

Cooperation of European Universities in the Frame of the Bologna Process

WERSÉNYI GYÖRGY

Abstract:

The Department of Telecommunication at the Széchenyi István University participates at the meetings with his partners in the frame of the Bologna process. Due to the Bologna Agreement only BSc, MSc and PhD degrees will be given at the universities after the year 2008. Universities are working on their teaching structures to fulfill the requirements and to create a transparent, well-defined credit-based rating of the students. This allows than intercultural exchange of students, researchers and lecturers (ERASMUS, SOCRATES). This report refers about the newest results and efforts of our partners in Europe and related to the Hungarian situation.

1. Introduction

The aim of the Bologna process is to create a transparent, equivalent education system in the EU. This also includes the compatible degrees and grades given by the universities. These grades then can be easily compared and accepted by other universities or employers worldwide. The teaching structures in Western and Eastern Europe do not match, so in the frame of the Bologna process only three degrees will be given after the year 2008: the Bachelor of Science (BSc), Master of Science (MSc) and the Doctor of Philosophy (PhD). In order to fit in the system, universities have begun to revise their teaching structures and degrees, because in a three-year education the starting year has to be 2005.

By using ERASMUS partnerships with universities in 2005 hosted Valencia the meeting participating Győr, Lille, Valencia, Zilina, St.Petersburg, Leipzig and Sofia.

2. Actual situation in Europe

In Spain the changes for the Bologna process are completed. Universities such as Valencia, Barcelona or Madrid are harmonizing their MSc structure to create student mobility among them.

The European concept is that “we are different but similar”, the intercultural exchange of students and teaching staff among universities is strongly recommended. Furthermore, the engineers having their degrees are suggested to stay in Europe.

Nowadays, one of the problems is that we have lot of different grades and degrees, often different diplomas for engineers with the same knowledge. Simplifying and reduction is called for. The BSc degree is often underrated by MSc engineers, and some workplaces prefer MSc instead of the BSc even if the latest would be enough. On the other side, salary does not follow the higher education and the difference between MSc and BSc slowly disappears.

Employees are not interested in risky business, research and development because multinational firms offer security and safe financial background.

2.1 Education

The education and evaluation of students has to be transparent and comparable. This means, a grade has to be a “quality insurance”, accepted everywhere. During the qualification the ECTS (European Credit Transfer System) credits are responsible for equivalent rating of student at different universities. This number represents how many hours (units) a student spends with a subject. Unfortunately, this number can not be used to qualify and rate the teachers and professors.

The load of a teacher can only be measured with a different measure. This includes the number of students, the number of classes (presentations and laboratory time). To highlight the problem, imagine two teachers: one has 4 hours of classroom presentation for 200 students, while the other has 8 hours (units) for 20 students. It is obvious that the latest is the double, despite the number of students. The difference appears only in the amount of examinations. With other words, the load of the students is not at all equivalent to the load of the teaching staff.

3. European efforts

Let us have an overview about our partner universities are in the frame of the Bologna process.

3.1 Spain

The Spanish way includes BSc as the first grade (grado) for 3 or 4 years. This corresponds to 180-240 ECTS credits. Neither language skills nor final thesis is required. The goal of this grade is to have „employability”. This means, the BSc engineer is able to go to work, is practice oriented and is entitled to continue his education to the MSc degree.

This second level is 1 or 2 years depending on whether the BSc was 3 or 4 years (accessory 120 or 60 ECTS points). The goal of the MSc is being prepared for higher education, teaching stuff and research stuff reinforcement.

The third degree is the PhD for 3-5 years. Having an MSc degree is not required only to have 300 ECTS points. This is similar to the German concept where „Fachhochschule” degree allows to continue to the PhD degree. In Hungary and East-Europe universities it is impossible. The PhD does not require classes and subjects, PhD and undergraduate students may share the classes.

3.2 Germany, Russia, Slovakia and Hungary

The Telekom Fachhochschule Leipzig starts his BSc programs in two specializations and MSc in one specialization. BSc is three years, practice oriented but with less influence of the market. Project and final thesis is included, as well as sufficient language skills. Students have to visit a foreign country in the sixth semester. The education includes law, economy and management skills as well. 60-80% of the subjects is basics, 25% professional basics, 11% professional core, 9% is the rest. MSc is meant to be 5 years from the beginning for about 20-30 students. Final thesis has to be connected with a scientific research. The main topics at the university are EMC and short and long distance wireless communication. For another subjects students are welcome at the partner universities for writing the MSc thesis.

The university at St.Petersburg has radio engineering, radio and TV broadcast, audio-video engineering education that is the most related to Győr. A telecommunication degree can be obtained at BSc and MSc level. Unfortunately, there is only Russian education and no credit system. MSc is +2 years to the 3 years BSc.

The University of Zilina also offers a 3+2 system of BSc and MSc levels. The MSc has mathematics to deepen the basics. It is a questioned method, whether the BSc should include all the basics (mathematics) that are required also for the MSc level or some parts should be moved in the MSc part only. Both concepts could be sufficient.

At the Szechenyi Istvan University in Győr, the new structure is introduced and it will begin at September 2005. We have a three-year BSc system in electrical engineering and informatics as well. The MSc degree will be given later. The university has an interdisciplinary doctoral school for PhD students.

3.3 Degrees

The BSc degree has to give „employability” to the students. It has to be practice oriented and maybe influenced by the market. It could be reasonable to „produce” engineers to the requirements of the industry but during a period of 3-4 years it could be outworn. A good example is the „network architecture engineer” BSc degree that was very popular but nowadays the market is full.

For the students it is important to have an overview (transparency) among the universities so they can choose the most sufficient for their interests. E.g. Győr does not have biomedical engineering or microelectronics (Valencia does) but students interested in microwave technology, telecommunication informatics or audio/video engineering are welcome.

It is a trend now that universities let 10-20% of the BSc students to the MSc level. With other words 80-90% of the students are going to be working in the industry. Starting classes of 150-200 students allow only a number of 20-30 for the MSc degree in a highly competitive selection process. Only the good ones can reach the MSc and the best the PhD degree. This is very good, because students can decide about their lives and profession at the age of 21-22 and not with 16-17 (mostly pressurized by the parents).

In Hungary the PhD degree was introduced ten years ago instead of the former doctoral degrees (dr.univ and Candidate of Sciences (CSc)). Good PhD students may reach the degree in 4-5 years but usually it takes more. This is due to other works and jobs of the PhD students and also the long process of reviewing of the scientific papers in international journals (in Hungary it is required to have certain publications in scientific journals). It takes years to publish recent findings and works. It is recommended to create a common platform and requirement in the EU also for the PhD degree, habilitation (if desired) and full professorship.

4. Summary

Based on the new results, the degrees take their shape in the Bologna process. A strong 3-4 years BSc education for practical knowledge will be the first grade. About 10-20% will continue to the MSc degree serving the new age-group of teaching staff and leading engineers. Only few students having PhD degree are for scientific work and research capable. The basis is the intercultural exchange programs such as ERASMUS or SOCRATES. This could be for shorter periods (weeks) or a whole semester. It would also preferable to have programs for teaching staff mobility for a whole semester.