the department with each company. Finally, the internship is a first class opportunity for the Department to be in constant touch with the needs of society and of labor market, adapting the information it offers to the students.

From 2005, in accordance to the program “Companies’ Program for Education and Primary Professional Training”, the internship program in the Department of Electronics has been greatly organized to a large extent, thanks to the efforts of an important part of the teaching staff. The starting and ending dates of the training period are clearly defined ensuring that they are completed in full. The process of drafting and signing of contracts between students and employers has been codified and takes place early enough, ensuring the employment rights of students. To participate in the program, first we make sure that a company has all the necessary guarantees. We have created a list of companies participating in the internship program at times. In the case of presented difficulties in completing the training, with the fault of the management of the company, the latter is excluded from future participation in the program. In all these ways, we ensure all the required internship positions, and, where possible, the necessary, harmonious working conditions. Finally the Department of Electronics ensures a minimal control of the quality and the working conditions, with completion by students and tutors of periodic progress reports.

It is extremely important to ensure continuity of quality that has been achieved by the practice of internships in the Department of Electronics and to improve some structures, such as the function and role of supervisor training to more active participation of teachers.

## **3.2. Postgraduate Studies’ Program.**

### **3.2.1. Title of the Postgraduate Studies’ Program**

The Electronics department of the School of Technological Applications at the Technological Educational Institute of Thessaloniki (T.E.I.-Th.) in collaboration with the School of Engineering and Design of Brunel University of London (UK) offers the possibility of obtaining an M. Sc. Degree entitled :

#### **«MSc Wireless Communication Systems»**

The title of the above M. Sc. Degree is awarded by Brunel University with the same terms and conditions as the title of the respective program of Brunel University. The MSc Postgraduate Program has already been approved by the Education Ministry by the 66835/E5 21.05.08 ministerial order.

### **3.2.2. Departments and Institutes that participate to the Postgraduate Studies’ Program.**

School of Engineering and Design Brunel University of London (UK).

### **3.2.3. How do you evaluate the Postgraduate Studies’ Program response to the goals of the department and the demands of the society?**

The students of the postgraduate studies’ program are considered students of the Brunel University (off campus students) and have the same privileges and benefits as well as obligations as the students that attend the program in UK (on campus students).

The academic procedures are controlled by a council formed from members of Brunel's University, the Technological Educational Institute of Thessaloniki and 2 student representatives. The records are reviewed by the corresponding administrative board of Brunel's University and the Learning and Teaching Committee. Also the off campus students complete questionnaires for the evaluation of the courses and the teachers which then are sent to Brunel's board. Any decision of the Brunel's University board is enforced to the postgraduate program performed in T.E.I.-Th.

In May of 2008 the program was evaluated by the QAA committee (Quality Assurance Agency). The QAA committee has visited the facilities of the department and after interviewing the teaching staff and the students has decided that the postgraduate studies' program is carried out with complete success, as all the agreements concerning the program between the two educational institutes are assured.

The program of studies is posted at the department of Electronics webpage (<http://www.el.teithe.gr/Msc/gr/index.html>), while there is a link that transfers the user to Brunel's website (<http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys>), where there is a detailed description of the courses' content.

The postgraduate program started the academic year 2007/2008 and the first graduates received their degrees in July 2009. Because of its recent history it is impossible to come to conclusions concerning the career path of the graduates.

#### **3.2.4. How do you evaluate the structure, the consistency and the functionality of the Postgraduate Studies' Program?**

The duration of the postgraduate program is 18 months and it is considered full – time schedule. The academic year begins in September and ends in May and it is followed by exams. The students are required to hand out their dissertation by next March. The courses are taught on Fridays and Saturdays from 9:00 to 17:00 due to the fact that the professors travel from Brunel and also that most of the students are working. The schedule of the lectures is determined from Brunel and announced to the students at their enrollment to the program.

The modules that are taught are the following:

1. Advanced Digital Communications
2. Wireless Network Technologies
3. Advanced Mobile Systems
4. Satellite and Optical Communications
5. DSP for Communications
6. Wireless Communication Security
7. Project Management
8. Wireless Communication Workshop
9. Dissertation

Attendance is compulsory for all the modules since there are no core/specialization modules.

The first six modules are of specialized scientific area, as the postgraduate program is addressed to graduates of higher education institutes, Greek or foreign who have already brought a document from the corresponding office that recognizes their degree. The candidates that are preferably accepted are graduates of Electronics, Electrical Engineering, Automation and Informatics departments.

The proposed postgraduate program aims to transmit the essential knowledge, skills and scientific background for a successful career in the sector of wireless communications systems. With this program, the graduates will obtain a strong scientific background, knowledge, experience and skills for a successful career in the private, public or academic sector.

The students are given individual or team projects for the majority of the above modules, which then they have to hand out, and also present in several occasions in order to prove, in both theory and in practice whether they fully and profoundly understand the network analysis and their capacity to implement it. Also the aim of the projects is for the students to communicate complex technical issues to both an expert and a non – expert audience, to work individually or

in teams, in order to solve new problems and to undertake advanced vocational or academic training.

The eighth module consists of seven laboratories delivered by Greek professors of the Electronics department of the Technological Educational Institute of Thessaloniki (T.E.I.-Th.). The abovementioned professors have been evaluated by Brunel University and have been given academic staff recognition certificate. Based on the lectures' schedule, the laboratories form the 30% of the courses. The carrying out of the laboratories is of crucial importance, since one of the goals of the postgraduate program is the detailed technical training and experience, which is gained through the program in order to contribute efficiently and rapidly at the work environment in the wireless industry. Furthermore the laboratories offer the students the chance to gain experience in analyzing and resolving complex practical industrial problems in wireless communication development.

The modules content is defined by Brunel's council and the respective teacher depending the demands of the time and the evolutions in science. For example the students who attended the program the academic year 2007/2008, where taught the module 'Satellite and Optical Communications' as two separate modules. The council from Brunel decided later that it was necessary to add a new module, 'DSP for Communications', so that the students of the course were fully informed and specialized in the basic wireless technologies as they are required for employment, especially in industries related to wireless systems development. So it was considered necessary to combine two of the already existing modules to include the new one.

The support documentation is uploaded to the web page <http://www.brunel.ac.uk/intranets/u-link/> where the students have access after enrolling. The support documentation is renewed during the academic year. Also the students can borrow books suggested by the professors and have been bought, after an order of the responsible of the postgraduate program in Greek, by the T.E.I.'s library and the postgraduate secretariat. From the abovementioned link, the students can be informed for other issues of the community.

### **3.2.5. How do you evaluate the exams system?**

Students' evaluation is done both during the academic year through their project and at the last weeks of May through written exams.

The written exams in May are carried out simultaneously (same date and time) with the respective exams of Brunel University, as the date and time is defined by the Brunel's council. The reason is to avoid leak of the correct answers through the on campus and off campus students' contact. The subjects of the exams are mailed to the program's responsible in Greek in a sealed envelope a day before. The envelope is opened inside the examination room after identifying the students. The students write in special notebooks sent from Brunel, where their name and the rest of their information are covered at the handing out so that they are not visible to the examiners. The day after the examination, the exams are mailed to the responsible of the postgraduate program in Brunel, who then delivers them to the respective professor. They are graded and returned to the responsible that reveals each student's personal information from the notebook and informs the responsible of the program in Greece for the result of each student. Students have the right to ask for a re-evaluation from a field examiner in case they are not satisfied by the grade that was given to them.

In case a student fails an exam he has the right of reexamination in September under the condition that he has not failed more than four modules. Also there is a possibility to retake an exam for some modules, where the student has a passing note that he wants to improve, after a decision of the Brunel's council.

At the end of the examinations period, Brunel University statistically processes the grades of both the on campus and the off campus students to evaluate in total the students' performance and to focus to any possible problems that could appear in the educational procedure. The professors are notified about the results by the councils.

About the end of November all the teachers are asked to suggest dissertation subjects. After submitting them to Brunel's council, the list of subjects which is common for the on campus and the off campus students, is sent to them through e-mail. Each subject can be assigned to only one student. The student should contact the supervising professor to discuss. Then the professor decides whether he will accept the particular student to carry out this dissertation. After the

professor's approval, the student states the subject to Brunel's secretariat by the end of January and only after the council's approval the dissertation is assigned to him. Also the students are given the opportunity to suggest a subject of their choice or to get involved in industries' projects, after these suggestions get the approval of the council in Brunel, of course.

By the end of June, students should have given out the interim report which is a diagram of the basic points of the dissertation, a timetable and the methods they are going to follow. This report is given to the professor who grades. The grade of this report takes part in the calculation of the dissertation's final grading.

By the end of September or March of the next year they have to hand out their dissertation to Brunel's secretariat. The necessary steps before that is the correction by the supervisor and the checking through a program for plagiarism (copy). Then it is graded by the supervising professor and a second examiner, elected by Brunel. In case there is a big difference between the two grades, the final grade is defined by a third external grader. The dissertation is an opportunity to evaluate: to what extent have the students become carriers of the knowledge they are given, the implementation of the technologies they have been taught and their specialization in a certain sector of wireless systems.

### **3.2.6. How do you evaluate the postgraduate students' selection process?**

The student selection is done by the council of Brunel. The minimum and maximum number of students which will be taken each year is jointly determined by Brunel University and T.E.I -Th. and the maximum number of students is currently 30. The selection of the students is finalized by Brunel University. The candidates submit the necessary documents at the postgraduate secretariat and they are evaluated during the council.

The Criteria of Evaluation are the following:

1. Degree grade.
2. Proof of English Language Knowledge.
3. Two References (one of which must be academic)
4. Relevant Academic or Professional experience.
5. Sum of the marks awarded in 4 modules of specialty from the undergraduate studies.
6. Time spent in obtaining the degree.

Along with their application the candidates should submit the following documents:

- CV in Greek and in English
- Attested copy of the degree from TEI or Greek or Foreign University.
- Full transcript of results.
- Proof of English Language Knowledge:  
-TOEFL (Paper based 550) or TOEFL (Internet based 79)(computer based 213)  
-IELTS with a minimum of 5 in each subsection  
-Cambridge Proficiency/Michigan Proficiency.
- Two References (one of which must be academic)

The evaluation criteria as well as the necessary documents are posted to the webpage of the department, so they are available to anyone who is interested.

All the applications and the attached to them documents are mailed to Brunel University and are evaluated by the corresponding council of the school. The results are mailed to the candidates and to the postgraduate's secretariat at A.T.E.I.

The evaluation process is characterized by transparency, as the selection of the students is done by a qualified committee which evaluates both the academic or professional activity and the undergraduate performance of the students.

### **3.2.7. How do you evaluate the funding of the Postgraduate Studies' Program?**

The operating cost of the P.S.P. is covered by the Special Account for Research Grants of the Alexander Technological Educational Institute of Thessaloniki and especially from funds transferred from Brunel University to the Special Account that mainly come from the students'

tuition, based on an agreement between the two institutes. Resources also occur from the mutual execution of research programs, the development, production and utilization of educational material in terms of the Postgraduate Studies' Program, from both institutes.

The program is fully funded by Brunel University. Based on the agreement that the two institutes have signed, Brunel University must give to the Electronics Department of the A.T.E.I. – Th. the 20% of the received tuition from each student as well as certain amounts for each laboratory and supervision and projects' evaluation services delivered by the staff.

Also the A.T.E.I.–Th.'s staff members with an academic recognition certificate can supervise students' dissertations, so the university will cover economically their services.

The A.T.E.I.–Th. bears the responsibility of the housing expenses which derive as a relation with the movement of academic staff from Brunel to the A.T.E.I.–Th. in order to teach or to meet with the Greek staff to discuss about the program. Also, beside the accommodation and transportation expenses, part of the tuition that are returned to the A.T.E.I.–Th. covers the transportation expenses of the Greek staff to UK for educational purposes. Finally, a great percentage of the money is being used to buy equipment, mainly software packages and utilities that are considered necessary for the carrying out of the lectures.

### **3.2.8. How do you evaluate the international dimension of the Postgraduate Studies' Program?**

The program is carried out at the department of Electronics of the School of Technological Applications at the A.T.E.I.–Th. under the same terms and conditions that are applied to Brunel University. The courses are taught and evaluated in English and attendance is compulsory. All the professors, except of those who are responsible for the laboratories, belong to Brunel's University academic personnel. The percentage of the abroad academics comes to 73% (8 out of 11).

The title of the above M. Sc. Degree is awarded by Brunel University with the same terms and conditions as the title of the respective program of Brunel University.

The majority of the students are Greek with the exception of 3 students, 2 of which have Greek and Cypriot citizenship and the other Cypriot citizenship. Finally it is under discussion the participation of foreign student in terms of the program Erasmus Mundus.

### **3.3. PhD Studies Program.**

There is no possibility to deliver PhDs for the Technological Educational Institutes of the country due to the current legislation. Nevertheless, the cooperation with Brunel University gives the opportunity to supervise doctorates, in collaboration with their colleagues from Brunel, from students enrolled to Brunel, but who implement the biggest part of their doctorate at the department of Electronics. This opportunity is already being used by some members of the department of Electronics.

## **4. Academic Work**

*In this sector the department is asked to critically analyze and evaluate the quality of the work that is done in all levels of studies (undergraduate, postgraduate, doctorate) answering in a series of questions that correspond to the evaluation criteria described in the document "Quality Assurance in Higher Education: Criteria Analysis of Quality Assurance in Academic Facilities" Edition 2.0, July 2007, ADIP, Athens, (<http://www.adip.gr>).*

*The answer to each question should at least contain:*

- a) What are the main positive and negative elements concerning the respective criterion, from the department's point of view*
- b) Which are the opportunities to take advantage of the positive elements and the risks of the negative elements that the department detects concerning the particular criterion.*

#### **4.1. How do you evaluate the efficiency of the academic staff?**

From the 16 permanent members of the department, 6 have a PhD degree. Generally the academic staff meets in a satisfactory extend the requirements of the undergraduate courses but certainly always there is room for improvement.

The basic principal of the department is to assign to theoretical modules professors with a PhD title and to laboratories those who don't. A very important issue that concerns all the T.E.I.s of the country is the unavoidable number of temporary teaching stuff. The department of Electronics gives special weight in assigning teaching to high level scientists, while taking care of renewing the contract of those with a good performance at their academic work. The good thing about the A.T.E.I. –Th is that it is located in the second bigger city of the country, which is an important source of a great number of prestigious scientific personnel. This personnel is being utilized properly for the academic work.

All the academic stuff of the department (permanent and temporary) is in constant communication with the students whether announcing certain office hours when they could see students, or communicating via the web (e – mail, announcements to the department's website, etc.). The facilities allow to many of the non – permanent stuff to have offices where they can accept students. Almost all the permanent members that don't possess a PhD, have years of experience in teaching laboratory courses and excellent knowledge at their area of expertise, which makes them extremely efficient.

#### **4.2. How do you evaluate the quality and efficiency of the teaching process?**

Analyzing the data from the tables 11-6.1 and 11-6.2 realizes that the average student graduates after a time much longer than the expected, while his degree grade is around 6.0. This fact should raise doubts about the efficiency of the teaching process. In realty though the reasons of the phenomenon are various. Firstly should be mentioned the large number of students (about 1500) in a department of 16 permanent academic members. Although there is evident lack of permanent stuff, it is consider more important the fact that to each laboratory course can participate only 20 students at a time

The true reason of the students' low performance and long duration of studies should be searched to the small number of professors in comparison to the number of students, the low level of the entering students, the problems of the Greek educational system that leads to a big number of students entering in higher education, but to schools that are far from their fist election, who don't even have the necessary knowledge background for higher education.

Although the department of Electronics has a sufficient building infrastructure, the lack of essential infrastructures like a library and study rooms, certainly does not help the efficiency of the educational process. Finally, the dead ends of occupational rehabilitation after graduation, lead to lack of interest and enthusiasm from the students' behalf.

#### **4.3. How do you evaluate the organization and the application of the academic work?**

The academic work that takes place in the department is a true implementation of the studies' program. The professors attempt to transmit knowledge of the highest possible level, which would correspond to the Institutes character. Every professor posts to the module's corresponding website support material and information concerning the module, while the classrooms are supplied with modern educational equipment (Electronic Computers, wireless internet, video projector and interactive whiteboard).

At the end of each spring semester all the open positions of Scientific and Laboratory associates for the next academic year are announced, so that the procedure of covering the open positions by contracting new stuff would be over by the beginning of the new semester. The suggestion of contracting temporary stuff is done by a three – member committee after a detailed revision of the candidates' files and taking under consideration the related legislation. The decision of assigning academic work to temporary personnel is taken by the General Assembly of each department and is validated by the department's Council. The latter informs the Council of A.T.E.I. – Th. that takes the final decision. The actual responsible of a Sector has the responsibility for the organization and application of the academic work and he receives notification for possible problems that appear during the semester.

#### **4.4. How do you judge the teaching aids?**

Acclaimed books, available in the free market, are given in a small number of lessons. The of 20 € limitation, as the maximum price of each textbook issued by the TEI, causes serious problems and in some cases imposes restrictions on the choice of the instructor. Usually the problem can be overcome by choosing an appropriate textbook, used to teach two courses, one follows the other, that are taught in different semesters. In addition, several members of the teaching staff (TS) have written books on their lessons, which are issued by independent publishers. Of course, most of the TS provide the students with their own teaching notes, many of which require upgrading.

The new educational law imposes multiple literature and textbooks issued to students. Each teacher should suggest at least two books relevant to the subjects taught, and the students will choose one of the books to procure. For the suggested books there are no financial constraints. Unfortunately, the new distribution system of the teaching literature is not yet fully implemented in the Department of Electronics and the TEI. This is due to the lack of computerization and, mainly, to the lack of the necessary funds, which are significantly higher than before.

#### **4.5. How do you assess the existing facilities and infrastructure?**

The available resources and infrastructure of the Department of Electronics may be considered as a model for the TEI, allowing the teaching staff to smoothly carry out their teaching work. The classrooms are equipped with computers, wireless internet, interactive whiteboard and video projector. Most of the laboratory rooms are equipped with modern teaching materials that are enriched at every opportunity.

Each of the laboratory rooms may provide simultaneous training to 20 students, whereas each of the six classrooms used for theoretical courses has a capacity of almost 60 students. Considering that in some cases, especially for lessons taught during the first semester, the number of students is often higher than 200, at least one more spacious classroom is necessary. It should be noted that the great auditorium of the department, although it is ideal for holding various events, it is inappropriate for teaching.

#### **4.6. How do you judge the use of ICT?**

Information technology and communications has been incorporated fully by the department of Electronics. This is mainly due to the nature of the courses that are directly related to information science and communications. What is more, the Internet room and the free WiFi enhance the use of ICT by the students. Further use of these technologies and services would be achieved by providing all of the students a free e-mail address.

#### **4.7. What do you think of the ratio teachers/students and their cooperation?**

The average ratio of teachers/students is 1/18. Considering only the permanent members of the TS, the ratio diminishes to approximately 1/90. It is therefore evident that there is an urgent need to recruit additional permanent teaching staff. The small number of permanent teachers is somewhat mitigated by the fact that the lectures of the theoretical courses are attended by a small percentage of students. The cooperation between the TS and the students is satisfactory with rather rare problems mentioned. The students can contact their teachers, not only during the lectures, but while the latter are in their offices or by email or through announcements in the website section.

#### **4.8. How do you judge the association of teaching with research?**

Although a significant number of the teachers are active researchers, the lessons are not always relevant to their research activity. However, there are subjects (e.g. telecommunications, microprocessors, etc.) where the students get to be informed on the most current, relevant, issues that concern the scientific research community. Thus, the students are up to date with the forthcoming developments that concern the subject of the course. Undergraduate students are not usually involved with the research effort of the department unless they select an appropriate thesis topic.

#### **4.9. What do you think of the partnerships with educational institutions in Greece and abroad and with the community?**

The department of Electronics is trying to develop partnerships with academic research centers, that from Greece and abroad. There is already a successful partnership with the Brunel University of Great Britain, into offering graduate programs on the subject of wireless communications. This cooperation is not confined only to joint teaching, but it also involves common research groups. Several members of the TS have close cooperation with teaching members of the neighbouring Aristotle University of Thessaloniki and the University of Macedonia. Other members of the TS collaborate with foreign institutions such as the Belarus State University, the Belarusian State University of Informatics and Radioelectronics, as well as with the Ecole Nationale Supérieure de Télécommunications de France. Finally, several courses of the Greek Open University are held at the premises of the department of Electronics. The partnership with the community is not worth mentioning at the present being.

#### **4.10. What do you think of the mobility of teachers and students?**

Members of the faculty often travel to other educational institutions in Greece and abroad. These travels are either part of research collaborations with members of other institutions or are under a use of Sabbatical in order to obtain a doctorate degree. Travelling of the TS is expected to become more frequent as the research activities of the department increase.

The mobility of the students is generally appreciable within the European student exchange programs (e.g. Erasmus). Through these programs the department accepts foreign students from European Union countries.

### **5. Research work**

*In this section the department of Electronics is required to analyze and evaluate the quality of the ongoing research projects, by answering to a series of questions that correspond to the criteria outlined in the document "Quality Assurance in Higher Education: Academic Units Quality Assurance" Version 2.0, July 2007, ADIP, Athens, (<http://www.adip.gr>).*

*The answer to each of the questions should at least include:*

- a) What, in the opinion of the department, are the main pros and cons of the department to the corresponding criterion.*
- b) How can the department benefit from the pros and what are the risks coming from the cons to the respective criterion*

#### **5.1. What do you think of the research promotion within the department?**

The research policy is shaped individually by the research agendas of the members of the TS rather than centrally by the department of. Therefore, there is a significant variation in the quantitative and qualitative composition of the produced project.

The research activity of the department is monitored mainly through indicators relative to the publications in the international scientific press. Each member of the TS may constantly update his/her scientific activity in the personal website. For the time being, there is not a centralized database and the system operates on a voluntary and individual basis.

An incentive for the conduct of research is the continued improvement of the laboratory infrastructures, which offer a friendly and efficient environment for research.

The personal is informed on funding opportunities for research through relative documents arriving at the administration office. Each document is forwarded to the sectors in orders to inform their members. Moreover, the Research Committee provides relevant information through the website [www.teithe.gr](http://www.teithe.gr).

#### **5.2. What is your opinion on the research programs and projects carried out in the department?**

The department of Electronics has participated or participates in programs that fall into various subject areas. Examples may include:

- Management of biomedical data.

- Simulation of climatic conditions (construction Climate Chamber).
- Student e-card.
- Development of a portable system for monitoring electromagnetic emissions and measuring the electromagnetic radiation.
- Development of an Automated system for Testing of Electronic Devices (AEXIS).
- Design and study of circuits with transistors TFT.
- "Smart House" remote management systems by telephone (TILESFON).

The funding of the programs came from:

- The research Committee of TEI-Th.
- Archimedes II (program to support research in TEI).
- EPEAEK (research project of the ministry of education).
- Research projects of the General Secretariat of Research and Technology (GSRT)
- Private funding (companies such as Olympia Electronics SA, Cardisoft SA).

Some programs were funded jointly by several sources.

Moreover, the following should be mentioned:

- During the last three years there seems to be a difficulty into finding funds for research.
- The Research Committee of TEI-Th programs funds low cost research projects. This implies that are restrictions on the scope and the number of the funded projects.

Future research efforts should be focused on proposals that can absorb resources either from national targeted research programs such as the Archimedes-II program or from co-financed programs from public and private entities.

Alternatively, the funding of research projects can be obtained through European programs. The effort for multi-level cooperation with foreign educational institutions, the countries of the European Union and the former Eastern bloc, combined with the thematic areas covered by the Department of Electronics, allow for an optimistic approach for the future proposals.

### **5.3. How do you assess the available research infrastructure?**

All of the workshops and their equipment is aged less than 10 (from 2001 and beyond). They can therefore be classified as modern in their organization and equipment. The physical infrastructure is relatively adequate, appropriate and qualitative and can serve the research efforts. Furthermore, additional equipment was acquired by research programs. This route, namely the acquisition of modern equipment through research programs and the subsequent use, at least part of this, in the educational process may become in the future a systematic way to renew and improve the infrastructure. Finally, from October 2008 has begun the process of institutionalization of various research laboratories, but has not yet been completed.

### **5.4. How do you judge the scientific publications by members of the faculty over the last five years?**

Most of the teaching staff are research active. A measure of the number of publications in international scientific journals and conferences, with a jury, is given in Table 11-9. Note that several of these publications have been made in collaboration with researchers outside of the department and/or the T.E.I.TH.

### **5.5. How do you assess the degree of recognition by others of the research done in the department?**

The popularity of the published research to the wider scientific community is reflected in Table 11-10. Note that this list is incomplete, and possibly lead to an underestimation of the true recognition these articles have received. Included are only the articles shown in Scopus, as sought by the Author IDs. References to articles published in non-English language journals and conference proceedings are omitted.

Moreover, other research activities of the TS that could disclose a criterion of recognition of their work (eg participation to committees of scientific conferences or to editorial boards of scientific

journals) are not concentrated in a way that can format the overall picture of the department, in this area.

### **5.6. What do you think of research collaborations of the department?**

Each member of the academic staff of the department, to a considerable extent, continues its collaboration with the originating universities, either from Greece or from abroad. This is illustrated by the joint research work. In particular there is, mainly on a personal level, cooperation with the following institutions:

- AUTH - Department of Electrical and Computer Engineering.
- AUTH - Physics department.
- Greek Open University (EAP)

Regarding research partnerships at departmental level, there is a promising collaboration with the Brunel University (UK). The existing successful co-organizing of a postgraduate department is planned to be evolved to dissertations level, where research will be conducted at the premises of the department of electronics.

### **5.7. How do you see the distinctions and awards awarded to members of the staff for their research work?**

The "Smart House" remote management systems which was co-funded by GSRT and the companies Olympia Electronics SA and Cardisoft SA, was selected by the external assessor of PPKKM (Regional Innovation Pole of Central Macedonia) as the standard model case study.

### **5.8. How do you assess the contribution of the students to the research?**

The contribution of students to the research carried out at the department of Electronics can not be classified as systematic. The number of students employed depends on the type of the research program and its potentiality to be split into such sections that will enable the effective engagement of students with some of them.

The situation should improve with the presence in the department of young scientists and postgraduate students which will prepare/participate in research projects of high quality.

## **6. Relations with social/cultural/productive (SCP) entities**

*In this section the department is required to critically analyze and evaluate the quality of its relationship with SCP entities in response to a series of questions that correspond exactly to the criteria described in the document "Quality Assurance in Higher Education: Academic Units Quality Assurance" Version 2.0, July 2007, ADIP, Athens, (<http://www.adip.gr>).*

*The answer to each of the questions should at least include:*

- a) What, in the opinion of the department, are the main pros and cons of the department to the corresponding criterion.*
- b) How can the department benefit from the pros and what are the risks coming from the cons to the respective criterion*

### **6.1. How do you assess the cooperation of the Department with SCP organizations?**

#### **1) Research projects:**

Over the past years 5 research programs have run through which the department of Electronics has worked with IT companies (OLYMPIA ELECTRONICS SA and Cardisoft SA is 2 of them), and the Department of Electrical and Computer Engineering of Aristotle University of Thessaloniki (in 2 of them). 4 out of 5 programs pointed at the designed and production of electronics aimed at consumers. The fifth project involved the installation of a wireless network (WLAN) in the premises of the department. With the implementation of this project was made possible the wireless Internet access at the ATEI-Th for visitors during conferences, or for the students of the undergraduate and graduate courses held in the auditorium and the classrooms. Information about these programs is available on the website of the department.

The programs were attended by 9 members of the TS, 4 of which are permanent members of the staff and 5 are laboratory colleagues of the department of Electronics. These programs also involved one undergraduate and one graduate student of the department.

The scientific collaboration of the department was made known to the public (a) through the partner companies with the implementation/optimization of the electronic products that were manufactured or optimized and affect consumers, (b) through international conferences attended by members of the TS in order to present the research results, and (c) through the websites of the members involved in the research projects.

**2) Connection of the department with the manufacturing organizations through the mandatory student placement.**

More than 50 private companies located in the wider region of Thessaloniki employ students to develop their practice. 23 of them specialize on IT technologies (e.g. INTRACOM, OTE SA), 20 focus on electronics – automation - industry (e.g. DELTA-PI A.VE.T.E.) and 14 companies deal with medical equipment (e.g. GENERAL ELECTRIC SA). More than 11 private companies, in the greater area of Athens (e.g. INTRACOM, Vodafone SA) and 12 companies in the mainland of Greece (e.g. OLYMPIA ELECTRONICS SA, Heracles SA) employ students to develop the practice. Finally 19 public companies (e.g. HAI SA, General Regional Hospital Papageorgiou, National Bank, ERT SA, Olympic Airways Services SA) also employ students.

A lot of graduates of the department were hired by companies by the completion of their practice (e.g. ERT SA, OLYMPIA ELECTRONICS SA, WIND).

**3) Sports Activities**

The department of electronics has a football and a basketball team. Both of these teams are the of the champions ATEI of Thessaloniki in their respective sports. A member of the TS is responsible for the sports activities and has been honored in 2008 by the Association of the Basketball Societies of Thessaloniki for his contribution.

**4) Using the infrastructure of the department to conduct courses of the EAP and the graduate program of the department in collaboration with Brunel University.**

Over the past two years the infrastructure of the department (classrooms and laboratories) are used to conduct all of the courses of the Greek Open University as well as the courses of the graduate program of the department in collaboration with the Brunel University. A member of the TS is responsible for the EAP courses and one technician of the department is also employed. Three associates of the department teach at the graduate program of the department conducted in collaboration with the Brunel University.

**5) Connection of the department with the graduates of the department.**

A database of the employment of graduates of the department was created during the scientific project EPEAEK II which dealt with "reshaping the undergraduate studies".

In 2005 an alumni meeting was held at the premises of the department of Electronics. A database of alumni was created beforehand with 3000 graduates enrolled, 800 of which attended the meeting. A member of the TS was responsible for the event and a student was employed for the entire organization. This meeting was a pioneer event in northern Greece for graduates of the Electronics department.

**6.2. How do you assess the dynamics of the department for the development of cooperation with SCP organizations?**

Mechanisms for the development of cooperation are developed through the research programs, the students' training program, and due to the certified facilities of the department for the conduct of undergraduate/graduate courses.

Members of the TS are interested in developing partnerships; and there is a strong interest from affiliated companies to offer positions for practice, or to develop partnerships on a scientific level.

The department has laboratories for conducting undergraduate/graduate courses, which are used in the past two years to conduct the graduate curriculum.

**6.3. How do you assess the activities of the department towards developing and strengthening partnerships with SCP organizations?**

The results of collaborative projects are reported in scientific journals (including IEEE journals). The objectives, scope and the output results are presented every year at the INFOSYSTEM exhibition. Finally the collaborations are displayed on the website of the department.

The objectives, scope and its output results were also presented at the alumni meeting meeting. Finally there is close cooperation with alumni who are executives of SCP entities.

#### **6.4. How do you see the connectedness of cooperation with SCP organizations with the educational process?**

Towards this direction educational visit of students to SCP facilities are organized. Guided visits are planned in some courses, however this is left to the discretion of the teachers. Occasionally, members of the SCP are invited to give a speech in relevant events of the department. However members of SCP entities are not employed as teachers.

#### **6.5. How do you assess the contribution of the department at the local, regional and national development?**

The existing research partnerships are stable and sustainable through the scientific projects and the student placement. There are programmatic cooperation agreements between the departments and the EAP as well as the Brunel University.

Unfortunately the department is not represented at the local and regional agencies and the various development institutions. Moreover the department does not participate actively at the local/regional development plans. There is however interaction and/or cooperation of the department with the Department of Electrical and Computer Engineering of the AUTH through research programs, the Department of Informatics, through the research project Archimedes, as well as with other departments of the ATEI - Th, such as the Food Technology department. The cooperation with the latter was developed through a thesis that aimed at the production of a video, advertising the department of Food Technology at the International Exhibition of Thessaloniki.

The department does not develop relationships with the local and regional community and with local, regional and/or national economic infrastructure. The department does not participate in major regional, national and international research and academic networks. In 2005 the department organized a pioneer alumni meeting.

### **7. Academic Development Strategy**

In this section the department is required to critically analyze and evaluate the quality of its Academic Development Strategy, by answering a series of questions that are in complete accordance with the evaluation criteria that are presented in the leaflet: "Safeguarding of higher education quality: Analysis of the criteria for the safeguarding of Academic units' quality." Edition 2.0, July 2007, ADIP, Athens, (<http://www.adip.gr>).

The answer to each question should at least include:

- a) Which are, according to the department, the central positive and negative characteristics of the department with respect to the criterion under consideration.
- b) What are the possibilities of turning the positive aspects into an advantage and which are the potential dangers emanating from the negative aspects of the relevant criterion that are identified by the department.

#### **7.1. What is your view on the academic development strategy of the department?**

The academic development strategy of the department is taking place inside the four year programming framework of the department and sets about all the activities of the department such as: Planning of new vacancies for Educational Personnel (EP), sufficient number of students according to the department's potential, adequate publicity for the department (promotional initiatives for the department's educational value, participation in exhibitions, events), formation and renovation of the department's laboratories. For the elaboration of the Academic Development Strategy a number of factors are taken into account: the evolution and progression of the EP, the new vacancies necessary for the sufficient recruitment of the department, the annual number of prospective students and the infrastructure along with the syllabus of the department. Moreover, the efficiency of the projection of the department to society is a matter of special interest in order to attract students of the highest level. The same policies are the driving forces behind the recruitment of EP. Since staff members are informed that the implementation of the department's developmental plan depends, to a large extent, on public aid, the department aspires to follow a maximalist approach in its 4-year planning for the successful completion of the majority of its initial targets.

## **7.2. What is your view on the process of elaboration of the Academic Development Strategy of the department?**

During the elaboration of the Academic Development Strategy of the department all educational personnel and student representatives are taking part in debates and proposals that are taking place in the department's collective administrative governing bodies, such as departmental or faculty general assemblies. Definitive decisions are made by the faculty's general assembly. The faculty's board has the administrative responsibility for the generation and supervision of the developmental plan's implementation. This project is supported by the head of the faculty, the departmental supervisors, and the various committees that potentially are formed by the faculty's council for the implementation of certain phases of the Academic Development Strategy (i.e. committee for the reproduction of the syllabus, committee for the safeguarding of quality and the evaluation of the faculty etc.)

## **8. Administrative services and infrastructure**

In this section the department is required to critically analyze and evaluate the quality of its Administrative services and infrastructure by answering a series of questions that are in complete accordance with the evaluation criteria that are presented in the leaflet: "Safeguarding of higher education quality: Analysis of the criteria for the safeguarding of Academic units' quality." Edition 2.0, July 2007, ADIP, Athens, (<http://www.adip.gr>).

The answer to each question should at least include:

- a) Which are, according to the department, the central positive and negative characteristics of the department with respect to the criterion under consideration.
- b) What are the possibilities of turning the positive aspects into an advantage and which are the potential dangers emanating from the negative aspects of the relevant criterion that are identified by the department.

### **8.1. What is your view on the effectiveness of administrative and technical services.**

#### **8.1.1. How well is the Secretariat of the faculty and of each department organized and recruited?**

The A.T.E.I.-Th. Secretariat of the Electronics Department employs two permanent administrative employees from the A.T.E.I. who are supported by employees under contract or students that are recruited to provide 10 hour employment which is sponsored by A.T.E.I. One employee is responsible for issues related to students while the other deals with administrative issues. Internet use and administrative e-services contribute significantly in the best possible accommodation of students' and Academic personnel's needs. The two departments (Infrastructure and Specialization) of the faculty do not have administrative support. In order to cover all immediate needs there is a need for two more employees to be occupied in the secretariat of the two sectors of the department. The department of Electronics runs a postgraduate programme on Wireless Communication Systems which is provided by the Alexander Technical Institute of Thessaloniki and the Brunel University of the United Kingdom and it has an employee responsible for its administrative support. The department's secretariat is organized with the support of up to date technological infrastructure and automated technology support systems.

#### **8.1.2. What is your opinion on the degree of efficiency of the services provided and of the working hours of the faculty's and departments' secretariat for the accommodation of academic personnel's and students' needs.**

The A.T.E.I.-Th. Secretariat of the Electronics Department is particularly efficient, due to the coherent division of labor, the support emanating from the PYTHIA electronic administration system and the implementation of specialized support of up to date technological infrastructure and automated technology support systems (PCs, printers, broadband internet). The office hours for students are daily from 11:00 to 13:00, and each student can refer to the secretariat which is located on the ground floor of the Electronics department building. The aforementioned office hours are considered sufficient but can be extended in periods of increased workload.

The secretariat that is responsible for the postgraduate program is located on the first floor of the A.T.E.I.-Th. in the Electronics department building and its office hours are from 09:00 to 13:00 from Monday to Thursday and 09:00 to 17:00 on Friday and Saturday.

The Postgraduate program's secretariat holds an updated database with students' telephone numbers and e-mails in order to be in direct and continuous contact with them, while it provides a continuous flow of information for various matters of their interest. Additionally, it is in constant contact with the respective departments of the Brunel University for the settlement of any possible problem.

**8.1.3. How effective is the cooperation between the administrative services of the department and the central administration of the Institute? How operational are:**

- a) the organization and the library's hours of operation  
b) the Informational Services**

The department's secretariat is cooperating with the A.T.E.I. of Thessaloniki central administration on an everyday basis. Students are served by the A.T.E.I.'s central library which has 250 different scientific journals and 14.000 books, thus operating as a borrowing library. The central library is open all weekdays from September to June from 08:30 to 17:00 and from July to August from 08:30 to 14:00. The central library's reading room is undersized and does not accord with the specifications a modern library should have, which makes it unsatisfactory for the increased needs of the Electronics Department's students and staff. A new central library is under construction though, which will provide a solution to the above mentioned problems while at the same time will attract more students. This may lead to the extension of the library hours.

There is not sufficient information flow for the announcement of research programs and future conferences that could interest the academic personnel. The information services provided by the library may help but do not promote research and information flow on specific issues of academic community.

**8.1.4. How are the laboratories and/or the classrooms of the department organized and staffed?**

There aren't any statutory reading rooms operating within the department of electronics of the A.T.E.I of Thessaloniki. It is true that it would be useful for the department and for the benefit of the students to have a central reading room-library to be used exclusively by the students of our department. In fact that could be one of the medium-term targets of the department towards the improvement of the services provided

The laboratories operating within the department are : A1 Mass Media Technology I, Power Electronics, A2 Electronics I , Electronic Physics, A3 Mass Media technology II, A4 Programming, Networks, A5 Antennas, Microwaves II, Radars, C1 Optoelectronics, Optical communications C2 Electric Circuits I, Circuit Theory, C3 Telecommunications I, II, III C4 Microprocessors II, Microprocessor Applications, Networks and Networks multimedia, C5 Microprocessors I, C.A.D., C6 Radio and Television production, D1 Digital Circuits I, II, D2 Electronics III, Electronic Measurements, Sensors D3 Automatic Control Systems, Industrial Automations, Digital Control Systems, D4 Electronics II, Electrical Measurements.

There is no secretarial or other administrative support for the laboratories. The existing laboratory facilities are used for conducting laboratory courses, providing the necessary laboratory equipment to students and facilitate the research activities of the entire teaching staff of the department.

**8.1.5. How effective do you think they operate?**

The laboratories of the department operate efficiently regarding the educational part and are open to students for most of the day, as members of staff and lab associates have their offices within the laboratories. Most laboratories are fully equipped for their training purposes, while the modernization as regards the equipment is already underway for those necessary (e.g. Lab of Telecommunications).

For laboratories to run efficiently, which will contribute to a better provision of knowledge to students as well as producing additional research work, the following are needed:

- The optimal allocation of courses per laboratory room. As an example, lab A1 houses the disparate laboratory courses of Power Electronics and Mass Media Technology I, while in the adjacent lab A3 runs exclusively the course Mass Media Technology II
- The necessary space allocation within the laboratories for research purposes only and their equipment with the necessary specialized hardware and software.
- The establishment of research laboratories with their leaders.

#### **8.1.6. How is the infrastructure and the service of computing and telecommunication supported? How effective is it?**

Infrastructure and informatics services within the department of Electronics are highly developed. The department has a large number of PC's while constantly acquires new ones. The Nautilus room, a modern pioneer islet of 40 high spec PC's is open for the students of the department. There, the students can make free use of the computers for their coursework or just connect to the Internet. With a nominal fee, students have access to photocopiers, allocated within the room, which they use routinely. In every classroom there is an electronic interactive whiteboard connected to a PC, while the use of internet by the lecturer is possible through a Wi-Fi network that operates within the department. The secretariat of the department runs effectively largely through the PYTHIA software, where students can through internet process their affairs e.g. enrolment in courses, etc. There is also a webpage that provides continuous information to students on issues related to the current educational process, as well as academic and professional issues of interest to current students and alumni of the Department of Electronics. In the E-LEARNING website, notes and educational materials for each course are posted by the teachers. Thus staff members are in constant communication among themselves and with the students and have the option of i) monitoring the number of students enrolled in classes for efficient class programming (eg number of labs to be scheduled, etc.) and ii) posting of test scores when needed. Furthermore a forum for students (FORUM) within the E-Learning website allows the teachers to have immediate feedback on student complaints and comments about the educational process. Finally, members of the department have access, when needed, to the conference room of the A.T.E.I. while the construction of a conference room within the department of electronics is well underway. Therefore, it can be argued that the department's computer and telecommunications services are highly developed compare to other departments.

## **8.2. Student Care Services**

### **8.2.1. How is the institution of tutor-advisor applied?**

This institution has not implemented yet been applied in the department of Electronics of A.T.E.I. of Thessaloniki. The application is assumed to essentially be a matter of time.

### **8.2.2. How effectively the access of members of the academic community is supported as regards the use of Information and Communication Technologies?**

All members of the educational staff and the temporary staff of department after they get employed they acquire e-mail accounts, accounts for accessing the online secretariat (PYTHIA) and for training web site (E-LEARNING) of the department. There is a tendency each member staff of the department to own a PC.

### **8.2.3. Is there any support services for working students? How effective is it?**

Such a service does not exist in the Electronics Department of the A.T.E.I of Thessaloniki as regards the undergraduate students. Special attention is given to the postgraduate students of the department, whose courses take place mainly during Friday and Saturday especially evening hours to facilitate working students. Finally, extra care is taken for working postgraduate students of the department to provide them grants and relevant benefits from the Organization of Occupation, when this is feasible to be applied.

#### **8.2.4. Is there any support services for weak students and for those who do not complete their studies on time? How effective is it?**

To support weak students extra tutorial lessons are taught, which are considered to be very satisfactory. Tutors are always available to provide additional knowledge and literature. In general the problem is located in the wide range of new coming students, as regards their knowledge background and capabilities. Consequently, any of those services provided to weak students are evaluated for their effectiveness primarily by the students' interest and response.

#### **8.2.5. Do any scholarships provided to excellent students or special category students (in addition to scholarships of State Scholarships Foundation)?**

Every academic year, scholarships are given to two of the best students of the respective academic year for their academic performance. Additionally the best student undergraduate student receives a scholarship, in case he wishes, to enroll for the Postgraduate Program of Department.

#### **8.2.6. Is there a specific department policy as concerns the smooth integration of newcomers in the department? How effective is it?**

There is no specific policy, apart from some gathering and welcome events. Important role plays the Association of Students and the union factions towards this issue. Moreover, students experiencing particular integration problems in the department, can personally communicate with the Head of the department, the heads of sectors and the rest of the education staff who are taking care for the direct solution of their problems.

#### **8.2.7. How students generally participate in the Department's and the Institution's life?**

Students generally show a good mood as regards participation in the department's life, having high rates of participation in events (e.g. participation in the annual International Fair of Thessaloniki and the Infosystem fair), gymnastics teams (e.g. football team, basketball team) and events organized by the department or institution. In the Nautilus room, photocopiers and printers operate at a low fee, mainly put towards the student activities. Student representatives are always participate in the administration of the department and the discussion forums in the website of the department is quite intense as concerns the departments activities as well as that of the A.T.E.I in general. Finally, despite the overcrowding at peak times in the corridors of the building, special attention is paid in keeping the interior as clean as possible, without placing posters around, in contrast with other Institute areas.

#### **8.2.8. How do foreign students who move to the department get supported?**

The department accepts foreign students from both EU countries and Eastern Europe through the ERASMUS-MUNTOS program. English language knowledge is a requirement for that. All of the department's academic staff speaks English, thus there is no problem for supporting foreign students. The department is now preparing a proposal to the Ministry of Education for creating a foreign language version of Department of Electronics program.

### **8.3. Department infrastructure**

#### **8.3.1. Sufficiency and quality of Library documentation**

The Department does not have its own library but it uses the Institute's Central Library. The Central Library is relatively well equipped although there is plenty of room for improvement. An important as well as useful feature of the Library is the free access to scientific journals through the cooperation between the Hellenic Academic Libraries Link (HEALink) and the Information and Loan management services of the Central Library of the ATEI of Thessaloniki. Additional access (i.e. in scientific journals published by IEEE) is particularly useful for the department of Electronics.

### **8.3.2. Sufficiency and quality of communal technical equipment**

As part of the communal technical equipment of the department there a fully equipped room named Nautilus including Personal Computers, photocopy machines and projection monitors as well as another room called Eykleidis especially equipped for students to undertake their dissertations (this room is under development) while wireless internet is available for all students (WLAN) of the department. The current communal equipment meets the needs, as concerns the quality, of the requirements of the department.

### **8.3.3. Sufficiency and quality of rooms and studying equipment**

In the department of Electronics of ATEI of Thessaloniki there are no legislated studying rooms. It is one of the medium-term aims to develop a central study room exclusively for the students of the department.

### **8.3.4. Sufficiency and quality of tutor offices**

All of the permanent members of lecturers have their own office which is well-equipped. The department offers a communal room for the temporary personnel while the majority of them is located within the Lab-rooms

### **8.3.5. Sufficiency and quality of Secretary-rooms and Sectors**

The secretary premises for the undergraduate and postgraduate courses are sufficient and their quality is good enough. Sectors do not have their own secretaries, yet.

### **8.3.6. Sufficiency and quality of conference rooms**

The General Meetings of the members of staff is taking place in the Lecture Theatre of the department. The department council is meeting in the head's of the department room, while the general meetings of the sectors are taking place in the lecture-rooms. All of the rooms are sufficient and of good quality.

### **8.3.7. Sufficiency and quality of the rest of the areas (lecture rooms, experimental schools, museums, archives, farms, demonstrating areas etc)**

The lecture-rooms are equipped with personal computer (PC) connected to the internet, whiteboard, interactive whiteboard and video projector. Both sufficiency and quality of lecture-rooms are particularly satisfactory.

### **8.3.8. Sufficiency and quality of infrastructure for people with special needs**

Special ramps and bars are included in the entrance of the department to allow easy access to people with special needs. An elevator is also available within the department for easy access in the first floor of the building.

### **8.3.9. How is the access of the academic community in the infrastructure and equipment of the Institution is ensured?**

In general, all the infrastructure and equipment of the department which is relative to the department are available to all the members of the academic community for direct access. Portable personal computers, projectors (either portable or not), transparency-projectors, lecture-rooms as well as a lecture theatre are available within the department.

## **8.4. New technology utilization from the several department services (except the educational and research work)**

### **8.4.1. Which if the department activities get supported by the information and communication technology**

In the web-space e-learning there is room available for each module of the department where the corresponding lecturer uploads useful relevant material such as lecture notes, literature, exams material, exercise solutions etc.

Most of the tutors have their own personal website where they upload educational material relevant to the modules they teach, their research activities, available dissertations as well as useful material as regards their type of science and their area of study.

Electronic secretary services are available allowing students to electronically choose their term modules as well as to get information regarding their exam marks, while the members of staff have direct information as regards the number of their students so as to optimize their planning regarding the number of the necessary lab groups.

**8.4.2. Which of the above activities and in what extend are used by the administration services, the department students and the academic staff?**

The academic staff and the department students are making extensive use of the email and the world wide web while the phone services are limited only to members of the academic staff and the department's administration staff. Up until May 2009, phone-calls were limited to local ones while activating the new IP telephony scene, calls are now allowed in all land line numbers.

**8.4.3. How many members of academic staff their own website?**

Only a few of the academic members of staff of the department have their own website (5 out of 16 permanent staff). Since this is one of their obligations according to legislation, it is anticipated that in a short period of time each member of the permanent member of staff will have its own website.

**8.4.4. How often the department's website is updated on internet;**

The website of Electronics department of A.T.E.I. of Thessaliniki is updated definitely every academic semester, but also in real time in case a relevant issue arises. In fact, a special committee for website deontology has assigned from the department's council that continuously observes the website and interferes in case an issue comes up.

**8.5. Transparency and effectivity in the usage of infrastructure and equipment.**

**8.5.1. Is rational use of the available infrastructure applied? How is it ensured?**

Yes it is applied. The section responsible staff with the supervisor of the department, in cooperation with the conventions of general sections and departments, watches over the indemnity of the rational use and development of the available infrastructures of the department.

**8.5.2. Is rational use of the department's available equipment applied? How is it ensured?**

The section responsible staff and the supervisor of the department in cooperation with the general conventions of sections and departments watches over the indemnity of the rational use and development of the available equipment of the department.

**8.6. Transparency and effectivity to the management of finance.**

**8.6.1. Is editing and performance procedure of the department's budget provisioned?**

The outlays allocation to the departments is applied annually by TEI's council and the council of school of technological applications depending to the available outlays from the central budget of ATEI of Thessaloniki and the central cervices, so there is no need to edit primary a budget that refers exclusively to the department of electronics.

**8.6.2. Is the resources allocation procedure provisioned? How effectively is applied?**

Yes. ATEI's council of Thessaloniki allocates the recourse to the departments and afterwards, the General Convention of electronics department allocates them to all the distributed needs. The procedure operates fair and democratically, depending to the department's lab needs. Usually, the financial recourses that come into the department are used for the improvement of its infrastructure and equipment.

### **8.6.3. Is the review procedure provisioned? How effectively is applied?**

The department submits a review to the administration of ATEI of Thessaloniki, about the usage and development of outlays that are provided.

## **9. Conclusions**

*In this Unit, the department has to detect its mainly positive and negative points, in the way they connote from previous units and to acknowledge development opportunities of its positive points and potential risks that comes up from its negative points.*

### **9.1. Which, in your opinion, are the mainly positive and negative points of the department, as they appear from the Internal Evaluation Report?**

A tertiary educational foundation should have as intention the allowance of high level education to its students, which are correspondent to the demands of business market. For this purpose four constituents are required:

1. Appropriate educational staff.
2. A contemporary program of undergraduated studies, supplemented by appropriate programs of postgraduated studies.
3. Students with high degree of knowledge and interest for their science..
4. Infrastructures.

The basis for the complete operation of every educational foundation is the educational staff (ES). Especially, the permanent ES of the department of electronics consists of 16 members, between them two are in educational permit. Six members of ES have a PhD diploma. Fourteen of the active members of ES, besides their educational work, have to provide important administrative and in many cases secretarial work. It is indicated that the typical working hours fluctuates from 10 to 16 hours a week, while has to be added the work pressure from the elaboration of the dissertations and the general collaboration with the students.

The quite small number of Es members, who also possesses different scientifically fields of electronics, has as result the isolation between them. One more cause of separation of ES is the fact that many of the 10 applications teachers of the department, confront negatively their colleagues who are in higher stages and especially the younger.

The above facts comprise a brake in every attempt for further progress of the department. Especially, in an important number of subjects the correlation of the content of theoretical and practical part, is too small, and the responsibility is exclusively on ES, while overlaps to the content of different subject are noticed. This creates discontent to the students, which emerges in the most obvious way by the exceptionally small attendance to the theoretical instruction, which is not obligatory. Although the problem is familiar, the reformation of the studies program which could confront it, regresses for a long period of time, without the perspective of completion, because of the peculiar relationship between the members of ES.

Besides the weakness of the undergraduate program of studies, department of electronics offers from the academic year 2007–08 a program of postgraduate studies in «Wireless Communication Systems», in cooperation with the University of London «Brunel». The program is provided in English, while all tutors are ES members at the University of Brunel. In the postgraduate program participates only one permanent member of ES from the electronics department, fact that demonstrates that the mass of ES is unconcerned about the actions of the program and therefore is not taking advantage from it.

In the department of electronics are enrolled almost 1500 students. Between those students, only a percentage of 10% to 20% participates actively into the educational procedure with its systematic attendance to theory classes. As a result, the average time of graduation goes beyond 4 years, while the average gradation of the diploma is very low (6.0) the causes of the phenomenon are many, like, the small number of permanent ES, the not harmonic collaboration between the members of ES, the weaknesses of the program and the regulation of the studies, but mainly the students low level of knowledge, many of whom don't have interest of the electronic science objective.

Unfortunately, the last years is observed a decrement of the student level of knowledge who are inserted to the department, while parallel, the pressure of the students for quick acquisition of the diploma, increases. The above facts comprises brake in every effort for development of the department, which is compulsory need to inquire ways in order to attract conscious students with interest in their science and furthermore with high background of knowledge.

The evaluation of the department by its students, has been actualized with the indicated procedures the vernal semester of 2008. However, the next academic semester (winter 2008–09), objective impermanent difficulties didn't allow the procedure of evaluation to be completed in the predicted period of time. The result was that the biggest part of the questionnaires was completed by the students in the duration of the exams, while some members of ES denied to participate to the evaluation procedure. In the table 11-11 are recorded the concentrated gradations, from the elaboration of the questionnaires in every academic semester, which are referring to the tutors, the organization of the subjects and the students of the department. There have been calculated 11 indices, from which three (3) evaluates overall the educational staff of the department (permanent and non permanent), six (6) the organization of the subjects to the studies program and two (2) indices the coherence of the students to their obligations (theory and lab). The conclusions that arise are that:

1. The students are not overall contented from the tutors. This discontent refers to the organization and the presentation of the subject's content, to their ability to teach, and their coherence to their typical obligations.
2. They believe that an important content and subject targeting improvement is necessitated and also general readjustment of the program of studies.
3. Eventhough the department offers new infrastructures in relatively synchronous equipment, only half of the students judge them sufficient.
4. The method of knowledge with the elaboration of assignments is extremely limited and inefficient.
5. The participation of the students into the educational procedure is very small, even though the attendance of the lab subjects are obligatory. Moreover, the level of their preparation related to the research of the subjects is extremely small.
6. The important declination, almost 10% in every indicator which appears between two successively periods of evaluation, is ought to the different conditions in which they were realized. Especially, the evaluation of the winter semester 2008–09, where all the indicators were decreased, doesn't include enough theory subjects and the corresponding members of ES.

The level of the building infrastructure of the department of electronics is sufficient for the coverage of its educational needs and superior in comparison to that of other departments of TEI. The six theory lesson classrooms have capacity of almost 60 students each and are founded with PCs, wireless internet, interactive board and video projector. All the lab classrooms have the possibility to provide education to 20 students, while they are founded with synchronous educational material which is continuously enhanced.

The mainly infrastructure deficiencies concerns a reading-room/library, a theory education classroom of great capacity (200 persons) and especially the establishment of sufficient number exclusively research labs, with complete equipment.

The lack of research labs, in combination to the small number of ES members with promiscuously knowledge objectives and the limited financing by the research committee of ATEI of Thessaloniki, have as a consequence the ES of the department to continue its collaboration with the universities from which derives, for the production of the research work.

## **9.2. Do you discern chances of exploitation of positive points and potential dangers from the negative points?**

In an environment particularly competitive for tertiary educational institutions that is expected to get worse in the next years, the Electronic Department must develop its innate advantages and reject its weaknesses. In particular, the department must take advantage of new technology with which its staff is familiar, for the promotion and supply of educational material to the students.

The appropriate promotion of the department will contribute to attracting students who are interested in electronic science and who have extensive knowledge. The improvement in the quality of the students will contribute significantly to the development of the department.

The upgrading of department's *e-learning* webpage, which already provides extensive educational material is mandatory in that it will offer information interactivity with the use of audiovisual

material, virtual laboratories, self-assessment tests and more generally with the incorporation of guided learning forms that do not require the physical presence of student in the classroom.

The contemporary buildings of the department must be expanded, mainly with the construction of research laboratories, which will allow the development of research by the educational staff. The research efforts must be focus on the submission of proposals concerning the absorption of national and community resources, in part-funded programmes between public and private institutions and in collaborations with institutions from abroad. In general, one more research of the educational staff, in combination with continual adaptations and improvements in material and technical infrastructures, will contribute to the national course of the department.

Since the proportion of the educational staff and the students is roughly 1/90, the need to hire more permanent educational staff is imperatively. The increase of educational staff will contribute to a better distribution of educational and administrative work, at the same time easing the disagreements between the existing educational staff, which constitute the main negative elements for further development of the department.

With the united effort of the educational staff, in short time, it is possible to develop all the many assets that the department has, for the improvement of the educational work provided to the students who are approaching their degree and also the creation of autonomous postgraduate programs of study that will fulfill the contemporary requirements.

## **10. Plans for improvements**

*In this section the department is asked to prepare a plan of action for the removal of the negative points and the reinforcement of the positive ones, determining priorities based on its possibilities.*

### **10.1. Describe the department's short-term plan of action for the removal of the negatives and reinforcement of the positive points.**

- Discussion between the Administration Members of the departments (Board department, General Assembly of Sectors and General Assembly of the Department) about the issues that resulted from the evaluation of the department. The aim is for the educational staff to be fully informed about the matters which contribute to the negative image of the department and to commit itself to the removal of all what concerns them, such as the teaching courses, communication with the students and intensification of research, etc.
- A meeting of the Head of the Department and those responsible for the Sectors with the temporary staff before the beginning of the half-year period, where their obligations will be strictly pointed out so as to avoid a general slackening which has been observed in some members. This meeting can also be repeated in the middle of the six-month term or in regular time periods, as long as this is practical, to examine the situation and to regulate the issues that the temporary associates may face during the performance of their teaching duties.
- Encouragement of the educational staff to use the internet in their teaching more intensively and systematically.
- The undertaking of initiative by the educational staff, so that with the Administrative department, they can immediately promote the updating of the laboratories in which they teach.
- A meeting and discussion between the Head of the department and those responsible for the Sectors, before the exams with the proctors, supervisors and the markers in order to secure the honesty of examinations and the academic level of the exam questions especially and generally of the department, which aspires to provide the society with graduates of high scientific prestige and training.

### **10.2. Describe the medium-term plan of action by the department concerning the removal of the disadvantages and the support of the advantages.**

- Promotion of proposals by members of educational staff about the establishment, organization and operation of the laboratories which will stimulate not only the research activity of the department, but also the promotion to a wider range of social institutions.

- The strengthening of the co-operation with foreign Universities and Research Institutions, such as University of Brunel, and the organization of new postgraduate courses of study. This co-operation can be extended even more at research level with the participation of the educational staff in common research programmes and the active participation in attending the doctoral thesis of students of Brunel University, the preparation of which would take place in the ATEI of Thessaloniki.
- The creation of conditions for the development of the academic environment that will allow members of the educational staff to spend more time at the ATEI, a fact that will contribute to the boost of their creative work in the department, better contact with the students and generally the upgrading of academic activities in ATEI, specifically in the department of Electronics.

### **10.3. Formulate proposals for action by the Administration of the Institution.**

- A positive approach to the proposals of the members of the educational staff concerning the updating of the laboratories, and the development of infrastructures in the Electronics Department, as long as these are sufficiently documented, are within the budget of the Department and lead to the improvement of the level of study and research that the department provides.
- More intense advertising campaign towards the Greek society about the possibilities offered by studies in the Electronics departments of ATEI.
- A partial building extension of the Electronics department and the creation of a modern reading-library for the students of the department.

### **10.4. Formulate proposals for a plan of action by the State.**

Renaming the name TEI to Universities, so that the same rights as Universities can be enjoyed, regarding the development of doctoral dissertation, teaching obligations, as well as the prestige that Universities have in comparison to TEI. This will lead students with higher training to TEI, therefore to the Electronics Department.

## 11. Tables

**Table 11-1. Professional Development of Department Personnel**

		2008- 2009	2007- 2008	2006- 2007	2005- 2006	2004- 2005	2003- 2004	2002- 2003
Professors	Total	3	2	2	<b><u>INCOMPLETE DATA</u></b>			
	Professional Development *			2				
	New hires*							
	Pensioners*							
	Resignations*							
Associate Professors	Total	2	2	3				
	Professional Development *							
	New hires*							
	Pensioners*							
	Resignations*							
Assistant Professors	Total	2	2	2				
	Professional Development *							
	New hires*							
	Pensioners*							
	Resignations*							
Laboratory Professors	Total	9	9	11				
	New hires*							
	Pensioners*			4				
	Resignations*							
Specialist Educational Staff	Total	16	15	20				
Contract Associates**	Total	68	77	52				
Laboratory Personnel	Total	5	6	6				
Administrative Personnel	Total	2	2	2				

\* Last year reference

\*\* It refers to contract number – not to associates' number (e.g if an associate has two contracts, for winter & spring terms, then two contracts are accounted for)

**Table 11-2.1. Development of registered students, all academic years included**

	2008-2009	2007-2008	2006-2007	2005-2006	2004-2005	2003-2004	2002-2003
Undergraduate	1556	1450	1490	1510	1443	1394	1386
Post Graduate	24	25	0	0	0	0	0
Doctorate	0	0	0	0	0	0	0

**Table 11-2.2. Development of new entrant graduate students**

	2008- 2009	2007- 2008	2006- 2007	2005- 2006	2004- 2005	2003- 2004	2002- 2003
Exams	1061	997	1024	1039	1022	986	992
Transfer (from other Dept.)	347	331	333	335	305	303	308
Placement exams	6	6	5	5	5	5	5
Other	142	116	128	131	111	100	81
Total	1556	1450	1490	1510	1443	1394	1386

**Table 11-3. Development of request number, open slots, entrants (registrations) & graduates for the Postgraduate Program (PgP) <sup>1</sup>**

<b>Title PgP:</b> «Wireless Communication Systems »			
		2008-2009	2007-2008
Requests (a+b)		31	41
	(a) Department graduates	22	31
	(b) Graduates of other Dept.	9	10
Open slots		25	25
Covered slots		24	25
Graduates		-	1

**Table 11-4. Development of requests' number, open slots, entrants (registrations) & graduates for the Doctorate Program**

	2006- 2007	2005- 2006	2004- 2005	2003- 2004	2002- 2003
Requests (a+b)	0	0	0	0	0
( $\alpha$ ) Department Graduates					
( $\beta$ ) Graduates of other Dept.					
Open slots					
Covered slots					
Graduates					
Average course of study					

**Table 11-5.1. Undergraduate Courses**

<b>COURSE</b>	<b>Site</b>	<b>Studies Programme Page <sup>2</sup></b>	<b>Lecturer (Associates)</b>	<b>Structure / Elective</b>	<b>Student Evaluated (Yes/No) <sup>3</sup></b>	<b>Lectures</b>
Mathematics I	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#1">http://www.el.teithe.gr/academic/lesson_description.asp#1</a>	43	P. Tzekis (Th)	Structure	Yes	Yes
Physics	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#2">http://www.el.teithe.gr/academic/lesson_description.asp#2</a>	43	I. Haritonidis (Th) V. Kargas(Lab)	Structure	Yes	Yes
Physics of Electronics	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#3">http://www.el.teithe.gr/academic/lesson_description.asp#3</a>	43	M. Drakaki (Th) I. Laftsis (Lab)	Structure	Yes	Yes
Electric CircuitsI	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#4">http://www.el.teithe.gr/academic/lesson_description.asp#4</a>	44	C. Mastorocostas (Th) S. Kirtopoulos (Lab)	Structure	Yes	Yes
Computer Programming I	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#5">http://www.el.teithe.gr/academic/lesson_description.asp#5</a>	45	S. Papadopoulos (Th) I. Iosifidou(Lab)	Structure	Yes	Yes
Electronics I	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#6">http://www.el.teithe.gr/academic/lesson_description.asp#6</a>	46	D. Papakostas (Th) I. Laftsis (Lab)	Structure	Yes	Yes
Digital Circuits I	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#7">http://www.el.teithe.gr/academic/lesson_description.asp#7</a>	46	G. Bamios(Th) X. Tzikas (Lab)	Structure	Yes	Yes
Electric Circuits II	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#8">http://www.el.teithe.gr/academic/lesson_description.asp#8</a>	47	C. Mastorocostas (Th)	Structure	Yes	Yes
Electrical Measurements	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#11">http://www.el.teithe.gr/academic/lesson_description.asp#11</a>	47	I. Kioskeridis(Th) A. Bizopoulos (Lab)	Structure	Yes	Yes
Mathematics II	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#10">http://www.el.teithe.gr/academic/lesson_description.asp#10</a>	48	P. Tzekis (Th)	Structure	Yes	Yes
Computer Programming II	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#9">http://www.el.teithe.gr/academic/lesson_description.asp#9</a>	48	A. Papastergiou (Th) A. Papastergiou (Lab)	Structure	Yes	Yes

Electronics II	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#12">http://www.el.teithe.gr/academic/lesson_description.asp#12</a>	49	D. Papakostas (Th) A. Bizopoulos (L)	Structure	Yes	Yes
Digital Circuits II	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#13">http://www.el.teithe.gr/academic/lesson_description.asp#13</a>	49	D. Papakostas (Th) H. Tzikas (L)	Structure	Yes	Yes
Optoelectronics	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#14">http://www.el.teithe.gr/academic/lesson_description.asp#14</a>	50	M. Drakaki (Th) A. Alexandris (L)	Structure	Yes	Yes
Circuit Theory	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#15">http://www.el.teithe.gr/academic/lesson_description.asp#15</a>	50	M. Dimopoulos (Th) S. Kirtopoulos (L)	Structure	Yes	Yes
Probability Theory & Statistics	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#16">http://www.el.teithe.gr/academic/lesson_description.asp#16</a>	51	M. Syrpi (Th)	Structure	Yes	Yes
Electronics III	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#17">http://www.el.teithe.gr/academic/lesson_description.asp#17</a>	52	N. Haralambidis (Th) N. Haralambidis (L)	Structure	Yes	Yes
Telecommunications I	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#18">http://www.el.teithe.gr/academic/lesson_description.asp#18</a>	52	G. Papadopoulos (Th) S. Sitaridis (L)	Structure	Yes	Yes
Microprocessors I	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#19">http://www.el.teithe.gr/academic/lesson_description.asp#19</a>	53	A. Hadjigaidas (Th) A. Hadjigaidas (L)	Structure	Yes	Yes
CAD & Electronic Construction	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#20">http://www.el.teithe.gr/academic/lesson_description.asp#20</a>	54	A. Hadjigaidas (L)	Structure	Yes	Yes
Electronic Measurements	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#21">http://www.el.teithe.gr/academic/lesson_description.asp#21</a>	54	I. Kioskeridis (Th) D. Kampitaki (L)	Structure	Yes	Yes
Technical Legislation & Studies	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#22">http://www.el.teithe.gr/academic/lesson_description.asp#22</a>	55	A. Georgiadou (Th)	Structure	Yes	Yes
Antennas & Transmission Lines	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#23">http://www.el.teithe.gr/academic/lesson_description.asp#23</a>	56	M. Ioannidou (Th) P. Lazaridis (L)	Structure	Yes	Yes
Signals & Systems	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#24">http://www.el.teithe.gr/academic/lesson_description.asp#24</a>	56	P. Lazaridis (Th)	Structure	Yes	Yes
Telecommunications II	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#25">http://www.el.teithe.gr/academic/lesson_description.asp#25</a>	57	I. Marmorkos (Th) S. Sitaridis (L)	Structure	Yes	Yes
Microprocessors II	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#26">http://www.el.teithe.gr/academic/lesson_description.asp#26</a>	57	D. Mitzias (Th) M. Papadopoulou (L)	Structure	Yes	Yes

Mass Media Communication Technologies I	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#27">http://www.el.teithe.gr/academic/lesson_description.asp#27</a>	58	D. Mitzias (Th) I. Sidiropoulos (L)	Structure	Yes	Yes
Profession Ethics	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#28">http://www.el.teithe.gr/academic/lesson_description.asp#28</a>	59	P. Aravantinou (Th)	Structure	Yes	Yes
Automatic Control Systems I	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#29">http://www.el.teithe.gr/academic/lesson_description.asp#29</a>	60	F. Stergiopoulos (Th) H. Manavis (L)	Structure	Yes	Yes
Mass Media Communication Technologies II	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#30">http://www.el.teithe.gr/academic/lesson_description.asp#30</a>	60	H. Dimoulas (Th) N. Kanatas (L)	Structure	Yes	Yes
Wave Propagation	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#31">http://www.el.teithe.gr/academic/lesson_description.asp#31</a>	61	M. Ioannidou (Th)	Elective	Yes	Yes
Sound Systems	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#32">http://www.el.teithe.gr/academic/lesson_description.asp#32</a>	62	H. Dimoulas (Th)	Elective	Yes	Yes
Foreign Language Terminology	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#33">http://www.el.teithe.gr/academic/lesson_description.asp#33</a>	62	A. Koukouli (Th)	Elective	Yes	Yes
Microwaves I	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#34">http://www.el.teithe.gr/academic/lesson_description.asp#34</a>	62	M. Ioannidou (Th) M. Hristodoulou (L)	Elective	Yes	Yes
Microprocessor Applications	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#35">http://www.el.teithe.gr/academic/lesson_description.asp#35</a>	63	D. Mitzias (Th) M. Papadopoulou (L)	Elective	Yes	Yes
Sensors	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#36">http://www.el.teithe.gr/academic/lesson_description.asp#36</a>	64	I. Kioskeridis (Th) N. Mallios (L)	Elective	Yes	Yes
Telecommunications III	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#37">http://www.el.teithe.gr/academic/lesson_description.asp#37</a>	64	P. Lazaridis (Th) A. Alexandris (L)	Elective	Yes	Yes
Computer Architecture	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#38">http://www.el.teithe.gr/academic/lesson_description.asp#38</a>	65	I. Trohidou (Th) S. Kirtopoulos (L)	Elective	Yes	Yes
Industrial Automations	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#39">http://www.el.teithe.gr/academic/lesson_description.asp#39</a>	66	I. Kioskeridis (Th) H. Manavis (L)	Elective	Yes	Yes
Business Topics	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#40">http://www.el.teithe.gr/academic/lesson_description.asp#40</a>	66	P. Aravantinou (Th)	Structure	Yes	Yes
Power Electronics	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#41">http://www.el.teithe.gr/academic/lesson_description.asp#41</a>	67	I. Kioskeridis (Th) I. Kioskeridis (L)	Structure	Yes	Yes

Digital Signal Processing	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#42">http://www.el.teithe.gr/academic/lesson_description.asp#42</a>	67	A. Papastergiou (Th) A. Papastergiou (L)	Structure	Yes	Yes
Automatic Control Systems II	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#43">http://www.el.teithe.gr/academic/lesson_description.asp#43</a>	68	F. Stergiopoulos (Th)	Elective	Yes	Yes
Microelectronics VLSI	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#44">http://www.el.teithe.gr/academic/lesson_description.asp#44</a>	68	M. Drakaki (Th)	Elective	Yes	Yes
Medical Technology	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#45">http://www.el.teithe.gr/academic/lesson_description.asp#45</a>	69	A. Papastergiou (Th)	Elective	Yes	Yes
Mobile & Satellite Communications	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#46">http://www.el.teithe.gr/academic/lesson_description.asp#46</a>	69	I. Marmorkos (Th) I. Stamatopoulos (L)	Elective	Yes	Yes
Networks & Network Multimedia	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#47">http://www.el.teithe.gr/academic/lesson_description.asp#47</a>	70	L. Tzimkas (Th) M. Papadopoulou (L)	Elective	Yes	Yes
Radio & Television Production	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#48">http://www.el.teithe.gr/academic/lesson_description.asp#48</a>	70	G. Bamniosç (Th) N. Kanatas (L)	Elective	Yes	Yes
Radars & Satellite Systems	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#49">http://www.el.teithe.gr/academic/lesson_description.asp#49</a>	71	M. Ioannidou (Th) G. Papadopoulos (L)	Elective	Yes	Yes
Digital Control Systems	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#50">http://www.el.teithe.gr/academic/lesson_description.asp#50</a>	72	F. Stergiopoulos (Th) H. Manavis (L)	Elective	Yes	Yes
Optical Communications	<a href="http://www.el.teithe.gr/academic/lesson_description.asp#51">http://www.el.teithe.gr/academic/lesson_description.asp#51</a>	72	K. Virsokinos (Th) A. Alexandris (L)	Elective	Yes	Yes
Business Organization & Administration Principles		73	A. Michailides (Th)	Structure	Yes	Yes
Software for Electronic Engineers		74	H. Sarafidis (Th)	Optional	Yes	Yes
Programming Languages for Internet Applications Development		74	E. Bousiou (Th)	Optional	Yes	Yes
Computer Aided Electronic Circuit Simulation		74	D. Papakostas (Th)	Optional	Yes	Yes

Computer Aided Measurements – Virtual Instruments		75	D. Kampitaki (Th)	Optional	Yes	Yes
Surface Mount Technology (SMT)		75	K. Papadimitriou (Th)	Optional	Yes	Yes
Programmable Logic Devices – The VHDL Language		75	P. Papavramidou (Th)	Optional	Yes	Yes
Digital Signal Microprocessors - Controllers		76	E. Bousiou (Th)	Optional	Yes	Yes
Neural Networks		76	A. Papastergiou (Th)	Optional	Yes	Yes
Electromagnetic Radiation Effects on Humans & the Environment		76	A. Papastergiou (Th)	Optional	Yes	Yes
Environmental Noise		77	G. Bamnios (Th)	Optional	Yes	Yes
Foreign Language I, II & III		77	A. Koukouli (Th)	Optional	Yes	Yes
Optical Communication Systems Simulation		77	K. Virsokinos (Th)	Optional	Yes	Yes

Table 11-5.2. Undergraduate Courses

COURSE	Multiple Bibliography	Hours In total	Credits	General Core(GC) Special Core Structure (SC) Specialty(S) Management Economics Law & Humanitarian Studies (MELH)	Registered students	Number of Students participating in the Exams Period A – B	Adequacy of Educational Media Yes/No <sup>4</sup>	Number of Students passing regular & repetitive Exam
Mathematics I	Yes	6	8	GC	320(Th)	75 - 49	Yes	52
Physics	Yes	6	7	GC	363(Th) 139(L)	113 - 61	Yes	81
						61 - 0		61
Physics of Electronics	Yes	5	5	GC	312(Th) 164(L)	116 - 75	Yes	53
						102 - 0		77
Electric Circuits I	Yes	4	5	SP	424(Th) 167(L)	166 - 138	Yes	89
						106 - 0		64
Computer Programming I	Yes	4	5	GC	315(Th) 238(L)	108 - 57	Yes	81
						121 - 0		62
Electronics I	Yes	6	6	SP	292(Th) 150(L)	108 - 81	Yes	48
						117 - 0		45
Digital Circuits I	Yes	5	6	SP	276(Th) 159(L)	93 - 59	Yes	41
						159 - 0		49
Electric Circuits II	Yes	4	4	SP	225(Th)	108 - 68	Yes	84
Electrical Measurements	Yes	4	4	SP	322(Th) 159(L)	48 - 109	Yes	65
						70 - 43		44

Mathematics II	Yes	4	6	GC	165(Th)	73 – 61	Yes	64
Computer Programming/Y II	Yes	4	4	GC	197(Th) 111(L)	76 – 42	Yes	71
						63 – 0		51
Electronics II	Yes	6	8	SP	178(Th) 102(L)	98 – 71	Yes	54
						68 – 27		65
Digital Circuits II	Yes	5	7	SP	260(Th) 134(L)	142 – 85	Yes	108
						134 – 0		50
Optoelectronics	Yes	4	5	SP	132(Th) 91(L)	62 – 39	Yes	53
						62 – 0		32
Circuit Theory	Yes	6	7	SP	184(Th) 149(L)	83 – 78	Yes	46
						140 – 0		100
Probability Theory & Statistics	Yes	2	3	GC	221(Th)	84 – 64	Yes	54
Electronics III	Yes	6	8	SC	92(Th) 128(L)	46 – 30	Yes	18
						128 – 98		48
Telecommunications I	Yes	5	6	S	270(Th) 153(L)	121 – 84	Yes	78
						109 – 0		25
Microprocessors I	Yes	4	5	SC	176(Th) 161(L)	82 – 70	Yes	55
						101 – 30		104
CAD & Electronic Construction	Yes	3	4	GC	125(Th)	80 – 0	Yes	64
Electronic Measurements	Yes	4	5	SC	156(Th) 128(L)	94 – 81	Yes	36
						114 – 38		54
Technical Legislation & Studies	Yes	2	2	MELH	131(Th)	39 – 12	Yes	44
Antennas & Transmission Lines	Yes	7	9	SC	162(Th) 95(L)	95 – 80	Yes	57
						81 – 0		44

Signals & Systems	Yes	3	4	S	199(Th)	94 – 50	Yes	60
Telecommunications II	Yes	4	5	S	92(Th) 119(L)	40 – 27	Yes	14
						93 – 0		44
Microprocessors II	Yes	4	5	SC	164(Th) 82(L)	98 – 38	Yes	91
						82 – 0		47
Mass Media Communication Technologies I	Yes	4	5	S	101(Th) 130(L)	38 – 25	Yes	40
						130 – 92		54
Profession Ethics	Yes	2	2	MELH	206(Th)	70 – 22	Yes	59
Automatic Control Systems I	Yes	6	8	S	111(Th) 115(L)	70 – 35	Yes	53
						110 – 0		54
Mass Media Communication Technologies II	Yes	4	5	S	146(Th) 129(L)	89 – 68	Yes	34
						129 – 0		44
Wave Propagation	Yes	2	3	S	36(Th)	23 – 9	Yes	21
Sound Systems	Yes	2	3	S	45(Th)	24 – 13	Yes	17
Foreign Language Terminology	Yes	2	3	S	28(Th)	12 – 5	Yes	8
Microwaves I	Yes	4	6	S	33(Th) 47(L)	24 – 14	Yes	19
						40 – 0		37
Microprocessors Applications	Yes	4	6	S	63(Th) 47(L)	41- 12	Yes	40
						47 – 0		37
Sensors	Yes	4	6	S	19(Th) 14(L)	5 – 6	Yes	11
						14 – 0		11
Telecommunications	Yes	4	6	S	8(Th)	2 – 0	Yes	2

III					6(L)	3-0		3
Computer Architecture	Yes	4	6	S	75(Th) 60(L)	49 - 12	Yes	48
						47 - 0		47
Industrial Automations	Yes	4	6	S	8(Th) 9(L)	6 - 2	Yes	6
						8 - 0		8
Business Topics	Yes	2	2	MELH	97(Th)	38 - 12	Yes	31
Power Electronics	Yes	7	8	S	132(Th) 94(L)	83 - 71	Yes	67
						88 - 0		60
Digital Signal Processing	Yes	4	5	S	137(Th) 128(L)	74 - 38	Yes	69
						128 - 0		45
Automatic Control Systems II	Yes	2	3	S	7(Th)	0 - 2	Yes	2
Microelectronics VLSI	Yes	2	3	S	42(Th)	25 - 8	Yes	31
Medical Technology	Yes	2	3	S	55(Th)	26 - 14	Yes	33
Mobile & Satellite Communications	Yes	4	6	S	18(Th) 16(L)	13 - 8	Yes	11
						14 - 0		14
Networks & Network Multimedia	Yes	4	6	S	50(Th) 30(L)	30 - 7	Yes	30
						30 - 0		21
Radio & Television Production	Yes	4	6	S	31(Th) 24(L)	8 - 7	Yes	14
						24 - 0		16
Radars & Satellite Systems	Yes	4	6	S	39(Th) 27(L)	22 - 13	Yes	17
						26 - 0		26
Digital Control	Yes	4	6	S	31(Th)	15 - 4	Yes	14

Systems					15(L)	14 – 0		13
Optical Communications	Yes	4	6	S	57(Th) 17(L)	23 – 25	Yes	21
						15 – 0		15
Business Organization & Administration	Yes	2	2	MELHE	143(Th)	39 – 30	Yes	69
Software for Electronic Engineers	Yes	2		OC	56(Th)	10 – 2	Yes	11
Programming Languages for Internet Applications Development	Yes	2		OC	80(Th)	34 – 7	Yes	38
Computer Aided Electronic Circuit Simulation	Yes	2		OC	38(Th)	3 – 3	Yes	2
Computer Aided Measurements – Virtual Instruments	Yes	2		OC	35(Th)	2 – 2	Yes	3
Surface Mounted Technology SMT	Yes	2		OC	92(Th)	34 – 9	Yes	42
Programmable Logic Devices – The VHDL Language	Yes	2		OC	31(Th)	2 – 3	Yes	2
Digital Signal Microprocessors - Controllers	Yes	2		OC	75(Th)	27 – 9	Yes	32
Neural Networks	Yes	2		OC	81(Th)	19 – 3	Yes	19

Electromagnetic Radiation Effects on Humans & the Environment	Yes	2		OC	80(Th)	15 – 7	Yes	19
Environmental Noise	Yes	2		OC	62(Th)	3 – 4	Yes	7
Foreign Language I	Yes	2		OC	79(Th)	19 – 8	Yes	17
Foreign Language II	Yes	2		OC	38(Th)	11 – 5	Yes	7
Foreign Language III	Yes	2		OC	24(Th)	3 – 4	Yes	4
Optical Communication System Simulation	Yes	2		OC	28(Th)	28 - 0	Yes	3

**Table 11-6.1 Grade distribution & average graduate grade of the Undergraduate Course**

Graduation Year	Grade Distribution (%)			Average Grade (Graduates' Total)
	5.0-6.9 GOOD	7.0-8.4 VERY GOOD	8.5-10 EXCELLENT	
2001-2002	61	55	0	<b>6,10</b>
2002-2003	44	29	0	<b>5,97</b>
2003-2004	85	53	0	<b>5,95</b>
2004-2005	62	53	4	<b>6,16</b>
2005-2006	32	54	0	<b>6,34</b>
2006-2007	38	60	0	<b>6,31</b>
2007-2008	62	80	0	<b>6,23</b>
2008-2009	47	49	2	<b>6,19</b>
Σύνολο	431	433	6	<b>6,15</b>

**Table 11-6.2 Development of Undergraduate Course graduate number & duration of study**

Entry year	Duration of study (years)								Total
	K	K+1	K+2	K+3	K+4	K+5	K+6	Have not graduated	
2000-2001 <sup>5</sup>				24	10.5	7		58.5	100
2001-2002			16.7	4.6	3.8			74.9	100
2002-2003		2.1	5.1	8.5				84.3	100
2003-2004		2.1	8.4					89.5	100
2004-2005	0.8	0.8						98.4	100
2005-2006									100
2006-2007									100

Table 11-7.1. Courses of Postgraduate Program <sup>[6]</sup>

<b>Title of PgP:</b> «Wireless Communication Systems»						
<b>Course</b>	<b>Site</b>	<b>Studies Programme Page</b>	<b>Lecturers (Associates)</b>	<b>Structural / Elective</b>	<b>Student Evaluated (Yes/No)</b>	<b>Lectures</b>
Advanced Digital Communications	<a href="http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys">http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys</a>	<a href="http://www.el.teithe.gr/Msc/gr/index.html">http://www.el.teithe.gr/Msc/gr/index.html</a>	Dr. M. Hadjinikolaou	Structural	Yes	Yes
Wireless Network Technologies	<a href="http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys">http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys</a>		Dr. Q. Ni	Structural	Yes	Yes
Advanced Mobile Systems	<a href="http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys">http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys</a>		Prof. Al - Rawashidy	Structural	Yes	Yes
Satellite and Optical Communications	<a href="http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys">http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys</a>		Dr. R. Nilavalan	Structural	Yes	Yes
DSP for Communications	<a href="http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys">http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys</a>		Dr. A. Amira – Dr. J. Loo	Structural	Yes	Yes
Wireless Communication Security	<a href="http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys">http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys</a>		Dr. T. Owens	Structural	Yes	Yes
Project Management	<a href="http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys">http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys</a>		Dr. H. Makatsoris	Structural	Yes	Yes
Wireless Communication Workshop	<a href="http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys">http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys</a>		Prof. I. Marmorkos	Structural	Yes	Yes
Dissertation	<a href="http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys">http://www.brunel.ac.uk/about/acad/sed/sedcourse/pg/ece/wcommsys</a>				Structural	Yes

Table 11-7.2 Courses of Postgraduate Program<sup>[7]</sup>

Title of PgP: «Wireless Communication Systems»								
Course	Multiple Bibliography	Hours in Total	Credits	Background (B) Scientific Area (SA) General Knowledge (GK) Skill Development (SD)	Core(C) Specialty(S) Direction (D)	Registered Students	Number of Students participating in the Exams	Number of Students passing regular & repetitive Exam
Advanced Digital Communications	Yes	28	15	<b><u>DO NOT EXIST</u></b>	<b><u>NOT EXIST</u></b>	25	25	25
Wireless Network Technologies	Yes	28	15			25	25	25
Advanced Mobile Systems	Yes	28	15			25	25	25
Satellite Communications	Yes	28	15			25	25	25
Optical Communications	Yes	28	15			25	25	25
Wireless Communication Security	Yes	28	15			25	25	25
Project Management	Yes	28	10			25	25	25
Wireless Communication Workshop	Yes	21	20			25	25	25
Dissertation			60			25		

**Table 11-8. Participation in Inter-University Courses**

	2008-2009	2007-2008	2006-2007	2005-2006	2004-2005	2003-2004	2002-2003	Σύνολο
Students that attended courses in foreign Universities	9	13	2	1	4	3	2	<b>34</b>
Visiting students of foreign Universities in the Dept.	12	9	3	5	0	6	2	<b>37</b>
Faculty members of the Dept. that moved to another University	2	2	9	7	3	0	1	<b>24</b>
Faculty members of other Universities that moved to the Dept.	3	5	5	INCOMPLETE DATA				

**Table 11-9. Scientific publications**

	A	B	C	D	E	F	G	H	I
2008		18		10		1			
2007		32		13		2			
2006		21		47					
2005		7		13					
2004		11		19					
2003		11		14					
Σύνολο		100		116		3			

**Empty cells are due to incomplete data.**

**Explanations:**

- A: Books/monographs
- B: Papers in refereed journals
- C: Papers in journals without referees
- D: Papers in refereed conference proceedings
- E: Papers in conference proceedings without referees
- F: Chapters in edited volumes
- G: Other works
- H: Conference presentations (refereed) with published proceedings
- I: Conference presentations (refereed) with no published proceedings

**Table 11-10. Recognition of scientific work**

	A	B	C	D	E	F	G
2008	121						
2007	125	1					
2006	85	1	1				
2005	60						
2004	62						
2003	65						
<i>Total</i>	<i>538</i>	<i>2</i>	<i>1</i>				

**Empty cells are due to incomplete data.**

**Explanation:**

- A: Citations
- B: Reports in special/scientific press
- C: Book reviews
- D: Participation in committees of scientific conferences
- E: Participation in editorial boards of scientific journals
- F: Invitations for lectures
- G: Patents

**Table 11-11. Student Evaluation**

A/A		Spring term 2008		Winter term 2008-09	
	<b>TEACHERS</b>				
1	Organizational ability	3.25	56.3%	2.74	43.6%
2	Teaching ability	3.13	53.3%	2.76	43.9%
3	Consistency	3.37	59.4%	2.84	46.0%
	<b>COURSE ORGANIZATION</b>				
4	Clarity of course objects	3.39	59.9%	2.89	47.2%
5	Organization of teaching material	3.08	51.9%	2.77	44.3%
6	Effectiveness of organizational structure	2.91	47.7%	2.67	41.7%
7	Level of difficulty	3.12	52.9%	2.76	43.9%
8	Adequacy of equipment	3.30	57.5%	3.15	53.8%
9	Organization & guidance work	1.95	23.7%	2.42	35.4%
	<b>STUDENTS</b>				
10	Course follow-up	3.54	63.5%	2.88	46.9%
11	Level of preparation	2.32	33.1%	2.17	29.1%

## 12. Appendix

*In this section the Department can (if it wants to do so) to append any evidence-documentation it considers useful for the Committee of External Evaluation.*

*In any case it is expected to include in the appendices the Guide of Studies in the Department and a list of publications of the members of the Department for the last five years.*

*The Guide of Studies is appended at the end of this report.*

The list of publications of the members of the Department for the last five years is as following:

A. Peer- reviewed scientific journals:

1. **A. Papastregiou, P. Tzekis, A. Hatzigaidas, G. Tryfon, D. Ioanidis, Z. Zaharis, D. Kampitaki and P. Lazaridis**, "A web-based melanoma image diagnosis support system using topic map and AJAX technologies", Informatics for Health and Social Care, Vol. 33, Issue 2, pp 99-112, 2008.
2. Z. Zaharis, **D. Kampitaki, P. Lazaridis, A. Papastregiou, A. Hatzigaidas**, P. Gallion, "Improving the radiation characteristics of a base station antenna array using a particle swarm optimizer", Microwave and Optical Technology Letters 49 (7), pp. 1690-1698, July 2007.
3. **A. Papastregiou, A. Hatzigaidas**, G. Grammatikopoulos, Z. Zaharis, **P. Lazaridis, D. Kampitaki, G. Tryfon**, "Introducing an advanced Topic Map software tool towards the deployment of a TM-based system for managing melanoma cases images", WSEAS Trans. on Information Science and Applications, Issue 3, Vol. 4, pp. 452-459, March 2007.
4. A. Giannakoula, I. Ilias, **A. Papastregiou, A. Hatzigaidas**, "Low temperature and water stress effects on photosynthesis, chlorophyll fluorescence and antioxidant metabolism of *Tagetes (Tagetes erecta L.)* leaves", WSEAS Trans. on Information Science and Applications, Issue 4, Vol. 4, pp. 893-900, April 2007.
5. G. Grammatikopoulos, **A. Hatzigaidas**, G. Tryfon, A. Papastregiou, "Presenting a 3-tier System for Managing Melanoma Images with Topic Maps", WSEAS Trans. on Information Science and Applications, Issue 4, Vol. 4, pp. 820-826, April 2007.
6. G. Grammatikopoulos, **A. Hatzigaidas, A. Papastregiou, P. Lazaridis**, Z. Zaharis, **D. Kampitaki, G. Tryfon**, "Simple Matlab Tool for Automated Malignant Melanoma Diagnosis", WSEAS Trans. on Information Science and Applications, Issue 3, Vol. 4, pp. 460-465, March 2007.
7. **A. Papastregiou**, G. Grammatikopoulos, **A. Hatzigaidas**, Z. Zaharis, **P. Lazaridis, D. Kampitaki, G. Tryfon**, D. Ioanidis, "Applying topic map technology to create a knowledge base of melanoma images for diagnostic support", WSEAS Trans. on Information Science and Applications, Issue 2, Vol. 4, pp. 406-412, Feb. 2007.
8. Z. Zaharis, **D. Kampitaki, A. Papastregiou, A. Hatzigaidas, P. Lazaridis, M. Spasos**, "Optimal design of a linear antenna array under the restriction of uniform excitation distribution using a particle swarm optimization based method", WSEAS Trans. on Communications, Issue 1, Vol. 6, pp. 52-59, Jan. 2007.
9. **P. Lazaridis**, G. Debarge, P. Gallion, Z. Zaharis, **D. Kampitaki, A. Hatzigaidas, A. Papastregiou**, G. Grammatikopoulos "Comparative study of the discrete cosine transform and the discrete orthogonal Gauss-Hermite transform for biomedical signal compression", WSEAS Trans. on Information Science and Applications, Issue 11, Vol. 3, pp. 2264-2269, Nov. 2006.
10. **D. Kampitaki, A. Hatzigaidas, A. Papastregiou**, Z. Zaharis, "On the design of a dual-band unequal power divider useful for mobile communications", Electrical Engineering, 2006, DOI 10.1007/s00202-006-0024-4.
11. **D. Kampitaki, A. Hatzigaidas, A. Papastregiou, P. Lazaridis**, Z. Zaharis, "Dual-frequency splitter synthesis suitable for practical RF applications", WSEAS Trans. on Communications, Issue 10, Vol. 5, pp. 1885-1891, Oct. 2006.
12. A. Giannakoula, I. Ilias, **A. Papastregiou, A. Hatzigaidas**, "Effects of changes in the photosynthetic photon flux density on photosynthetic CO<sub>2</sub> exchange, chlorophyll fluorescence in lettuce (*Lactuca sativa L.*)

- before and during long-term chilling”, WSEAS Trans. on Environment and Development, Issue 8, Vol. 2, pp 1037-1043, Aug. 2006.
13. **A. Manitsaris, A. Hatzigaidas**, “An Integrated Educational System based on Topic Maps”, WSEAS Transactions on Information Science and Applications, Issue 12, Vol 2, ISSN: 1790-0832, pp 2073-2079, Dec 2005.
  14. N.P. Papadopoulos, A.A. Hatzopoulos, **D.K. Papakostas**, C.A. Dimitriadis, S. Siskos, “Modeling the impact of light on the performance of polycrystalline thin-film transistors at the sub-threshold region”, Microelectronics Journal, Vol. 37, No. 11, pp. 1313-1320, November 2006.
  15. **Papakostas D.K.**, Hatzopoulos A.A., “A Unified Procedure for Fault Detection of Analogue and Mixed-mode Circuits Using Magnitude and Phase Components of the Power Supply Current Spectrum”, IEEE Tr. Instrumentation and Measurement, Vol. 57, No 11, pp 2589-95, November 2008.
  16. N.P. Papadopoulos, A.A. Hatzopoulos, **D.K. Papakostas**, “An Improved Optical Feedback Pixel Driver Circuit”, IEEE Tr. on Electron Devices, Vol. 56, No 2, pp 229-35, Feb 2009.
  17. **Papakostas D.K.**, Hatzopoulos A.A., “Improved Analogue Fault Coverage Estimation using Probabilistic Analysis”, International Journal of Circuit Theory and Applications, May 2009, Published online: 2 Mar 2009, DOI: 10.1002/cta.586.
  18. N.P. Papadopoulos, A.A. Hatzopoulos, **D.K. Papakostas**, R. Picos, C.A. Dimitriadis, S. Siskos, “A Light-impact Model for p-type and n-type poly-Si TFTs”, IEEE Journal of Display Technology, Vol. 5, Is. 7, pp 265-272, Jul 2009, Published online: Aug 2009, DOI: 10.1109/JDT.2009.2015898.
  19. **M.G. Dimopoulos, D.K. Papakostas**, A.D. Spyronasios, D.K. Konstantinou, A.A. Hatzopoulos, “Circuit Implementation of a Supply Current Spectrum Test Method”, (αποδεκτό για δημοσίευση από 9/2009 στο IEEE Tr. Instrumentation & Measurement.)
  20. C. Mademlis, **I. Kioskeridis**, T. Theodulidis, “Optimization of Single-Phase Induction Motors-Part I: Maximum Energy Efficiency Control”, IEEE Trans. on Energy Conversion, vol. 20, no. 1, pp. 187-195, March 2005.
  21. C. Mademlis, T. Theodulidis, **I. Kioskeridis**, “Optimization of Single-Phase Induction Motors-Part II: Magnetic and Torque Performance Under Optimal Control”, IEEE Trans. on Energy Conversion, vol. 20, no. 1, pp. 196-203, March 2005.
  22. C. Mademlis, **I. Kioskeridis**, “Optimizing Performance in Current-Controlled Switched Reluctance Generators”, IEEE Trans. on Energy Conversion, vol. 20, no. 3, pp. 556-565, Sept. 2005.
  23. **I. Kioskeridis**, C. Mademlis, “Maximum Efficiency in Single-Pulse Controlled Switched Reluctance Motor Drives”, IEEE Trans. on Energy Conversion, vol. 20, no. 4, pp. 809-817, Dec. 2005.
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