



European Council
of
Civil Engineers

**Standing Committee on
Education & Training**

Developments in European projects and networks of relevance for Civil engineering education and profession in Europe

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Contact person of ECCE in EUGENE

Contact person of ARACIS in ENAEE

53rd ECCE meeting

Malta, 6 May2011



EUGENE Academic Network
EUropean and Global ENgineering Education
01.10.09-30.09.12
155980-LLP-1-2009-1-IT-ERASMUS-ENWA

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EUROPEAN AND GLOBAL ENGINEERING EDUCATION
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a new TN (Academic Network in LLP) with the main goal of improving the impact of EEE on competitiveness, innovation and socio-economic growth in a global context

Five main activity lines

A) *Ph. D. STUDIES*: Structure and Bologna follow-up in the competitiveness issues (main question: are Ph D studies in Engineering and Technology in Europe effective/innovative/competitive enough?)

The purpose of this Activity Line will be to collect information on the experience with different doctoral programmes and formulate recommendations for the future.

B) PROMOTE EE IN EUROPE AS A TRUE RESEARCH FIELD

(with comparison of worldwide developments in EER ...): a true and innovative research area to improve entrepreneurship, innovation and competitiveness;

A second Activity Line is targeted to promote the recognition in Europe, as it already happens in other regions of the world, of *EE as a true research area*. In fact in order to develop the potential of European Higher Education institutions it is of paramount importance to identify aspects of the learning process where innovation is needed, putting in place the required research activities.

C) IMPROVE transnational MOBILITY of engineering students, graduates and professionals

This item will involve two main aspects:

Ca) Within EHEA: Checking and improving the applicability and consistency (in the Engineering field) of European Qualification Frameworks, EU Directive on Recognition of Professional Qualifications, Accreditation Standards and other relevant “European” documents.

Deliverable output(s): Revised documents, tested during the project.

Cb) On the global scale: Comparison of the “European” documents with other documents and agreements (Washington and other Accords in the IEA, but also regional and national Standards in other parts of the world: e.g. North Africa, S.E. Asia, Latin America); tentative agreements for mutual recognition.

Both aspects should involve not only the “academic” side, but also the “professional training” (and “Vocational education and training”).

ECCE Contact person in EUGENE, Prof. Iacint Manoliu, is involved in the activities of the Line C.

***D) LLL & CONTINUING EDUCATION* as a tool to improve competitiveness and innovation of European engineers**

The purpose of this Activity Line is by the help of benchmarking good practices and analyzing the latest university research results in this focus area to conceptualize the needed actions in the university-industry collaboration. Special focus is on the modern use of ICT and the orchestration of the activities to increase synergy between and through that societal impact of research, teaching and the third mission operations.

E) INCREASE ATTRACTIVENESS of studies in science and engineering and to EHERA: involve students organisations (ERASMUS Mundus Network, TEMPUS Mediterranean, as follow-up ...) and promote awareness outside the EU of EE evolution and opportunities;

E1: Aim: Identify examples of good practice enhancing the attractiveness of engineering as a career both to traditional and non-traditional groups. The focus will be on attracting students of the right quality to both Bachelor and Masters degrees.

E2: Aim: Compilation of employability attributes in engineering graduates and identification of good practice for embedding these in engineering curricula.

E3: Aim: Promotion of Engineering Education in the EU outside the EHEA including the identification of examples of good practice for increasing the number and quality of non-EU students on engineering programmes in the EHEA.

Activities under the EUGENE Line C

□ Meetings

- At the First Scientific Committee and Kick off meeting, Florence, 21 December 2010 the Line C was founded, under the Chairmanship of Prof. Giuliano Augusti
- The initial meeting: Brussels, 20 February 2010
- The second meeting: Rome, 23 March 2011

□ Workpackages of EUGENE Line C

- Workpackages and deliverable, as presented in the progress Report submitted to the EC on 28th March 2011

Work Package 7

European Engineering Standards and Qualification Frameworks

Deliverable 22 Round Table Discussion on paper “High Level Qualifications Frameworks and the EUR-ACE Framework Standards – do they fit together?”

The Round table discussion has been scheduled to take place during the Engineering Education flash Week in Lisbon in September 2011.

Deliverable 23 Public Discussion on first draft of WP7 Final Report.
This discussion is scheduled to take place before May 2012.

Deliverable 24 High Level European Qualifications Frameworks and Engineering Standards: a critical comparative review and suggestions for improving applicability and consistency”
This report, to be produced in September 2012, will include the outcomes of the discussions in Deliverables 22 and 23. It will also take into account the response of ENAEE to the Public Consultation on the Recognition of the Professional Qualifications Directive that has been circulated by the European Commission.

Work Package 8

Comparison of EUR-ACE and International Engineering Alliance Standards (Line C)

Deliverable 45 Updated version of the Glossary of Terms Relevant to Higher Education (Engineering) – NOT FORESEEN IN THE ORIGINAL APPLICATION

This deliverable is added to the project because it was recognised as a valuable adjunct to the comparative study of the EUR-ACE and International Engineering Alliance (IEA) standards. A small working group, including Prof. Iacint Manoliu, has met three times to develop a common glossary. In addition to representatives of the ENAEE and ECCE the group included a representative of the IEA. A final version of the Glossary is in preparation and it is intended that this will be sent to the Administrative Council of the ENAEE and the next meeting of the IEA for approval as a working document.

This draft will be presented in a open discussion at the World Engineering Education Flash Week in Lisbon in September 2011.

Deliverable 25 Public Discussion on first draft of WP8 Final Report

The work on the first draft is progressing, and will be completed in time for the public discussion scheduled for the Engineering Education Flash week in September 2011 in Lisbon. The Glossary developed in Deliverable 45 will form part of the discussion.

Deliverable 26 Comparison of the EUR-ACE Standards and the requirements of the Washington and Sydney Accords. This report, due in March 2012, will incorporate the outcomes of Deliverables 25 and (in part) 45.

Work Package 9

Engineering Standards Worldwide

Deliverable 27 Engineering Standards worldwide; a comparative collection.

This Work Package began in October 2010, and initial work has focused on contributing to an important project led by OECD (Organization for Economic Co-operation and Development). This project, Assessment of Higher Education Learning Outcome (AHELO), is a feasibility study to investigate the development of assessment methods for higher education that would be globally 'valid for all cultures and languages'. This project is complementary to the work of EUGENE Work Package 9 as engineering is one of the three academic subjects in the present feasibility study.

Work Package 10

Mutual recognition of engineering degrees and qualifications

Deliverable 28 Proposals for Mutual recognition of engineering degrees and qualifications

This Work Package does not begin until October 2012.

**The European Network for the
Accreditation of Engineering Education
(ENAAEE)**

and the EUR-ACE[®] Label

Short history of development of engineering accreditation in Europe

2000	ESOEPE agreement (European Standing Observatory for the Engineering Profession and Education)
2004-2006	EURACE project
8 February 2006	Foundation of ENAEE UAICR (Union of Association of Civil Engineers of Romania) among the founding members
2006 – 2007	EUR-ACE Implementation project
2007	6 agencies authorized to aimed EUR-ACE label: Engineering Council (UK) Engineering Ireland, ASSIIN (Germany), CTI (France) Ordem dos Engenherios (Portugal), RAEE (Russia)
2008 2010	EURACE Spread
2009	7 th agency authorized: MODEK (Turkey) New candidates: ARACIS (Romania), NVAO (The Netherlands) SKVC (Lithuania) OAQ (Switzerland), KAUT (Poland), AQA (Austria)
2011	30 th March: application for EUR-ACE 14+ sent in Brussels

EUR-ACE Framework Standards

Reasons for establishment

- To implement European system of programme accreditation for engineering degrees
- Encompassing all disciplines and profiles
- Applicable in existing accreditation systems in use in Europe

EUR-ACE Framework Standards (1)

Six Categories of learning outcomes

- Knowledge and understanding
- Engineering analysis
- Engineering design
- Investigations
- Engineering practice
- Transferable skills

For each category, outcome criteria for First and Second Cycle programmes' graduates have been established.

EUR-ACE Framework Standards (2)

Criteria and requirements for programme assessment

→ Aspects of the programme to be looked at during the assessment process:

- Needs, objectives and outcomes
- Educational process
- Resources and partnerships
- Assessment of the educational process
- Management system

The EUR-ACE[®] Certificate



This is to certify that the Bachelor programme
Energie- und Prozesstechnik
(Power and Process Engineering)

provided by

Technische Universität Berlin
Fakultät Prozesswissenschaften

accredited by
ASIIN e.V.

or **07 December 2007** until **20 December 2008**

satisfies the outcomes of **First Cycle** programmes specified in the **EUR-ACE Framework Standards for the Accreditation of Engineering Programmes**, and therefore for the above period of accreditation is designated as a **First Cycle EUROPEAN ACCREDITED ENGINEERING PROGRAMME**.



For the European Network for
Accreditation of Engineering
Education (ENAE)
The President
Prof. Ing. Giuliano Augusti, Sc.D.

Brussels, 17 December 2007



For ASIIN

The Managing Director
Dr. Iring Wasser

Düsseldorf, 17 December 2007

Benefits for HEIs

- Additional certificate of quality of education
- Means of promotion: programme meets academic *and* professional standards
- Assurance that programme meets quality standards set by the engineering profession
- Benchmarked against other European programmes
- Reliable information on quality of FC programme for admission for SC
- Incentives for students to choose EUR-ACE labelled programme

Benefits for students

- Assurance that EUR-ACE[®] labelled programme meets high European and international standards
- Facilitate application to EUR-ACE[®] Masters programmes in other HEIs
- Additional quality label recognized by employers in Europe
- International recognition of degree as meeting professional standards
- Regulatory bodies accept EUR-ACE[®] labelled programmes as meeting requirements for becoming chartered engineer

Benefits for employers

Successful completion of EUR-ACE labelled programme assures:

- Competences of graduates:

 - Candidate's knowledge, understanding and practical capabilities meet international standards

- Reliable information on quality of degree programme of candidate without knowing its details

- Not only academic standard of programme checked but also relevance for profession

- Complement to Diploma Supplement (giving academic point of view)

Benefits for accreditation agencies

- Offering additional quality label to customers (HEIs)
- Certification of quality of accreditation agency according to ESG *and* employers' requirements
- Integration into European network of engineering professionals
- Possibility to accredit in other European and worldwide countries with no authorized agency

Benefits for professional engineers organizations

- Guarantee that graduates meet educational requirements for entering into their registers (if organisation has set its educational standard at EUR-ACE level)
- FEANI automatically includes the EUR-ACE® accredited programmes in its Index of European recognized engineering programmes

Members of ENAEE

Engineering (Education) Societies	Engineering Accreditation Agencies	Others
FEANI	ASIIN	CoPI
SEFI	CTI	Unifi
Eurocadres	Engineering Council	BBT
Danish Society of Engineers	Engineers Ireland	
Instituto de la Ingenieria de Espana	MÜDEK	
CLAIU	Ordem dos Engenheiros	
IGIP	RAEE	
Finish Association of Graduate Engineers	ARACIS	

Further information

Website: www.enaee.eu



Project Number: 504345-LLP-1-2009-1-IT-ERASMUS-ECUE

Agreement number: 2009 - 3314/001 - 001

ECCE obs partners

- Fondazione Politecnico di Milano,
- University of Stuttgart (Germany),
- University of Birmingham (UK),
- Eötvös Loránd University (Hungary),
- SEFI(Belgium),
- CEFI (France),
- ACET (Spain),
- DEKRA Akademie (Germany)

ECCE obs main objectives

- to improve the cooperation among HE institutions and enterprises during the process of definition of the competences to be developed by engineering HE institutions;
- to establish a permanent Observatory, able to regularly provide players and stakeholders with directions and recommendations on skills offer and demand in the engineering context and the ways of aligning and enriching them;
- to develop an easily understandable European model (for Universities and business stakeholders) for the “translation” of engineering higher education courses and curricula into learning outcomes and linking them to the EQF levels (from 6h to 8h).

ECCE three main targets, to which surveys were addressed

- Alumni / Engineers
- Representatives from Universities
- Representatives from Enterprises

Results of the surveys, to be analyzed in the final meeting to take place on 8th September 2011 in Budapest