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HELLENIC REPUBLIC
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EXTERNAL EVALUATION REPORT

DEPARTMENT OF CIVIL ENGINEERING

ARISTOTLE UNIVERSITY THESSALONIKI

November 2013

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External Evaluation Committee

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

1. Professor Christos Vrettos (President)
   (Title) (Name and Surname)
   Technische Universitaet Kaiserslautern
   (Institution of origin)

2. Professor Emmanuel Maragakis
   (Title) (Name and Surname)
   University of Nevada
   (Institution of origin)

3. Professor Panagiotis (Pete) D. Scarlatos
   (Title) (Name and Surname)
   Florida Atlantic University
   (Institution of origin)

4. Professor Kypros Pilakoutas
   (Title) (Name and Surname)
   University of Sheffield
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5. Professor Photios G. Ioannou
   (Title) (Name and Surname)
   University of Michigan
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Introduction

I. The External Evaluation Procedure

The External Evaluation Committee (EEC) visited the Department of Civil Engineering at the Aristotle University of Thessaloniki during the period 29 October to 1. November 2013.

In the morning of 29 October, a brief introduction was given on the scope of the evaluation by Professor Constantine D. Memos (Member of HQA) at the offices of HQAA in Athens.

The team arrived in Thessaloniki in the afternoon of 29 October. The first meeting took place in the central administration building. In a brief speech the Rector of the university presented the key features of the university with emphasis on the embedment of the department of Civil Engineering within the university. The university consists of several schools covering the entire range of academic fields including well-established schools in medical sciences, natural sciences, social sciences, and engineering.

The Rector expressed concerns on the proper operation of the university due to the recent and anticipated budget cuts in the immediate future which also resulted in reduction in technical/administrative personnel.

The next presentation by the Vice-Rector gave an overview of the university, figures about budget and research funding.

Next, the Dean of the Faculty of Engineering welcomed the Committee and gave a brief overview of the Faculty.

This was followed by a presentation by a senior administrator from the Office for Research that independently manages and audits all research funding and expenditures.

The Department Chair (DC) briefly introduced the structure of the department and presented departmental statistics.

Finally, the departmental QA-officer outlined the procedures followed within the department for self-evaluation.

The next day, 30 October, concentrated on presentations of the programs of diploma, post-diploma and doctoral studies. This was followed by a summary of research activities including presentations of selected research projects in different areas. The day was concluded with tours of the main laboratory facilities including computer labs, class rooms and departmental library.

During one of the lab visits, the ECC was confronted by a small group of noisy students protesting against the external evaluation, however, they offered no coherent messages. The committee invited the protesting students to join a planned meeting on the next day that was dedicated to student issues, but they failed to turn-up.

On the last day of the visit (31. October) the structure and activities of the departmental committees were presented. This was followed by description of international activities, student exchange programs, awards and distinctions, collaboration with social, cultural and industrial entities.

The afternoon included meetings with diploma, post-diploma, and doctoral students, technical and administrative staff as well as discussions with teaching staff.

The visit concluded with a plenary meeting with the DC and other senior faculty members.

All meetings were held at the building of Hydraulic Structures where laboratories, administrative and faculty offices of the same discipline are housed.

- *Documents provided*

Prior to the visit, the HQAA (ADIP) provided in electronic form the internal evaluation report of the department for the year 2011, dated January 2012, including the program of studies.

During the site visit the department provided a room for the committee that included course folders containing course notes, sample exams, projects, homework, diploma theses, post graduate theses, doctoral theses and grading records. The department made available all presentations and internal documents in electronic form to the committee. Furthermore, the committee was provided with sample course evaluation questionnaires.

II. The Internal Evaluation Procedure

The Internal Evaluation Report (IER) is extensive, covering many topics of departmental activities including structure of the department, diploma, post-diploma and doctoral studies, course descriptions, research activities, strategies of academic development, administrative services and infrastructure, and plans for improvement.

The quality of the information provided is adequate and relevant to the evaluation. However, the documents are incomplete, partly due to the fact that input of data from some faculty members is missing.

Points referring to educational objectives and goals, strategic planning, student and staff evaluation need to be presented in a more comprehensive manner. The committee attributes these deficits to i) lack of experience with evaluation procedures, ii) lack of standardization, and iii) unwillingness of certain faculty and students to participate and exert the necessary effort. In this respect, it would be helpful if the department is made aware of the external evaluation criteria in advance of the committee visit, and is provided with adequate time of at least six months to prepare for the visit.

The objectives set-up in the IER are appropriate for a leading civil engineering program and are quite ambitious. However, based on the report alone there is no adequate evidence that all the objectives have been accomplished.

A. Curriculum

APPROACH

The goals and the objectives of the curriculum as stated in the Diploma Supplement are as follows:
The aim of the study program offered by the School of Civil Engineering is to initially provide the graduates with the necessary knowledge, so as to acquire a serious theoretical background. Furthermore, the direction of the teaching courses is towards the main subject of Civil Engineering, as defined by modern technical, social and economic reality.

To achieve these general objectives the department offers an extensive range of courses. The students can specialize in one of the four concentration/specialisation areas. The contents of the courses cover a broad range of subjects in typical civil engineering fields.

In developing the initial curriculum they have consulted with national and international universities, Technical Chamber of Greece, professional bodies, governmental authorities and other regional stakeholders. This curriculum is approved by the departmental General Assembly, the Senate and the Ministry of Education. We note that students, faculty, technical/administrative staff are involved in the approval procedure.

The curriculum is consistent with the objectives set and the requirements of the society and civil engineering practice.

The curriculum is subjected to major revisions, as needed, approximately every ten years, and to minor annual revisions in the framework of the IER.

IMPLEMENTATION & RESULTS

The curriculum is successful in implementing the departmental goals.

The curriculum corresponds to the standards set-up by leading national and international civil engineering departments.

The structure of the curriculum is overall rational and adequately articulated.

It is noted that students in higher semesters can take courses in arbitrary order with no pre-requisites. In the opinion of the EEC, the definition and implementation of pre-requisites is essential for the learning process and makes the teaching of classes more effective. Hence, the introduction of pre-requisites is strongly recommended.

The curriculum is partly inhomogeneous with different difficulty levels among courses. It also appears that there is an inconsistency between the actual workload and the ECTS credit points for individual courses. For example, the projects accompanying the course are not included in the determination of the credit hours.

The course material is available in electronic form for downloading from a portal. According to statements by students the course material contains sufficient information for exam preparation and external books are not necessary. The course contents are defined in most courses inspected.

It is suggested that an effort be made to articulate the course contents in a more uniform and comprehensive manner. It is also suggested that every course specifies the learning outcomes and how they will be achieved. We understand that the process for fulfilling this suggestion has been initiated.

The content of the curriculum appears to be very dense making graduation within the regular study time feasible only for a small percentage of students (presently less than 10%).

The committee was informed that in the near future there will be drastic reductions in teaching personnel due to retirement with no plan of replacement. This will jeopardize the academic program in its present extent, and we recommend that steps be taken to strategically address the upcoming problem. Such steps could include optimisation of the curriculum, including consolidation/elimination of elective and post-diploma courses.

Faculty members are well-qualified and cover a significant area of expertise.

With respect to laboratory classes there is lack of qualified technicians to prepare and support laboratory classes in all core subjects, and lack of sufficient number of test stations for ensuring hands-on experience in laboratory testing. These are key prerequisites for fundamental understanding and a successful career in Greek practice.

IMPROVEMENT

The Department is aware of the need to continuously review and update the curriculum. More specifically, they are in the process of assessing the feasibility of reducing and consolidating the elective courses to streamline the curriculum.

Post-Diploma Studies

The department offers three specialist post-graduate programmes and one interdepartmental/interdisciplinary postgraduate programme. It also participates in two interdepartmental/interdisciplinary postgraduate programmes. The subjects are based on contemporary and society-driven needs. The department also offers a structured doctoral programme. The requirements for entering the programmes are demanding.

Compared to the diploma curriculum, these programmes are more efficiently structured with a more precise definition of objectives and learning outcomes. In particular the Earthquake Engineering and Seismic Design of Structures programme is operating with high international standards.

The specialist laboratory classes are adequate and sufficiently equipped through the use of research facilities.

B. Teaching

APPROACH

With respect to teaching methodology, the department follows traditional teaching concepts in engineering. It includes formal lectures by the academic personnel, lecture notes in printed or electronic form, problem solving sessions, projects, and formal exams. The students reported a variety of delivery methods including traditional blackboard and modern electronic presentations.

Presently, there are 2118 registered students, of which 1331 are in the n+2 Diploma program, served by 92 faculty members involved in teaching.

Students reported that they are overall satisfied with teacher cooperation and availability.

Students should be encouraged to enhance their interaction with teaching personnel. The existing mentoring program has given, for the moment, limited results and should be improved.

The classrooms and the audio-visual infrastructure appear to be adequate. Computer clusters designated for exclusive use by civil engineering students are available and are located within the departmental buildings. The department is also endowed by a specialist library.

The examination system follows the traditional format with projects and written/oral exams for each course. Past exams are available to assist student preparation. Students reported that the content of examinations is continuously updated. The exams are set and assessed by the responsible teaching staff.

IMPLEMENTATION & RESULTS

The teaching procedures are adequate.

The teaching material and resources are adequate and of sufficient quality. Material inspected appears to be up-to-date.

In post-diploma courses there is a strong link between research and teaching.

There are plentiful opportunities for academic staff and student mobility that are well-received and utilized by students. It is noteworthy that the department runs a popular placement program which results in over 100 summer internships per annum in local government and industry.

A student course evaluation system was recently initiated. Both electronic and paper forms are used. The response by the students is rather disappointing. To enhance response, we recommend dedicating class time in filling out course evaluation forms.

The students appear to be satisfied with the method and delivery of teaching. They further reported that there is a wide discrepancy of rigor among courses with the same ECTS units and weight in the final grade.

From the material provided, for different diploma courses it appears that, in general, less than half of the students registered in the course make a serious attempt in each exam. This adds considerable loads to administrative and teaching staff.

The practice followed in grading the diploma thesis leads to narrow bands of grades. This results in grade inflation and inadequate performance differentiation. This is because the current system allows students to extend the period of the thesis preparation until a satisfactory level is achieved. We recommend limiting the allowable preparation time for the thesis. Furthermore, a wider spread in grades would facilitate better screening by potential employers and be fairer.

Time to graduation varies considerably and currently the average year of graduation is more than six years. The newly imposed system (n+2) allows the student to maintain this status up to seven years. This will hopefully bring down the average time to graduation.

The final degree grade variation is as expected for the calibre of students entering the department, with an average score above seven.

IMPROVEMENT

The Department is already considering methods to improve the rate of response to the student evaluation to match the excellent level of responses at the post-diploma programmes.

There is no evidence of any formal student advising procedures. We recommend the department to investigate appropriate procedures to ensure effective completion of studies.

C. Research

APPROACH

The departmental policy is defined in the IER. The research is both fundamental and applied with emphasis in the areas of earthquake engineering, materials and structures, hydraulics and the environmental, transportation systems, protection of monuments.

Research topics presented are driven by societal needs as defined by government agencies, industry and European research organisations.

It is evident that departmental research policy is that all faculty members should be engaged in research and endeavour to work at the forefront of their area of expertise. To facilitate this, policy includes equitable distribution of resources to all faculty members. Research is organized within the umbrella of individual discipline-specific laboratories.

The internal standards for assessing research quality are defined by the faculty promotion processes. It appears that the number and quality of publications and citations are taken seriously into account.

IMPLEMENTATION & RESULTS

The budget is distributed to all research laboratories. When funding is available research members of staff are financially supported to participate in conferences and international activities.

Due to the recent budget cuts and the overall downturn of construction activities (which contributed a considerable amount of external departmental funds through a special fund for engineers), the current and future proper operation of the laboratories is at risk.

The laboratories are well endowed in terms of space and adequately equipped for research. In particular the soil mechanics/dynamics laboratory is very well equipped and utilized.

However, the number of specialized technical personnel is regarded as extremely low for the size of the department and laboratories, with the consequence that faculty and researchers have to improvise and spend their own time to fill the gap. Therefore, laboratory operations rely on the dedication and unpaid contribution of academic staff and doctoral candidates.

The EEC expresses its concern for the sustainability of the laboratories because of the limited technical support. Given the extent and variety of the facilities it is inevitable that the severe reduction in the operating budget will also be detrimental on maintenance.

We highly recommend that a system be established to at least reimburse and create positions for necessary technical support personnel. The Civil Engineering laboratories are crucial for support of national infrastructure development such as the Metro lines or pipelines in the absence of other such specialized laboratory facilities in the country.

The number and quality of scientific publications for the faculty reported is comparable to other peer research institutions abroad. Among the faculty members, there are individuals with a world leading record in research.

The record of research projects is very impressive, particularly in EU funded projects in the area of Earthquake Engineering. There is evidence of excellence in all laboratories.

The department maintains a large number of research collaborations with international researchers and researchers from other Greek universities. This collaboration enhances the education experience of the doctoral students and junior faculty members.

The research outcome is highly appreciated at national and international level. This is evidenced by citations, invitations for keynote lectures, participation in code/standards committees.

IMPROVEMENT

The department identifies the need to extent their research activities in new fields, such as, nanotechnology and new environmentally friendly materials.

The committee suggests that a strategic effort is undertaken to enhance the visibility of the excellent work already performed. Such a promotion should be targeted more at the international level.

D. All Other Services

Services to students and teaching staff are provided by various groups of technical and administrative staff that are partly under the control of the central university administration.

The support staff members are highly appreciated by the students and the faculty members, as confirmed during the interviews. However, many complains were cited regarding the expected adequacy of available human resources in the near future.

There is a widespread anxiety about job security due to expected cuts, which together with the consequent low morale may jeopardize the quality and good standing of the department.

Most of the procedures are electronically delivered including class registration, announcements and job opportunities.

At the moment the department has its own secretarial office for student support and lead administrator. Secretarial and technical support is also available at individual laboratories.

Selected student issues are addressed by direct communication with faculty and the Department Chair. No specific student counselling services (similar to the position of an Undergraduate Program Advisor) have been identified.

The department promotes the presence of students on campus by extended operating hours for the departmental library and the IT-facilities.

The committee saw evidence of intense student-led activities in athletics, culture, politics, entertainment and student support.

Collaboration with social, cultural and production organizations

The department is very active in addressing regional and national societal needs. Examples include the restoration of the Theological School in Chalki, the archaeological excavations in the Thessaloniki Metro line, and the design of modern access infrastructures to Rotunda for all disabled persons.

E. Strategic Planning, Perspectives for Improvement and Dealing with Potential Inhibiting Factors

Strategic planning at the university and departmental level is extremely difficult, since the overwhelming majority of the university budget stems from the central government which comes with control of academic functions. This makes it very difficult to make changes to the curriculum, introduce new courses, develop new research areas and establish laboratories in new disciplines.

Incoming number of students is determined by the central government and this number is increasing despite the budget cuts and reduction of administrative staff.

Many of the university procedures are prescribed (by law and government), rigid and outdated with limited possibilities for change. Examples include hiring and promotion procedures for academic staff, classification of staff, salaries, examination procedures, prescribed maximum number of doctoral students per faculty and duration of doctoral studies.

For universities to thrive there is a need for more self-governance and financial independence.

The departmental management structure relies on decisions by the General Assembly. Such a system has inherent restrictions with respect to development of clear, distinct and long-term strategic plans for the department.

Finally, the uncertainty with respect to future budgetary and personnel issues is prohibitive of any meaningful strategic planning.

F. Final Conclusions and Recommendations of the EEC

The department took the evaluation very seriously and all participating members were very anxious to cooperate with the EEC. The faculty members are very much dedicated to their duties and take pride in their programmes. There appears to be a high level of collaboration among the faculty members we met, who appreciate each other's work and contributions. The faculty members are very fair and sensitive to student issues.

The program of studies is very impressive and has the potential to produce high quality engineers.

The curriculum is well and thoughtfully designed with an exceptional range of specialized topics in the four streams of specialization within the civil engineering programme. The curriculum is designed to produce independently thinking civil engineers and is consistent with the needs of Greek society, where many graduate engineers develop their own private practices at an early stage of their career. At the same time their education provides them with the necessary background to be competitive at the international level.

For each course a more detailed syllabus including learning objectives, grading system and type of examination is recommended. This documentation can be considered as a quality assurance tool and is standard practice for institutions subjected to external evaluation and accreditation requirements.

It appears that there is an inconsistency between the actual workload and the ECTS credit points. For example, the projects accompanying the course are not included in the determination of the credit hours. This issue needs further consideration.

Course pre-requisites are not required, but are essential for effective learning and better utilisation of resources, and should be implemented.

The practice followed in grading diploma thesis leads to narrow bands of grades, resulting in grade inflation and inadequate differentiation. A greater spread is recommended.

By reviewing the provided documents there is inconsistency in the format and content of the material presented. This was partially due to differences in the work-load and type (compulsory/elective) of individual courses. Nonetheless, we recommend that the department develops a standardized format in accordance with acceptable international QA practice.

With respect to research achievements the faculty shows an impressive record particularly in winning EU-funded research projects. Their successes should be celebrated and promoted internationally. However, there is concern that these successes are accomplished by a limited number of faculty members. This could present a risk to sustainability and enhancement of research success.

The laboratories are well endowed in terms of space and adequately equipped for research. However, we identified needs with respect to the ability to serve the requirements of the curriculum.

The EEC was informed that in the near future there will be drastic reductions in teaching personnel due to retirement with no plan of replacement. This will jeopardize the academic program and we recommend that steps be taken to strategically address the upcoming problem. Such steps could include optimisation of the curriculum, including consolidation/elimination of post-diploma courses.

Strategic planning is prohibited by control exerted by the government and the externally imposed organisation and governance.

The Members of the Committee

Name and Surname Signature

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