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Accreditation of higher education in EIE in Europe

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Abstract

The introduction of the Bologna Process is leading to changes in the process of accrediting engineering programmes and also the quality control mechanisms associated with these programmes. The EIESurveyor project is examining the various accreditation processes currently in use in Europe and existing accreditation systems in Germany, Ireland and Portugal are reviewed in this paper. Developments relating to mutual accreditation by the professional engineering bodies are also presented.

1. Introduction

During the Bologna follow-up-conference in Prague, "Ministers recognized the vital role that quality assurance systems play in ensuring high quality standards and in facilitating the comparability of qualifications throughout Europe. They encouraged universities and other higher education institutions to disseminate examples of best practice and to design scenarios for mutual acceptance of evaluation and accreditation/certification mechanisms."

Therefore, national accreditation agencies have been installed in many countries. Though the intention was (and still is) to achieve comparability of degrees, accreditation processes in different countries are different.

In the EIESurveyor project, one of the working groups is collecting available material on the processes and procedures of accreditation.

Using the accreditation agencies of Germany, Ireland, and Portugal as examples, it will be shown that accreditation procedures differ in Europe.

2. Accreditation in Germany

Education is in the responsibility of the individual States in Germany. Prior to the reforms that came into effect after the Bologna declaration, quality control of higher education was, therefore, a matter of the ministers in charge of higher education. The legal aspects were handled by themselves.

Functional control in the field of electrical and information engineering (EIE) was executed by the German Council of University Departments of Electrical and Information Engineering (FTEI). Only those departments, that met the requirements of the FTEI, were recognised by FTEI. Students with degrees awarded by FTEI recognized departments were preferred by German industry. Therefore, all university departments of electrical and information engineering aimed at meeting the requirements. Thus, a very effective and cost-efficient system of quality control was set up.

Since this system was completely outside of political control, ministers wanted to get rid of it. They took the opportunity of harmonization in the framework of the Bologna process to change the laws in such a way that the new degrees must now be accredited by accreditation agencies. This was based on the concept that competition between agencies would improve the quality of accreditation process. In order to control the accreditation agencies, they installed an Accreditation Council [1], [2] as a foundation under public law in North-Rhine Westphalia, the latter being one of the states of the Federal Republic of Germany.

To date, the Accreditation Council has accredited six accreditation agencies. These are in alphabetical order:

ACQUIN (www.acquin.org),
AHPGS (www.ahpgs.de),
AQAS (www.aqas.de),
ASIIN (www.asiin.de),
FIBAA (www.fibaa.de),
ZEVA (www.zeva.uni-hannover.de).

Each of these agencies is different from the others [2], either by its legal form, or by an existing or missing specialisation to certain subjects, or by its funding, or by its additional tasks and dependencies.

Presently, each new bachelor- and master-course programme must be accredited in Germany during the next three years. Accreditation should then be renewed every five years.

Programme accreditation is described using the procedures of ASIIN as an example. Initially, the programme team prepares a self-evaluation report, following guidelines prepared by the accreditation agency. A review team, consisting of three to seven peers, for formal correctness, then analyzes this report. Questions to be answered concern the content of a study course programme and its coherence, its level and quality, whether or not there is a need for graduates from this programme in the job market, the quality and quantity of lecturers, whether there is adequate supervision of students, whether there are sufficient lecture rooms, whether these are equipped adequately, whether there is appropriate access to literature, etc.

If these questions are answered satisfactorily, the team of peers visits the faculty offering the program. They review the management team of the faculty, the staff and the students. The latter are also interviewed in absence of staff.

At the conclusion of the visit, the team of peers gives a provisional summary to the management team of the faculty. They write a final report with recommendations. A board of experts, who may add to or even change the final report, then discusses this report. The final decision about accreditation is then made by another, independent group of experts.

Accreditation might either be awarded without any conditions, or with conditions or recommendations that ought to be followed within one year, or it might be denied. In the latter case, the state might even forbid the faculty to run that programme. Therefore, it is to be expected that the vast majority of programmes will be set up in a way that makes them likely to be accredited.

Since there are about 15000 course programmes in Germany (including all technical and non-technical subjects), about 3000 accreditation procedures must be executed each year. Since one of these procedures costs about € 25000, politicians are beginning to discover that they have produced gigantic additional costs. The previous system was more efficient and cheaper by some orders of magnitude.

Unfortunately, educational politicians in Germany find it difficult to admit that they have made mistakes. Therefore, the Bologna reforms will be reformed gradually over the next few years. In relation to accreditation this process has already begun.

Presently there is a discussion about replacing the program accreditation by what is called “system accreditation”. The idea is to install a quality assurance system at the Universities and Fachhochschulen. The new QA-system itself will be accredited every five years also. The QA-system will then accredit the individual programmes.

Again, this idea is flawed, since it is quite clear that the existence of a quality assurance system does not guarantee by itself that quality is maintained, let alone improved.

The umbrella organization of the four councils of schools of engineering and of computer technology at German Universities, 4ING, is, therefore, concerned about the future of engineering programmes at German Universities. They have started an intensive discussion with the sixteen state ministers and with the federal minister in charge of higher education in Germany. The experts of 4ING believe that the Bologna process in general, and accreditation of its programmes in particular must be reformed to maintain high-level higher education programmes.

3. Accreditation in Ireland

In Ireland each University is responsible for both the awarding and quality control of its own degrees. In addition engineering programmes have been subjected to external accreditation by the professional engineering bodies for many years. Engineers Ireland (EI) is responsible for setting up and maintaining proper standards of professional and general education for the formation of chartered engineers and has formally accredited engineering degree programmes in Ireland since 1982.

The accreditation process [3] involves a periodic audit of the engineering education provided by a particular programme. It is essentially a peer review process with an independent panel comprising both academic staff and professional engineers from industry. Detailed self-assessment reports and documentation are submitted to the panel several weeks in advance of the visit. During the 2-day visit the panel meet with academic and support staff members,

students, former students and employers. The panel also visits the various facilities (library, laboratories, etc.) and reviews student project work, examination papers and scripts and other assessed work. If the accreditation panel were satisfied completely with the standard of the programme, accreditation would be granted for a five-year period, at the end of which the programme would be invited to apply for re-accreditation. If the panel is not satisfied completely, accreditation for a reduced period, or, where there are serious deficiencies, no accreditation, is proposed.

In recent years, Engineers Ireland has revised its accreditation criteria, with the emphasis moving from inputs to outputs. Thus the new criteria are based on programme and learning outcomes [4].

4. Accreditation in Portugal

Prior to the introduction of the Bologna Process in Portugal, there were two accreditation and quality controls for the programmes at the Universities and Polytechnics with two different objectives.

The first was an accreditation process to control the scientific quality of the programmes and the adequacy of the staff, laboratories, programmes and the learning process quality. The responsibility for this process was a commission established by the Rectors of the Public Universities which was independent of the Government. The quality control was evaluated every five years, unless there were problems and in this case the period could be shortened to two or three years to check if the compulsory modifications had been introduced. The commission that evaluates the programmes is composed of academics, who prepare a report and propose a decision in relation to the programme quality, which is approved or not by the Quality Body.

The second was an accreditation process organized by the Professional Bodies to check if the standard of the programme was sufficiently high so that graduates from the programme would be able to practice as engineers and undertake the necessary responsibilities. The commission, which typically comprised three engineers and two academics, visited the institution offering the programme and undertook the evaluation. The Professional Body reviewed the report proposed by this commission.

For the two processes, which are independent, the Universities and Polytechnics prepare documentation on the administrative processes (information on teaching and administrative staff, subjects, programmes, laboratories, equipment, quality selection of students, student performance and subsequent employment information as well as questionnaires on the programme and teaching process.). During the visit, which generally lasts two days, the commission independently interviews the faculty, students, staff and alumni. After their visit, the commission writes a report, which is submitted to the board. The report makes a recommendation, and also gives guidelines for improving the quality of the programme

The implementation of the Bologna process started during the current academic year and is already being realized in most of the programmes being offered at the Universities and Polytechnics. The Portuguese Law, which defines the new structure of the programmes, was published in May 2006 and also defines the new accreditation quality control process. A new independent Accreditation Agency, which the Government will establish, taking into account the European Accreditation System guidelines, will be responsible for the overall quality control. This new Agency will include representatives from the European Agency or representatives from accreditation boards from other European countries. The Portuguese Law, which is going to define the accreditation process, has not yet been published.

5. The EUR-ACE Project

Under the auspices of FEANI, a group of national associations involved in accreditation [ASIIN (Germany), CTI (France), EC (UK), EI (Ireland), COPI (Italy), OE (Portugal), UAICR (Romania) and RAEE

(Russia)] submitted a proposal to the European Commission to set up the EUR-ACE project [5] with the objectives of (i) ensuring consistency between existing national engineering accreditation systems, (ii) establish a European "quality label" for accredited programmes, (iii) assisting with the establishment of accreditation in European countries where it does not yet exist, thus improving the quality of engineering education, facilitating trans-national recognition and mobility of engineering graduates. Following the successful completion of the EUR-ACE project, the partners established ENAEE (European Network for Accreditation of Engineering Education) to establish policies and procedures whereby the professional accreditation agencies in Europe will be authorized to add the EUR-ACE label to their accreditations.

6. Conclusions

Degree programmes in Universities and other Institutes are subject to various accreditation, evaluation and quality control processes, which vary from country to country. These processes can be managed by the Government, the State or by the Institutes themselves. Engineering programmes in addition may be subjected to external accreditation by the professional engineering bodies. The Bologna process, with its focus on mobility, credit transfer and quality control is resulting in a review of current accreditation processes. In addition the professional engineering bodies are increasingly considering mutual accreditation, which is also leading to changes in the process. The EIESurveyor project is reviewing existing processes and procedures for accreditation across Europe with a view to proposing best practice for accreditation and quality control of EIE engineering programmes in Europe.

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