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ΣΤΗΝ ΑΝΩΤΑΤΗ ΕΚΠΑΙΔΕΥΣΗ

HELLENIC REPUBLIC

H.Q.A.

HELLENIC QUALITY ASSURANCE AND
ACCREDITATION AGENCY

EXTERNAL EVALUATION REPORT

Technological Educational Institute of Thessaloniki
Department of Automotive Engineering

December 20, 2013

OPERATIONAL PROGRAMME
EDUCATION AND LIFELONG LEARNING
investing in knowledge society
MINISTRY OF EDUCATION & RELIGIOUS AFFAIRS, CULTURE & SPORTS
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External Evaluation Committee

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

1. Prof. Anna Stefanopoulou (Coordinator)
    (Title)   (Name and Surname)

    University of Michigan
    (Institution of origin)

2. Prof. Athanasios Megaritis
    (Title)   (Name and Surname)

    Brunel University
    (Institution of origin)

3. Prof. Ioannis Michaelides
    (Title)   (Name and Surname)

    Cyprus University of Technology
    (Institution of origin)

4. Dr Apostolos Pesiridis
    (Title)   (Name and Surname)

    Brunel University
    (Institution of origin)

N.B. The structure of the "Template" proposed for the External Evaluation Report mirrors the requirements of Law 3374/2005 and corresponds overall to the structure of the Internal Evaluation Report submitted by the Department.

The length of text in each box is free. Questions included in each box are not exclusive nor should they always be answered separately; they are meant to provide a general outline of matters that should be addressed by the Committee when formulating its comments.

Introduction

Two of the members of the External Evaluation Committee (EEC), namely Prof. Athanasios Megaritis and Prof. Ioannis Michaelides, had a first introductory meeting in Athens with members of the Hellenic Quality Assurance Agency (HQAA) on December 16. The two EEC members travelled on the same day to Thessaloniki where they met the other two members Prof. Anna Stefanopoulou and Dr. Apostolos Pesiridis to begin the evaluation of the Department of Automotive Engineering of the Technological Educational Institute (TEI) of Thessaloniki, based on the guidelines of HQAA.

That same evening Professor G. Miltsios, the Department Chairman welcomed and drove the committee at the Department for an introductory and planning meeting with the Internal Evaluation Committee (IEC). The IEC gave a full overview of the Internal Review Report and the Department's new web site.

Note that the EEC had received well in advance the Internal Review Report 2009-2010 with several appendices associated with the publications, the study plan/guide, and the employment profile of a Department Graduate. One week before the visit, the EEC received the updated Internal Review Report 2011-2013 and its associated appendices. The internal review report was comprehensive and provided adequate data. Having studied all these material prior to the visit enabled the EEC to have a list of questions and clear understanding of the Departments status.

Based on that understanding, the EEC asked the IEC during the evening of Dec 16th pre-meeting for clarifications, requested additional data, such as samples of graded exam and theses, and finalized the meetings and interviews of the following two days of the evaluation visit (Dec 17 and 18).

Members of the IEC, and especially the Department Chairman, were present in all the following meetings, except the private EEC meetings and the EEC meeting with the students.

In the morning of Dec 17th the EEC met with Prof. P. Tzionas, President of TEI and President of the Alexander TEI Quality Assurance Agency (ΜΟΔΙΠ). He highlighted the strengths of the TEI and its organization in schools and departments. He provided background and the history of the genesis of the Department. The President knew the strengths and weaknesses of the Department. Moreover he seemed eager to utilize these strengths to create opportunities for the Department and the TEI overall despite stringent Greek economic constraints. President Tzionas informed the EEC that he will be supporting Department efforts to provide professional services to industry and other entrepreneurial activities that can help the educational and research infrastructure of the Department. Lastly he emphasized that the TEI will strive for self-governance with rigorous guidelines and policies for pursuing such initiatives that should ultimately aim to improve the educational mission of the Alexander TEI.

The EEC visited all Department laboratories the remaining of the morning of Dec 17th. During the laboratory visit the EEC members interacted with the specialized laboratory technical staff and many professors of practice. The academic staff provided information on the equipment and how each one is used in the curriculum. During the laboratory tour, the EEC also observed a one-to-one student examination of laboratory assignment that was

underway at the time of the visit.

Lunch was provided at the faculty lounge with discussions on the process of thesis selection and supervision. The EEC saw the results of a few innovative theses and research programs. The afternoon was dedicated to student interviews. A sets of 5 students from a course during the freshman (1st) year was selected randomly from a lecture hall. Another set of 5 students from the junior (3rd) year was also randomly selected and interviewed by the EEC. The instructors of the respective courses have had alerted the students that the EEC might be stopping by to observe and interview the students. The EEC members discussed with the students for several hours about a broad range of topics. The students were mature, informed and very helpful.

The second day, Dec 18th, started with a presentation on the industry practical training from the academic staff supervising the process and advising the students. The EEC asked for clarifications on how the training is evaluated and saw blank journals that the students use to document their weekly activities. The EEC did not see, however, any samples of filled and graded training journals.

The EEC then visited the library and the ERASMUS office. The Department visit ended with a presentation and a discussion of the Department research activities and the funding competitions available specifically for TEI academic staff.

In summary, the EEC members met with all but two Department staff; one had a leave of absence and one had a family emergency. The meetings were productive and well organized. The interaction and discussions were engaging, comprehensive, and constructive. The members of the IEC made a concentrated effort to provide the information that the EEC members requested. The visit concluded with a de-briefing of the TEI president on the EEC conclusions and possible recommendations.

The EEC members were transported to Thessaloniki Airport and flew to Athens where they spent the next two days composing this report.

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

APPROACH

This section relates to the evaluation of the Curriculum of the Degree in Automotive Engineering offered by the TEI Thessaloniki. The evaluation of the Curriculum is based on the observations made during the visit of the External Evaluation Committee (EEC) in the Department and the "Study Program" and "Study Guide" documents downloaded from the website of the department. It must be noted that these two documents are under review and a revised program is planned to be implemented in the next academic year (2014-15).

The objective of the Departmental curriculum is to promote the development and dissemination of knowledge in the technology of Automotive Engineering through teaching and to provide the students with the necessary background that will secure their effective education and training towards their professional career and development. In order to achieve this objective, the Department has established a 4-year undergraduate curriculum that in general abides by internationally recognized standards.

The curriculum is cohesive and well structured. The courses are organised in 8 semesters (normal degree duration of 4 years). The students have to prepare and present a thesis typically in the last (8th) semester. In this (8th) semester students are placed in industry for their industrial training. The industrial training is compulsory for all students. Students can start their industrial training provided they have passed two-thirds of the subjects in the curriculum.

The curriculum includes a wide range of subjects that covers the following fields:
- Vehicle design and development
- Vehicle structure stress analysis and optimization
- Analysis of internal combustion engine performance
- Heat transfer in internal combustion engines
- Automotive aerodynamics
- Measurement and control of car engine emissions
- Development of electric and hybrid cars
- Computational fluid dynamics
- Automotive manufacturing technologies
- Modelling and simulation of machining processes
- Composite materials.

The curriculum serves well the departmental objective but the Committee observed that there are certain weaknesses related to the time allocated for laboratory and workshop training sessions. This is recognised by both staff and students and it is to be changed in the new study program under development. In particular it was pointed out to the Committee by the students that one teaching hour (45 minutes) that is currently allocated for a typical laboratory session is not sufficient. The academic staff agrees with this and indeed they plan to increase the duration of these sessions to at least two hours. It was noted that in the past the laboratory sessions were longer but they were shortened to one hour when the study program was last revised in the academic year 2010-11.

The Curriculum is defined and organised by the Curriculum Committee consisting of 6 members; there is no information about the composition of this committee and whether students or stakeholders are included. The EEC did not find a clear description of the Curriculum design process, and the same applies to the process for Curriculum update and renewal. The faculty receive inputs from companies, students, and academics from other universities, in an effort to update their curriculum and laboratories and keep them in line with technological trends and with societal/employer needs. There is no evidence, however, of written procedures or documentation of this input.

Recommendation A1
The EEC recommends that the Department needs to define explicit and detailed procedures for Curriculum definition, organisation and revision. We are aware of the major economic

and staffing constraints that the department has, but we hope that this critical point is used to engage all the staff and include the part-time technical instructors in the Curriculum development.

IMPLEMENTATION

The curriculum is basically implemented through distribution of the teaching load among the two sectors or divisions of the Department, namely, Construction Division and Energy Division. There are 39 taught subjects of which 35 are compulsory and the students have to select another 4 elective subjects out of 8 available allowing for a limited specialisation in one of the two main areas covered by the department.

After a recent curriculum review, it was decided to eliminate some subjects, such as for example, practical training in the machine tool workshop and the subject in the field of Refrigeration and Air Conditioning, due to the persistent and well-known understaffing problem in Full-Time (FT) and Part-Time (PT) staff. This understaffing problem is an underlying factor that affects many areas of activity of the department. In an effort to cover the lack of staff, the members of the academic staff have been overloaded through an additional 2 teaching hours per week and in some cases with subjects outside their specialisation. The staff's willingness to cover this shortfall and to engage in areas outside their specialisation is commendable.

The core curriculum is thorough and compares well with equivalent curricula in universities abroad in terms of core taught subjects covered and duration of studies. The Department is unique within Greece in that it offers the only specialised curriculum in Automotive Engineering. The structure of the course and curriculum is rational and clearly articulated in the Study Program.

The curriculum could be enriched with relevant electives from other TEI departments especially the Department of Automation. The EEC recognizes of-course that such a cross-listing of courses could only be possible with inter-departmental cooperation so that students from Automation could take courses in Automotive Engineering. Elective courses on alternative fuels and propulsion (batteries, hybrid vehicles, natural gas), off-road and two-wheel vehicles would provide skills relevant to the Greek job market. The students are currently electing such topics as part of their dissertation.

The material for each course is largely appropriate with numerical simulation introduced when it is absolutely necessary and practical training supported by extensive facilities. The sample of students the EEC interviewed communicated that there are only a few lectures and assignments using computers (plotting and tedious, spread-sheet calculations). More importantly, the time offered for many of the laboratory/workshop sessions is not sufficient for the appropriate exposure of students to practical application of the theoretical foundations they receive.

Specifically, the EEC found that students have limited exposure to practical applications using numerically simulated demonstrations. Two computer rooms utilized in specific courses are provided in the Department with only a handful of more computers available in the library for flexible student access. Software available for student training and assignment/project work is appropriate but can be quite significantly expanded for project work to reflect on the software resources available at other reputable institutions in the field world-wide.

Instrumentation for physical demonstrations is old but effective when used. Due to the lack of funding for the purchase of consumables and spare parts it was noted that some of the equipment available in the department remain inoperable for fairly significant periods of time thus affecting partially the quality of teaching provided.

Recommendation A2
The EEC recommends that the duration of the laboratory/workshop sessions should be increased from one teaching hour at present to at least two teaching hours per session in

order to allow more hands-on experience across by all rather than a few students in every session.

Recommendation A3
Despite the extensive facilities and laboratory equipment available, the EEC recommends that some of the instrumentation and equipment is modernised in order to follow recent technological trends. It is notable that a few undergraduate theses (πτυχιακες) are structured around developing instrumentation displays of modern technologies that can be used in the laboratories for teaching. These displays allow demonstration and experimentation of working principles and could even be commercialized.

Recommendation A4
The EEC recommends more and continuous training of the students in numerical simulation techniques and software. For this to be possible, more computers and computer laboratories have to be available within the Department, the Library, and the TEI overall.

RESULTS

The understaffing problems (9 member of FT staff and 7 PT staff compared to approximately double and triple of these numbers, respectively, before 2010-2011) had a two-fold impact on the department. First there has been a reduction on practical (laboratory/workshop) teaching time delivered to students. Second, the instructors occasionally teach outside their primary area of specialisation.

It is noted that the academic staff divided the extra load and covers the subject outside their area of expertise by spending considerable amount of time to gather, synthesize, and teach the appropriate material. The academic staff workload is exacerbated by the significant number of perpetual students. These are students who have exceeded - in most cases by far - their time of study as specified in the Study Program.

Despite these problems the EEC feels that the Curriculum is thorough and produces knowledgeable Automotive Engineers who satisfy the needs of the industry and some of them often go on to postgraduate courses of study.

The department management and other staff are well aware of the problems and have already initiated action through the revised Study Program for 2014-2015 underway.

IMPROVEMENT

After two days of a meetings with almost all the FT and PT staff, a good cross-section of the students, and visiting of most of the facilities, the EEC is able to recommend the following improvements:

Recommendation A5
The EEC understands that a revised Study Program and course sequence is underway and strongly recommends that this should be completed and implemented as soon as possible. The revised Study Program will need to be posted early on in the web to inform incoming students.

Recommendation A6
The EEC recommends that the Department, with the full support of the TEI administration engages all stakeholders such as the local community, industry, the students, alumni, to form an Advisory Board which could provide advice regarding the Curriculum, laboratories, industry training and other important matters to ensure that the Automotive Engineering education offered by the Department remains relevant and modern.

B. Teaching

APPROACH

The department offers one undergraduate degree in Automotive Engineering. The programme of studies consists of the basic general subjects (35 in total) and the elective subjects that define the direction of specialty of the student: Construction or Energy routes which reflect the two divisions of the department. The Department has an established teaching methodology and approach broadly designed for the delivery of a curriculum, which is a mix of theoretical and applied areas. Student attendance is compulsory in laboratory sessions but optional for general lectures where theory and fundamentals are taught. In addition, there are tutorial sessions in which theory-based problems are solved in class by the lecturer/instructor.

The teaching staff/student ratio due to the large numbers of perpetual students results in ratios in the order of 100:1. This an unacceptable figure compared to international standards but the EEC recognizes that many Greek universities suffer from similar problem. To arrive to the 100:1 student to instructor ratio the EEC took in account the fact that the incoming class is approximately 150 students and more than 70% of the students still study for more than 6 years. The large number of non-progressing (perpetual or idle) students absorbs resources during compulsory lab hours and final examinations.

Another student issue with impact on teaching is the inhomogeneous background of incoming students with a quarter of the student body coming from technical schools without competing. The average entry requirements are also considered by both staff and students to be relatively low causing a mismatch between learning outcomes outlined and the required background of students, especially those entering the Department from the technical schools.

The student grades are assigned based on clearly defined policies at the beginning of the term. The lecture-only course grades depend only on the final written examination grade. The majority of course grades depend also on laboratory assignments using team-based measurements and individual reports. Some laboratory sessions, however, are assessed orally on an individual basis which provides for a higher quality of assessment.

The collaboration of teachers and students is at a good level, the staff is generally cordial and helpful with clear teaching ability with some students expressing enthusiasm with the course and with staff members and the majority of students showing satisfaction with the courses.

The resources of the department are considered adequate in terms of equipment for laboratory sessions with 12 laboratories/workshops organised and headed until now by FT instructors and assisted by PT instructors responsible for the equipment, maintenance and teaching. The Committee visited all these laboratories. Some of them contain a good number of laboratory equipment. There is also laboratory equipment developed and constructed by the students as part of their dissertation work, demonstrating ingenuity on the part of both the students involved and the quality of guidance provided by the staff involved.

Some of the laboratories are in need of modernisation and a few are housed in inadequate and neglected buildings. Specifically, the condition of some laboratories/workshops needs improvement as pieces of the ceiling have been known to fall off. Some of the laboratories have had heating problems.

Recommendation B1
The EEC recommends that new, high-calibre staff is recruited to deal with the immediate problem of the high teaching workload, and to help the department achieve its long-term strategic goals.

Recommendation B2
The EEC recommends the average entry grade for incoming student to be increased to allow students to successfully attend the course without the difficulties encountered by some students to deal with the theoretical part of the course. Given that the entry grade cannot be

directly controlled by the department, the EEC suggests stepping-up the recruitment of high-achievers via public relations and outreach that will highlight the departments' strengths and successes.

Recommendation B3
The EEC recommends that the number of the incoming students is adjusted to reflect the employment opportunities and the department capabilities to train these students as per the standing requests by both staff and students. To this end, the department should perform a thorough analysis of the job market, the expectations of growth in the field and the impact of the graduates in the economic prosperity of the local community and the nation. Based on this analysis, the department should recommend to the Greek Ministry of Education and the TEI administration the right number of incoming students.

Recommendation B4
A student-mentor (or student-tutor) scheme could be established for very weak students. The Department and the TEI should try within the legal educational framework to establish small scholarships for good students that are interested and can help mentor their junior peers.

Recommendation B5
Better use of laboratory facilities has to be made as in some cases laboratories are scarcely used (e.g. machine tool workshop). This can be solved by increasing the duration of the laboratory sessions from 1 to at least 2 teaching hours and by the recruitment of more staff.

Recommendation B6
The assessment scheme and outcomes for each subject should be explicitly stated in the Study Guide. Moreover the pre-requisites for each course need to be clearly identified in the study guide.

Recommendation B7
The maintenance of the laboratory spaces should be improved to provide for safe, healthy and enjoyable working conditions.

Recommendation B8
Heating problems need to be resolved for improving the working conditions of both students and staff.

IMPLEMENTATION

Based on discussions with staff and students, examination of a sample of assignments and final examination problems, the ECC concludes that the quality of the teaching is appropriate. The teaching material used is also appropriate and some of the staff have detailed sets of notes and their own textbooks relevant to the subject they are teaching. Some of the notes are available online while in other cases hard copies are provided.

A particularly strong point of the Department is the placement of students in industry for their industrial training. Internal mobility requirements for industrial training are well covered and 3 members of staff are engaged as student supervisors for their industrial training. This scheme works very well and in a good number of cases students have been able to find employment after completing the course with their former employers during their industrial training period. There is no systematic assessment and supervision of the student training given that site visits of supervising educational staff to the student work-place are not feasible, mainly due to financial and time limitations.

The Department is already considering revising the assessment process of the technical training. As an example, the students might need to return and be interviewed by the academic supervisor within 6 weeks of the initiation of training. Another good practice would be a final presentation of all the students at the end of their training term. This presentation could include lessons learned and anecdotes of the difficulties and rewards obtained during

the training. The benefits for such an organized event are expected to be three-fold. First, the presentations will establish peer competition and elevate student efforts. Second, the event could be attended by junior students and provide a valuable and realistic introduction to the students that are getting ready to organize their training. Last, but not least, the event would facilitate documentation of good employers and can be utilized by the department as a public relations and outreach.

Student evaluation of teaching effectiveness is done at the end of each semester in a fairly satisfactory manner with centralized and automated statistical processing by TEI. A form with a comprehensive questionnaire is distributed and filled by the students present in the class in the absence of the lecturer. The evaluation forms are submitted to the administration office of the department for processing. These evaluation forms are made available to the staff concerned if they wish to have them. The ECC could not determine the statistical relevance of the answers received given that they reflect a small student population, specifically, the ones that happened to attend lecture during the evaluation, and the laboratory population (since labs are compulsory). Moreover, it is unclear if and to what extent the outcomes of the evaluation are actually implemented in the following academic year.

Recommendation B9
Time constraints are precluding the academic supervisor from visiting the students on industrial training in order to assure the quality of the industrial training, hence the department needs to devise and implement a different assessment policy.

Recommendation B10
Ensure that all the staff FT and PT access the questionnaires and document course and lecture improvements based on student feedback. This documentation should be submitted to the curriculum committee periodically.

Recommendation B11
With the centralized assistance of the TEI the Department should implement a midterm student evaluation that the instructors can receive in time to adjust their instruction appropriately. Moreover, the Instructors should discuss these adjustments with the students to remind them that their opinion matters.

RESULTS

The EEC has shifted through data concerning attendance, numbers taking examinations at the end of each semester, and examination pass rates. The overall exam pass rates are very low and they require immediate corrective measures. On the other hand, due to the fact that students are free to undertake as many examinations as they need until they pass a given subject the usual phenomenon is that a very high percentage of students who are totally unprepared or who for whatever reason do not wish to be examined at that stage enter the examination process. These students do not attempt to answer questions but they submit an empty exam sheet thereby lowering the overall pass rate. The above is an artificial indicator of the level of difficulty of a subject or the appropriate pass rate of any given subject. The EEC got the sense that the Department Chair and the Curriculum committee will try to quantify the extent of the problem and determine if there are certain subjects or instructors that require special attention.

It was also evident during the two-day visit at the department that communication between the students and the staff is satisfactory but there is still room for improvement. The relationship of the Department with industry seems (on a small sample) to be good. There were limited data on the employability of the graduates and the number that continue their studies at postgraduate level.

IMPROVEMENT

The staff of the Department seem quite aware of the possibilities for improvement and are eager and able to actively engage with this process.

Recommendation B12

The Department should improve the examination pass rate, without lowering the course standards. Possible ways are to establish a student advising system (see B4 above) or improve the current Studies Mentor system operated by the department in which two of the current department academics are involved. At the minimum the Department should apply and automatically enforce pre-requisites for each course to reduce unproductive enrolment.

Recommendation B13

Integrate compulsory theoretical and numerical assignments in all courses to ensure student participation and improve student education. Compulsory assignments could maintain continuous participation of students throughout the semester improving the success rates in final examinations. Weekly homework is a standard practice in most undergraduate Universities courses. The extra load associated with the homework grading could be handled with paid student graders.

Recommendation B14

Students should be allowed to enroll in a course and participate in the examination only twice. The duration of studies should also be limited to two years beyond the normal duration study (4 years). The EEC realizes that there is a need for a national framework for this implementation of this recommendation.

Recommendation B15

The Department or the TEI career office should keep a record of graduates' employment or progression to studies at higher postgraduate level. This is a key performance indicator and can be used in Departmental publicity material.

C. Research

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

The Department of Automotive Engineering of TEI in Thessaloniki is a teaching intensive Institution, based on its undergraduate education mission, where commonly used research metrics are not systematically taken into consideration. Moreover, a high research activity is not a reason for offsetting (reducing) the teaching load of the academic staff, especially not at the current understaffing conditions. Research output is only assessed during the evaluation process of promotion.

Despite the persistent understaffing problem of recent years and the lack of cohesive research policy at present there are 8 on-going research projects run by 5 academic members of staff. In addition, the department has had notable success in recent years in securing research grants through a competitive application process such as ARCHIMEDES I, II and III national research programs targeting TEI research collaborations. However, due to the increased workload as a result of understaffing and the progressively increasing number of students (active and idle) the research output has decreased in the last 3 years.

The research infrastructure and support falls short of modern research needs and this can be traced to a lack of research funding at the national state and industry levels as well as at the internal (Institute-wide) level. The Institute's Research Committee has currently been able to allocate around 80,000 Euros for internal funding of research programmes for all of the Institute's schools of which the department has recently managed to secure funding for one of their programs. This leaves some national-level programs and International collaborative programmes of research as sources of funding. In addition, the equipment provided is teaching-orientated which means that it is not suitable for the generation of new knowledge.

Published research output has dropped substantially recently from a fairly constant output and even citation count in the 2005-2010 timeframe arising from published papers in both peer-reviewed journal papers and conference proceeding to a bare minimum of published work in the last three years.

Due to the legal framework and the end of the Department's MSc programme in collaboration with another Institution and the fact that there is no PhD programme in the department there is a lack of experienced and trained researcher to assist the academic staff in carrying out research work resulting to publications. Therefore, the current framework of carrying out research means employing undergraduate students or recent graduates in individual or group projects in order to produce research output.

Recommendation C1

The Department staff should seek collaboration with other institutions nationally and internationally. This will allow the Department to also employ research associates to conduct research within the department under the supervision of the department's academics and to produce research output. Given that the Greek job market is ailing, the Department could attract highly skilled professionals and turn the weakness to opportunity.

Recommendation C2

The Department should draft a detailed, long-term research vision and develop guide-lines in assessing and promote research. The ECC realizes that the national economic reality and forecast are hampering such long-term planning but stresses the need for such a strategic plan. As an example, the existing academic staff could try to focus on certain areas and collaborate among each other in order to remain active in research.

Recommendation C3

The Department and TEI management should develop incentives that encourage

researchers to increase their research output, attend conferences, and publish their work in peer-reviewed journals.

Recommendation C4

The Department should identify key areas of research interest and procure latest technology equipment in these specific areas as well as software appropriate for these tasks. Ideally, the equipment should not duplicate capabilities that can be found in nearby institutions and should be shared, and thus, fully utilized by several members of the academic staff.

Recommendation C5

Re-introduction of the MSc course (not necessarily with the previous collaborator) to provide not only a source of additional income but also a source of potential researchers to assist the academics in their research.

Recommendation C6

The EEC encourages the Department to creatively utilize the existing unique laboratory facilities for external users to broaden the Department's reach to community and industry (with paid services) and generate some funding that can feed to internal research funds.

D. All Other Services

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

APPROACH

The EEC visited the Administration office, the Library and the ERASMUS office and had a useful discussion with the staff of these services. The Department places a high priority to the various services provided to faculty, teaching staff and students, including the secretariat of the Department, teaching laboratories, the Library, electronic services, webpages, course syllabi, course evaluations, and internships with industry.

Most of the administrative procedures are processed electronically, including registration, course selection, grading, student course evaluations, library functions and various databases. Students interviewed expressed their satisfaction with the quality of services provided by the administration.

The administrative staff of the ERASMUS office gave an excellent overview of their program, their services and their plans for expansion. The ERASMUS office staff was able to highlight many successes, where Automotive Engineering students were provided internships and studies abroad. The overview highlighted cases where students were actually employed after the end of their ERASMUS scholarship. The Department faculty advisor is introducing the ERSAMUS opportunities to all the top students. Moreover, several academic staff is also using the ERASMUS opportunities and teach or perform research abroad.

The Department has one good room that is used for faculty visitors or small (<10 persons) meetings with a portable (table) projector and a portable (tripod-mounted) screen. The EEC was using that room for the Evaluation visit meetings. The room was well heating, had a coffee pot and nice view. That room is the only flexible meeting space in the department and is not available to students.

Many of the instructors' offices are housed within the laboratory space, some have no windows, and all of them are completely decentralized from the offices' of other academic staff. Apart from the luck of natural light, the academic staff office arrangement is not conducive to collaboration.

The committee saw numerous students waiting in non-heated corridors to enter in the lab areas to discuss or submit their lab assignment. There were no seating or leaning areas and any of the Department corridors and no common space for the students to wait or even study while waiting. The students have to go to an open classroom (with rigid auditorium seating), the Library, or the little café, if any of these services are open.

The EEC also strolled the TEI campus common area (wide corridor) next to the cafeteria or rather coffee shop and in-front of the library where the TEI students mingle. The corridor was lively with many tables from student organizations and a good heating level. The area was however very smoky, and rather loud, hence not conducive to productive interactions among the students of different TEI schools and departments.

Recommendation D1:

It is clear that the Department needs to create a space within the Department building space to increase the presence and productivity of the Automotive Engineering students. This space can be modular with some computers, blackboards, tables, seats, and it could also house some student project areas with benches. This space should have adequate lighting and heating. Clearly the students have to claim ownership and responsibility for maintaining and

protecting such space.

IMPLEMENTATION

There is a good level of support that is provided by the two Department administration staff regarding general administration activities, academic studies and student support and some other departmental activities.

The central Library facilities are of good standard and the Library has a good number of reference books and manuals related to the Department of Automotive Engineering. There is also access to data banks such as SCOPUS and Web of Knowledge. There was some uncertainty regarding the full access, however, of important publications relevant to the Department. Notably articles from the Society of the Automotive Engineering (SAE) and the American Society of Mechanical Engineers (ASME) might not be fully accessible and the Library has only access to abstracts.

The common areas for study in the Library are small and the Library closes well before the end of lectures and laboratories leaving student with no study area. Note here that the TEI in in the outskirts of Thessaloniki in a relative isolated area with infrequent (30 min) access to public transportation.

Recommendation D2

EEC recommends that the working hours of the library are expanded to facilitate students wishing to use the library services. In case of staff shortage, students from the Library Department can be recruited on a voluntary basis as part of their training to improve their practical experience.

Recommendation D3

EEC recommends that the Institute (TEI) should provide adequate space for study purposes in the library in an effort to expand the small space available to students.

RESULTS

Administrative services are reasonably effective mainly due to the use of web-based systems. Two employees are full time members of the administrative staff serving all the students and staff. Staff appeared positive and able to cope with the workload which at the current staffing level did not appear to be unreasonable. The Department Staff seems to be happy with the overall cooperation and interaction with academic staff and students. Last but no least, the staff had a positive and creative attitude in achieving higher standards in the services they offer.

The ERASMUS office staff presented an impressive number of successful visits to academic institutions and industry internships. Although all the positions available are filled, there seems to be little competition for these positions with very high rate of approval of the applications received.

IMPROVEMENTS

The department is well aware of the problems raised with common student study space. There is commitment and determination to solve them but the current financial situation does not allow for widespread solutions to be implemented.

Collaboration with social, cultural and production organizations

There are no established programmes by the Department that builds relationships with social or cultural organisations. However, the faculty of the Department have some links and collaborations with industrial organizations and a database of potential companies for industrial training do exist. The committee recommends that the Head of Department receives support from TEI management in order to enhance the department's link with industry and the local community.

E. Strategic Planning, Perspectives for Improvement and Dealing with Potential Inhibiting Factors
For each particular matter, please distinguish between under- and post-graduate level, if necessary.

Short and Medium Term Goals
The Department has developed short and medium term goals. In terms of short term goals these include:
1. Study Program review and upgrading to be completed.
2. Completion of the procedure of recruitment of staff against approved vacant posts.
3. Increase of the research output of the staff.
4. Implementation of measures to improve student attendance.

The EEC is able to confirm that these are the most important changes required. Further recommendations have already been provided in previous sections regarding the above points.

In terms of medium term goals these include:
1. Thorough planning as to the future direction of the department.
2. Investigation into the causes of the small ratios of graduating students to the initial student input in an effort to provide appropriate solutions to the problem.
3. Upgrading of laboratory equipment to support applied research.
4. Formulation of MSc course either independently or in collaboration with another university.
5. Collaboration with local industry and key stakeholders as well as societal organisations.

Recommendation E1
Apart from the above issues covered by the short and medium term objectives, the EEC notes that there must be relevant long term goals and the respective plans for their implementation. To justify the funding and resources requested for these plans, the Department should try to quantify the expected benefits with specific targets on workforce development, innovation, and scholarship.

Recommendation E2
The EEC considers that the proposed short and medium term actions proposed by the

Department are appropriate and should be strictly implemented. The Committee strongly advises the Department to take into consideration all the recommendation provided in sections A, B, C, and D above.

Recommendation E3
Short, medium and long term plans to achieve the above goals need to be developed and implemented. The details of these plans would need to be worked out and appropriate policies must be developed at Department level. In times of high uncertainty, different scenarios and risk mitigation plans must be devised.

F. Final Conclusions and recommendations of the EEC

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

The Department of Vehicle Engineering is a unique department in Greece as it is the only Institution that offers a Curriculum in the field of Automotive Engineering. It has obvious strengths including facilities, high-quality of full-time, part-time teaching and administrative staff, and the full support of the management of the School and the TEI administration. It has a large number of students compared with its capacity but the continuing increase in student numbers needs to be reversed and in particular the department due to its uniqueness could perhaps afford to be more selective. The committee realised that there is a good, collaborative spirit within the department to surpass difficulties and to reform the department. Good leadership was observed and confirmed by the students as well.

The EEC members agree that there is a significant scope for improvements to be made in all areas of provision of the Department, such as curriculum development, teaching and learning processes, research and support services. There is also need to consider carefully an appropriate balance between student numbers and numbers of FT and PT faculty staff and technicians. The department/TEI should also consider the state of the current teaching (and research) infrastructure and initiate improvements.

The Department should endeavour to increase the quality of its entry requirements, in relation to incoming students. A reasonable way to achieve this is to reduce the number of incoming students which is excessive as was indicated by both staff and students. The committee also believes that the TEI administration and the department should strive to reduce the student/staff ratio towards internationally acceptable levels for Automotive Engineering departments by appointing more full-time faculty.

The academic curriculum should be re-directed back towards its stated mission's objectives in order to achieve a more practical approach to teaching. For this purpose laboratory sessions and workshop teaching time should at least be doubled. Also some synergy between the teaching effort/curriculum and research should be established.

The Committee hopes that the faculty members and management in the Department of Automotive Engineering and TEI of Thessaloniki will read this report and its recommendations in the context of a sincere effort to overcome weaknesses and improve the quality of their educational and research activities.

The Members of the Committee

TECHNOLOGICAL EDUCATIONAL INSTITUTE OF THESSALONIKI

DEPARTMENT OF VEHICLES

Name and Surname   Signature

Prof. Anna Stefanopoulou
University of Michigan, Ann Arbor, Michigan, U.S.A.

Prof. Athanasios Megaritis
Brunel University, London, Uxbridge, United Kingdom

Dr. Ioannis Michailides
Cyprus University of Technology, Limassol, Cyprus

Dr. Apostolos Pesiridis
Brunel University, London, Uxbridge, United Kingdom