



EIE-Surveyor: Observatory of the Bologna-process in EIE: an aid for the enhancement of mobility

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Abstract

An accurate survey of the present status of the situation of the implementation of the Bologna-process in the fields of Electrical and Information Engineering in Europe is one of the objectives of the EIE-Surveyor project (www.eie-surveyor.org) ERASMUS thematic network. To attain this goal, a survey is proposed, identifying the curricula available in Europe in these disciplines, at the levels of bachelor, master and doctoral studies.

The results obtained will be presented in a dedicated website and also a paper monograph in order to allow free access of students or colleagues to this information.

1. Introduction

Today, in various European countries, work is in progress to put the curricula in conformity with the Bologna-process scheme. Some of them are actually running it and others are in a reflection or implementation stage. At the moment the result of the European policy relative to ERASMUS mobility has strongly encouraged the mobility of students. Some works remain to be done in order to enhance the mobility thanks to the use of

some standardised descriptors in order to describe curricula and competences, and also some works and reflections in order to emphasise the understanding of accreditation methodologies and procedures and the recognition of diploma, which are a huge aspect if we want to encourage actually the mobility of students and also of workers. Task 3 of the EIE-Surveyor thematic network (www.eie-surveyor.org) aims at emphasise on having a better understanding about the existing curricula available in Europe in Electrical and Information Engineering.

2. Objectives

The objectives of the task are to provide information and synthesis on the existing curricula in EIE in Europe, and also to get a snapshot of the implementation of the Bologna-process in Europe in our disciplines. The main purpose is to have a better understanding of the present and evolving situation and to provide this information to other universities in Europe and also outside Europe: it will be possible so to enhance the attractiveness of the European HEI and curricula landscape to extra-European students.

In the curricula we are interested in, two kinds of difficulties could be identified:

- The first are structural difficulties due to the fact that higher education systems are different from one country to another one, and also because the diploma accreditation procedures are also different, even if the situation is a little bit clearer thanks to the Bologna-process implementation. This set of difficulties has to be identified in order to well understand the various national practices.

- The second concerns some fundamental aspects of the field or pedagogical approach: it is interesting for us as "specialists" to identify what are the difficulties at the moment to think about or elaborate common or shared curricula.

This study is made in 2 stages.

The first stage is to identify the present structures of institutions, curricula, diploma and gateways in the various European systems, in order to have a common global view.

The second point consists in characterising with more details the contents of the curricula/diploma in Electrical and Information Engineering thanks to a set of disciplines/keywords (i.e. a common glossary).

Various target groups have been identified: professional engineering associations, life long learning institutions, students, teachers and accreditation boards.

3. Activities

For that, the main activities presently running on concerning that activity are the following ones:

- Completion and update of the study (monograph) achieved during the THEIERE project, integration of international curricula.



Based on the results of the EU-funded thematic network
THEIERE:
 Thematic Harmonisation in Electrical and Information
 EngineerRing in Europe
 Project Nr. 10063-CP-1-2000-1-PT-ERASMUS-ETNE

Figure 1: Cover of the THEIERE monograph

- Update of the monograph "An overview of Doctoral studies in Europe" achieved during the THEIERE project, survey of prerequisites, assessment procedures and duration of PhD studies.

- Definition of a tool, for the research of curricula abroad.

A sub-task on international degrees available in Europe at the master level is also proposed in this project. The purpose is to analyse these international courses: languages used, organisation (actual or virtual mobility...), accreditation and recognition.

4. Partnership

Within the project, some national contacts have been identified. These national contacts have the responsibility to provide and check the information relative to their country. In some countries, several partners work together, in some countries (France) the French group lays on the strong partnership with the Club EEA.

5. Background

The background of the project consists in the results of the THEIERE (Thematic Harmonisation in Electrical and Information EngineerRing in Europe) project (www.eaeeie.org/theiere) during which was set up an observatory on the implementation of the Bologna process in Europe, in Electrical and Information Engineering. This observatory resulted in a monograph [2] which was published and sent all around Europe (700 copies).

6. Methodology

Starting from the monographs developed during the THEIERE TN (2000-2003), and THEIERE-DISS TN (2004-05) projects, the aim is to complete the missing information as well as to update the existing one, because the situation is always evolving.

PhD studies are completed, together with the identification of the existing links between masters and PhDs, taking into account the master courses which will prepare the students for PhD studies. A census of the existing international curricula in EIE will also be integrated in the monographs.

This task also includes a survey about mobility in order to build-up a portal that underlines the key issues to improve mobility in our fields.

As shown in Figure 2, we want to point out that core activities deal with competencies (*Tuning* activity) which are an important element for the implementation of accreditation procedures, the mean to reach this purpose being the Bologna process approach.

- "Overview per country" : This part, the most important of the monograph, consists in several files ; one per country, with a description of the respective Higher Education system in our fields, the delimitation of disciplinary fields, an

explanation of the processes for the definition, the validation, and the accreditation of the contents of the curricula and the degree systems. Some statistics will be provided, allowing interested people to get an idea on the weight of our disciplines in the various countries.

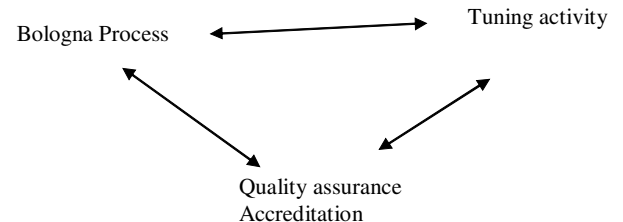


Figure 2: The role of competencies in the Bologna process

- Two appendices give the monograph a non negligible interest: Appendix A proposes a list of the institutions providing curricula in our fields, with their internet sites. Appendix B proposes, generally as tables, the list of degrees in our fields in each European university. Because of the present reflections about Bologna process, some of these tables will need to be updated quite soon, but the general interest to show which are the specificities of the universities as far as Electrical and Information Engineering is concerned, remains important.

4.1. Bachelor level

City	Institution	Faculty or department	Electronic	Telecommunications	Automatic Control	Computer and Information Systems	Power Systems
Brno	Vysoké učení technické v Brně	Fakulta elektrotechniky a komunikačních technologií	x	x	x		x
		Fakulta informačních technologií				x	
	Masarykova univerzita v Brně	Fakulta informatiky				x	
Ostrava	Vysoká škola báňská – Technická univerzita Ostrava	Fakulta elektrotechniky a informatiky	x	x	x		x
Pardubice	Univerzita Pardubice	Ústav informatiky				x	
Pízeň	Západočeská univerzita Pízeň	Fakulta elektrotechnická	x	x			x
Praha	České vysoké učení technické v Praze	Fakulta elektrotechnická	x	x	x	x	x

4.2. Master level

City	Institution	Faculty or department	Electronic	Telecommunications	Automatic Control	Computer and Information Systems	Power Systems	Biomedical Engineer	Economics of Power Systems

Figure 3: Example of a table

7. Planned outputs

The main planned outputs for this task of this three-year project are:

- Guidelines for a proposition for an accreditation methodology, together with a census on accreditation boards and methodologies (this work is in fact done mainly in a dedicated task [3] but some results will be used in these outcomes).
- Update of the monograph on the degrees and international degrees available in EIE in Europe, available both as a book and as website.
- Update of the monograph on the Doctoral studies in Europe.

The described outcomes will be disseminated to various universities, inside and outside the project partnership, as well as institutions at the national levels (ministries of Higher Education, Professional bodies, accreditation bodies) and European level (European Commission, Thematic networks, European societies...). Some other partners outside Europe will be also targeted, but may be not at a wider level at first. These outcomes will contribute at showing the important work which is done in these directions at the European level, and also to contribute at rendering the EIE-Surveyor thematic network project as well as the EAEEIE association to act as a Reference Point for Electrical and Information Engineering in Europe.

8. Conclusion

The TN purpose is to participate in the setting of the academic world for tomorrow in the fields of Electrical and Information Engineering. The task presented in this paper is dedicated to the analysis of existing curricula in EIE in Europe and to the

understanding of the implementation of the Bologna-process in the various European countries.

The results of the tasks, both as a website and a paper monograph, will be widely disseminated and very useful both for students interested by mobility and by academics interested in developing a new common multinational curriculum.

These various aspects will be also very useful in order to have a better understanding of the functioning of the accreditation methods, since these procedures are presently very different from one country to another, and these differences are an obstacle to the recognition of diploma all around Europe.

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References

- [1] H. Yahoui, O. Roesch, J.M. Thiriet, M. J. Martins and O. Bonnaud, "Evolution of master degree in Europe: An overview of the European programme available in electrical and information engineering", EIEEE'05 Conference, Lappeenranta, Finland, June 2005.
- [2] Collective, under the co-ordination of J.M. Thiriet & M.J. Martins, *Monograph: Towards the harmonisation of Electrical and Information Engineering Education in Europe*, Ed. EAEEIE, Nancy & Lisboa, August 2003, 350 pages.
- [3] F. Maciel Barbosa, C. Burkley, M. Hoffmann, D. Pasquet J.M. Thiriet, "Accreditation of higher education in EIE in Europe", to be published in 18th EAEEIE'07 Conference, Prague, 2-4 July 2007.