

Quality assurance for higher and technological education in Greece

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ABSTRACT: Greece's Law 3374/2005 is the relevant legislation behind the quality assurance system for higher education and technological education institutions, and the credit transfer system. This legislation links accreditation of the higher education institutions with an internal evaluation conducted every two years and an external evaluation conducted every four years. It also provides the authority for the body to deal with organising quality assurance. This body makes administrative and organisational services available for accreditation of higher and technological education institutions and the European credit transfer system. Due to the internal opposition from educational institutions, the implementation of the law has been delayed and, hence, other issues relating to students' competencies, academic programmes and the accreditation process are still to be considered.

INTRODUCTION

There is an urgent need for improvement and upgrading of the quality of education provided by Higher Education Institutions (AEI) and Technological Education Institutions (TEI) in Greece. After a long delay, a new system of evaluation for the highest level of tertiary education was introduced as a result of a recent reform of higher education. This reform was grossly overdue because of parliamentary delays, ambiguous legislation and objections from professional bodies and employee unions. Greece's Ministry of Education wishes to follow the binding agreement that comes from agreeing to the Bologna protocols signed in 1999. It should be pointed out that Greece is the last country in the European Union to establish a system of higher education evaluation. It is clearly desirable for the schools offering education to be evaluated and accredited. The positive sign of this reform is that finally, all the stakeholders mentioned above are finally willing to participate in the process of improving and upgrading the higher education system.

In evaluating higher education institutions one has to look at the connection between the education provided and the job market. It should be pointed out that there are too many academic departments in Greece. Most large cities in Greece have both university departments and technological departments providing higher education, but the graduates of those departments have a major problem in finding jobs. The pride felt by students and their families when they are accepted into a higher education programme turns into disappointment if they cannot find a good job (or a job at all) when graduating after four to five years of study.

There are many university departments for which the professional rights of the graduates are not secured by law. There are graduates who cannot participate in the ASEP (government agency) examinations that would enable them to start their career as public sector employees, although their programme of study was similar to other graduates who are able to enter the public-employee system. Also, the system of transferring of students between universities is important for many families. For families with several children, it is paramount that siblings of the first child registered at a certain university department should be able to transfer to a similar department in the same city, or to a department that is close to the family residence. Therefore, many students and their families are in despair, which makes the connection between university studies and employment critical.

Credit transfer is carried out under the European System of Transfer and Accumulation of Credit Units (ECTS), and this is already applied at the universities participating in the SOCRATES-ERASMUS programme for undergraduates. The procedures for this system are easy to apply, students have more opportunities, and the extended implementation of the system can lead to study programmes in European universities becoming more open and comparable. The system of accreditation works fairly as long as the academics and students involved apply the rules of the system correctly and have the sense of responsibility for the tasks and duties they have to perform. If education works well, then there will be

fewer problems in society, in the economy, in finding jobs, and in the elimination of the corruption that weakens society and lowers people's motivation.

When executing the accreditation procedures, the assessment of quality should take into account such factors as the effectiveness of teaching and research, the studies and all the services offered by the institutions of higher and technological education in Greece, the recognition of certain weaknesses and problems regarding the academic nature, the mission and the goals of the institutions, etc. In addition, the comparability of quality assurance as it relates to the goals of the national system of higher education and international norms, experiences and practices already applied to other institutions mean that internationally accepted objective criteria should be introduced, supported by appropriate quantitative and qualitative indices.

In this article, the requirements of the accreditation law introduced, as well as the opposition by academic staff members to this legislation, and the additional issues that institutions will have to address after the implementation of the accreditation law in Greece are presented, analysed and discussed, along with some international research findings on accreditation and related matters.

ACCREDITATION LAW

The evaluation and accreditation of higher (AEI) and technological education institutions (TEI) is to occur every two years (internal) and every four years (external), as required by Law 3374/2005 (FEK 189A) [1]. Internal evaluation will be undertaken by members of the academic unit to be accredited, while external evaluation will be organised by an independent agency established by the Law. The agency will not conduct evaluations itself; that process will be performed by committees of independent experts appointed by recognised authorities. The majority of committee members will be professors of higher education institutions, but there will also be representatives of students and of research institutions and professional organisations.

The Agency of Quality Assurance for Higher Education (ADIP) was established with a mandate to offer administrative and organisational services to the institutions. The President of the Agency will be appointed by the Minister of Education based on a proposal from the Greek Parliament's Committee on Educational Issues. Members of the committee will comprise six university professors, four professors from the technological sector, one student representative, one representative of non-educational/research institutions selected jointly by the Minister of Education and the Minister of Development, and one representative of the Central Union of Chambers (Technical Chamber, Trade Chamber, etc).

The European Credit Transfer System (ECTS) was also established under Law 3374/2005, with the objective of evaluating the study programme undertaken by a student and recognising the students' achievements during their period of study at a European university. The system of transfer and accumulation of units is already in use at universities in EU member countries at both the undergraduate and graduate levels. The system is based on the rule that 60 credit units represent one academic year's workload for a full-time student. That is, 30 credit units per semester or 20 units per trimester. In addition, the Addendum of Degree was established, which is an explanatory document that will be attached to the title of studies (degree). The document's purpose is to provide comprehensive information on the studies and the exact content of the studies undertaken by graduates.

OPPOSITION FROM ACADEMIC STAFF

AEI academic staff in Greece are members of the Hellenic Federation of University Teachers Association (POSDEP). The Federation supports the interests of its members and provides opinions on issues of importance to its members to the Ministry of Education that may provide relevant input to laws and regulations introduced by the Ministry. Also, POSDEP expresses opinions on the implementation of such laws and regulations in education [2].

The main characteristics of the reforms attempted by the government, which according to POSDEP create a major drawback to the advancement of university education in Greece, are presented below [2]:

- The reduction of government funding will lead universities towards economic bankruptcy, and will force universities to seek funding from the private sector. Universities will, therefore, become *competing enterprises* that sell educational services and research products (requiring the introduction of tuition fees for graduate studies programmes and entrepreneurial research activity within the universities). This policy was agreed upon at the Convention of the Ministers of Education of the OECD countries held in Athens in 2006.
- Low salaries and poor working conditions are humiliating for Greek academics, when taking into account their social status, role and position in society. The net monthly salary of lecturers is approximately €1,200, and these represent about a quarter of academic staff in large universities and about half in small universities, working mainly as part time teachers (Presidential Decree PD 407/80).
- The policies applied to research and university vision set aside basic research sponsored by the government, and support the concept of the *entrepreneurial university* for non-basic research and the *invasion* of universities by private companies.

- Student support in the form of libraries, computer laboratories, study rooms, presentation halls, lecture rooms, dormitories and restaurants is poor. This creates an exodus of students from small universities in small cities and towns to larger universities, thus creating a student increase at universities of Athens and Thessalonica. Hence, the *cost free* education for students is not exactly as it should be.
- The establishment of the base grade of 10 out of 20 average units, as a minimum grade required to enter university education (taking the University Entrance Examinations in June of each year as organised by the Ministry of Education), turns away thousands of students from the university, despite the fact that they have successfully completed high school. They are forced to become *customers* who need to purchase education from the private sector.
- Adopting the unsuccessful Bologna Process has led to the degradation of education. The government has issued presidential decrees to make three-year studies at universities abroad equal to five-year studies at Greek universities.
- Breaking the sequence of Greek programmes of study and adjusting courses to meet the requirements of the implementation of the credit units system, which is a prerequisite for the commercialisation of education, means that degrees will be broken down into smaller and smaller parts, leading to the elimination of the professional-unions' rights of the graduates. The announcement of financial support for the adoption of the credit system coming from the 4th European Community Support Framework will result in full implementation of this system.
- Ranking of universities will follow the implementation of the system of Quality Assurance and Accreditation to the Higher Education. This will have an effect on university funding and will increase the influence of market competition on the very existence of departments and institutions.
- Self management of universities and abolition of academic independence by the Ministry of Education will result in the appointment of private managing agencies by the universities, with *ad-hoc* definitions of equality between university departments (to perform student transfers between universities). The Ministry of Education will establish and operate an auditing body (SAEI) and the accreditation body for foreign degrees (DOATAP).
- Abolition of unified public and free higher education resulting in the transformation of universities into *private enterprises* that will operate on the separate basis for each university with four-year contracts with the Ministry of Education, with financial independence, forcing universities to become strict schools that bear full responsibility for students and teachers.
- Revision of Article 16 of the Constitution leading to the abolition of free public higher education and the recognition of the Centres of Liberal Studies as universities, which have acquired their titles from foreign universities, as equivalent to the public universities. These were rejected by the students' during their long-term strikes in 2007. However, Law 3696/2008 was issued on the establishment and operation of colleges.

In summary, the reduction in government funding will oblige the universities to seek funding from the private sector to perform non-basic research, and will cause that staff salaries and student support will be inadequate. Accreditation will create a ranking system that will lead to the commercialisation of universities. The credit transfer system will disrupt the sequence of studies, and all these will damage free higher public education in Greece.

ISSUES RAISED FROM THE ABET ACCREDITATION APPLICATION

Research carried out by several academics and researchers concerning the implementation of accreditation requirements by the Accreditation Board for Engineering and Technology (ABET) has unveiled several issues and evoked many discussions that have led to the following observations and conclusions:

- *Enhanced level of technological literacy and competency*: An overview of how the International Technology Education Association's (ITEA) Standards for Technological Literacy, regarding the Content for the Study of Technology and the ABET's Engineering Criteria 2000's (Criterion 3 Programme Outcomes and Assessment), focused on producing higher levels of technological literacy and competency in students, by providing guidelines for pre-college through undergraduate education, which were intended to promote improvement in the quality and quantity of engineering students [3].
- *Types of knowledge related to outcomes of ABET Criterion 3*: In order to implement the ABET's Engineering Criteria, engineering educators should understand different types of knowledge and how these types relate to the outcomes described in Criterion 3. The researchers provided a heuristic approach for framing a programme's educational objectives by identifying examples of the type of programmes engineers seek to graduate from. Three sections then followed, each addressing categories of knowledge: tacit knowledge, four types of knowledge that can either be tacit or explicit, and the knowledge created and shared in teams. The researchers concluded on how these types of knowledge effect engineering students and how they can be included in engineering curricula [4].
- *Application of qualitative and quantitative data analyses for the evaluation of engineering programmes*: The researchers clarified key concepts and examined supported qualitative research, used by engineering educators when they were concerned about the improvement of classrooms, programmes and institutions. The investigators compared quantitative and qualitative research, described some qualitative data collection-strategies, addressed methods for establishing trustworthiness, and discussed strategies for analysing the qualitative data. Also, illustrative examples of recent engineering education research that featured qualitative data analysis and mixed-method approaches were used (quantitative and qualitative) [5].
- *Continuous programme improvement*: Engineering programmes seeking accreditation are required by the ABET to document their continuous programme improvement efforts and their outcomes. The researchers proposed the use of the subject-specific results obtained with the Fundamentals of Engineering (FE) examination as one of the metrics

suitable for assessing the outcomes of such efforts in individual courses. Statistical approaches appropriate for analysing the FE examination results and some caveats about their use were presented, with an application to hydraulic engineering courses [6].

- *Engineering students need to show competency in a set of skills:* Engineering accreditation criteria require that engineering graduates demonstrate competency with a set of skills identified in Criterion 3 (a)-(k). Because of a scarcity of instructional material on many engineering topics, a team of engineering instructors developed and tested a set of short modules for teaching these skills. In comparing pre- and post-module data, 33% of the comparisons were significantly different at a 0.05 level. In comparing control and post-module data, the corresponding value was 44%. The results indicated that instruction with these short modules produced a significant effect on student learning [7].
- *Improvement of the accreditation process:* ABET developed the revised accreditation Engineering Criteria 2000 (EC2000), which emphasise learning outcomes, assessment and continuous improvement rather than detailed curricular specifications. These criteria, together with international agreements among engineering accrediting bodies, facilitate mobility of an increasingly global profession. To assess the utilisation of the new criteria, ABET has commissioned a multiyear study of the impact of EC2000 on US engineering education. Initial results from the study are encouraging and, as more results emerge, should support continuous improvement of the accreditation process itself [8].
- *Engineering and professional skills required by ABET:* In developing its new engineering accreditation criteria, ABET reaffirmed a set of *hard* engineering skills while introducing a second, equally important, set of six *professional* skills. These latter skills include communication, teamwork, and understanding ethics and professionalism, which may be labelled *process skills*, and engineering within a global and societal context, lifelong learning and knowledge of contemporary issues, which may be designated as *awareness skills*. The researchers were positive about a number of creative ways that these skills were being learned, particularly at institutions that were turning to global and/or service learning in combination with engineering design projects. The researchers were encouraged by work directed at assessing these skills, but recognised that there was considerable research that remained to be done [9].
- *College and department ranking interest and controversy:* College rankings conducted by various popular magazines have generated both considerable interest and controversy. The researchers presented statistical analyses of 13 years of U.S. News and World Report graduate programme *reputation* rankings for engineering colleges and their constitutive departments, trying to reveal the relationship between the department rank and the college rank [10].
- *Assessing outcomes for ABET or assessing students' skills and attitudes:* Since the new ABET accreditation system was first introduced to American engineering education in the middle 1990s as Engineering Criteria 2000, most discussions in the literature focused on how to assess Outcomes 3 (a)-(k) with relatively little concern about how to equip students with the skills and attitudes specified in those outcomes [11].
- *Accreditation preparation, assessment and feedback:* Preparing for an accreditation evaluation under EC2000 is a demanding task. For many programmes, the most challenging requirements of the criteria have to do with establishing mechanisms to obtain input from various constituencies, formulating objectives on the basis of these inputs, formulating outcomes corresponding to each objective, establishing a range of assessment mechanisms to evaluate the programme and outcomes, and establishing feedback mechanisms to use the results of the assessment to improve the programme. The researchers presented the experience of one programme and some of the lessons learned from the programme [12].
- *Changes for engineering curricula for different interest groups:* The National Society of Professional Engineers (NSPE) and the American Society of Civil Engineers (ASCE) sponsored programmes to recommend changes to the engineering curriculum. Various other studies such as the one by the American Society for Engineering Education (ASEE) investigated methods to strengthen undergraduate education. Researchers questioned civil engineering undergraduate and graduate students, as well as practicing alumni. The findings suggest that all three groups perceived that some subject areas were more important than others. For example, greater than 40% of each group identified four subject areas that presently receive or should receive a high level of coverage in the civil engineering curriculum [13].
- *Evaluation of programme effectiveness using course and programme assessment:* Engineering academics at universities are engaged in the process of developing assessment plans to implement continuous quality improvement and satisfy the requirements of EC2000. The researchers defined the educational inputs, processes, outputs and outcomes in order to clarify the focus of the new *outcomes assessment* model of engineering education. A framework was presented to clarify the meaning and scope of assessment activities needed to meet the information needs of academic programmes and institutions. Models for course assessment and programme assessment were presented and the similarities and differences discussed [14].

From the research described above on the application of the ABET accreditation process, one can foresee that similar issues to those identified previously may emerge during the application of Law 3374/2005 in Greece and the need to face these issues will be imperative. The issues that refer to students' competencies, academic programmes and the accreditation process can be summarised as follows:

- *For students:* enhanced level of technological literacy and competency, specific types of knowledge and skills, competency in certain skills, such as engineering and professional skills;

- *For academic programmes*: continuous improvement, college and department ranking, engineering curricula according to the interests of different groups, programme effectiveness based on the courses and programme assessment;
- *For the accreditation process*: improvement of the process, accreditation preparation, assessment and feedback, assessment of outcomes for the accreditation body or assessment of skills and attitudes of students, application of qualitative and quantitative data analyses for the evaluation of engineering programmes.

DISCUSSION

The need to have quality assurance processes at Greek universities, regarding Higher Education Institutions (AEI) and Technological Education Institutions (TEI), is in accordance with the goals set by the Bologna Process of 1999. The Bergen Conference of the European Ministers responsible for Higher Education (19-20 May 2005) adopted standards and guidelines for quality assurance in the European Higher Education Area [15]. The complete description of the standards and guidelines are given by the European Association for Quality Assurance in Higher Education (ENQA) as *Report Standards and Guidelines* for quality assurance [16], is shown in Table 1.

Table 1: Standards and guidelines for quality assurance adopted by the Bergen 2005 Conference.

A. European standards for internal quality assurance within the higher education institutions	B. European standards for external quality assurance
<ul style="list-style-type: none"> • Policy and procedures for quality assurance; • Approval, monitoring and periodic review of programmes and awards • Assessment of students • Quality assurance of teaching staff • Learning resources and student support • Information systems and public information 	<ul style="list-style-type: none"> • Use of internal quality assurance procedures • Development of external quality assurance procedures • Criteria for decisions • Processes fit for purpose • Reporting • Follow-up procedures

According to the above, Law 3374/2005 was issued to cover higher education quality assurance in Greece. The process of evaluation and accreditation will take place every two years for internal evaluation and every four years for external evaluation. Under Law 3384/2005, the Authority for quality assurance was established, which will provide higher education institutions (AEI and TEI) with administrative and organisational services for accreditation, as well as the European System of Transfer and Accumulation of Credit Units (ECTS), which will help student mobility within the European Union.

Those involved in research on accreditation problems have realised that in applying the accreditation system, there are aspects to be resolved for students, as well as for the academic programmes and the accreditation process. Engineering and technology education for students requires high levels of technological literacy in specific types of knowledge. It also requires the development of competencies in engineering and professional skills, which should be included in the assessment. The academic programmes should undergo continuous improvement, and universities will face strong competition because of university's and department's ranking. The universities will make revisions to their engineering curricula according to the interests of a range of groups (mainly professional groups), and check often upon the effectiveness and success of their programmes. The accreditation process is a tedious and time consuming process that also needs continuous improvement. The accreditation requires the stages of preparation, assessment and feedback. Further, the accreditation body requires that the accredited institutions assess the outcomes and results of obtained knowledge and skills of their students, and carry out comprehensive qualitative and quantitative analyses of the data obtained for the evaluation of their engineering academic programmes.

The opposition expressed by the attitudes of POSDEP refers mainly to privatisation issues. There are serious fears regarding the lowering of government funding in public universities, which will force the universities to seek funding from private companies, hence, creating dependence of the universities on the private sector. Also, there are fears that universities will have to conduct only non-basic research, since basic research, currently sponsored by the government, will be replaced by non-basic research done for private companies. At present, academic staff salaries and student support are inadequate, leading to the economic degradation of staff and students after accreditation. The university will have to undertake commercial activities that will eventually lead to ranking and commercialisation, and the universities will be forced to compete with very well established European universities. The credit units transfer will break the scholarly sequence of studies for the students and will have a detrimental effect on students' retention and the completion of their degrees. The entire accreditation system will cause loss and damage for the free higher public education system in Greece.

Members of POSDEP exhibit low attitudes and morale, and are pessimistic about the outcomes of the privatisation, commercialisation and strong competition, elements that were tested in other sectors of economy and have proved their advantages and also strong disadvantages. Serious consideration should be given to the findings on accreditation processes by other researchers when it comes to the application of Law 3374/2005 to the public Greek universities. The co-existence of public and private universities in Greece would increase students' options, along with the credit transfer

system, to select between Greek and European universities, to register with their preferred university and department, and experience mobility skills that will be useful later in their professional life.

CONCLUSIONS

Law 3374/2005 relates to the quality assurance of higher education institutions (AEI) and technological education institutions (TEI) in Greece, and legislates for the systems of transfer and accumulation of credit units and the Addendum of Degree. According to the Law, the evaluation and the accreditation of the higher education establishments will take place every two years (internal evaluation) and every four years (external evaluation). With the same Law, the Authority for Quality assurance is organised, which makes available administrative and organisational services for accreditation, also under this Law, the European System of Transfer and Accumulation of Credit Units (ECTS) is being introduced.

However, the implementation of the Law has been delayed because of internal opposition at the higher education institutions. By the time the Law will be in full power, other issues regarding the students' competencies, the academic programmes and the accreditation process will have to be addressed. With regard to students, specific types of knowledge and skills will be developed (engineering and professional), academic programmes will undergo continuous improvement, since they will be competing for college and department ranking. Revisions of the curricula according to the interests of the relevant groups will take place, and the accreditation process will be improved, based on the preparation, assessment and feedback. Finally, the system will require the application of qualitative and quantitative data analyses with regard to its quality.

The internal opposition within the educational institutions is due to fears and anxiety concerning the economic degradation of academic staff and students, dependence of the universities on private industry, replacement of basic research by non-basic research for private companies, increase of commercial activities at the universities because of the ranking and breaking of the continuity of studies due to the credit transfer. All of these will contribute to the overall loss of freedom and the demise of free higher public education.

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