

ENAAE General Policy Statement

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1. INTRODUCTION

ENAAE defines accreditation of engineering educational programmes as the “result of a process to ensure suitability of that programme as entry route to the engineering profession”, with the active participation of “independent panels including academics and professionals”.

Accreditation, thus defined, has been practiced for many years, under different names, in several European countries: it has proved to be a powerful tool to improve both the academic quality of the education and its relevance to the job market.

The main objective of ENAAE is to promote and coordinate National Accreditation Agencies and analogous bodies in order to set up and implement gradually a pan-European de-centralized system of accreditation of engineering education, that is a system leading to pan-European recognition of national accreditations, consistent with the objectives of quality, transparency, recognition and mobility pursued by the Bologna Process and confirmed for the years to 2020 by the Higher Education Ministers’ Meeting in Leuven/Louvain-la-Neuve (April 2009).

Many European national legislations reserve the term “accreditation” (or a similar one in the national language) to the governmental authority. However, throughout this General Policy Statement “accreditation” is identified with the positive assessment decision, in accord with the definition given above, by the “technical” body of the Accrediting Agency.

2. BACKGROUND

ENAAE is an offspring of ESOEPE (European Standing Observatory for the Engineering Profession and Education) which was established on 9 September 2000 with the purpose of “build[ing] confidence in systems of accreditation of engineering degree programmes within Europe”, and facilitating “exchange of information”, “voluntary agreements on accreditation of engineering educational programmes and recognition of engineering qualifications” and “the development of standards on the competence requirements of graduate engineers”.¹

To pursue these aims, in 2004 ESOEPE was instrumental in creating the consortium which submitted to the European Commission (DG EaC) the EUR-ACE project, that elaborated and published the “EUR-ACE Framework Standards for the Accreditation of Engineering Programmes” at the First and Second Cycle level, and a proposal for a European system of accreditation of engineering programmes in which national Agencies would accredit the programmes and the EUR-ACE quality label be added if the Framework Standards are satisfied.² The EUR-ACE project was concluded on 31/03/2006 with the presentation of the results in a public workshop organized together with DG EaC, in which EUR-ACE was listed among the six EC-sponsored “European quality labels in higher education”.

¹ ESOEPE Agreement, September 2000; <http://www.enaee.eu> [ESOEPE and past projects/ESOEPE].

² EUR-ACE: Document A1: “EUR-ACE Framework Standards for the accreditation of engineering programmes”; Document A2: “Organization and Management of the EUR-ACE accreditation system”; <http://www.enaee.eu> [ESOEPE and past projects/EUR-ACE project (2004-2006)].

In the meantime, in order to more effectively implement the EUR-ACE proposals, ESOEPE, enlarged by other partners, transformed itself into the International not-for-profit association (aisbl) ENAEE (“European Network for Accreditation of Engineering Education”), which was formally constituted in February 2006 and held its first General Assembly on 30/03/2006. ENAEE Statutes, By-laws and other pertinent documents are available on the ENAEE website www.enaee.eu.

ENAEE registered the EUR-ACE[®] trademark and started implementing the EUR-ACE accreditation system with the support of two EC projects, namely “EUR-ACE IMPLEMENTATION” (2006/2008) and “PRO-EAST: Promotion and Implementation of EUR-ACE Standards [in the Russian Federation]” (2006/2007). The first EUR-ACE labels were awarded in 2007.

Currently (2009), the EC project “EUR-ACE SPREAD” (2008/2010) is assisting the expansion of the EUR-ACE system, but ENAEE and the system are already self-supporting independently of this project.

3. THE EUR-ACE[®] FRAMEWORK STANDARDS (EAFS)

ENAEE strongly supports a field-specific approach and programme accreditation, considering it essential to fulfil the need of aligning the goals of educational programmes with the expectations of the relevant stakeholders and ensuring their relevance for the labour market.

Programme accreditation does not exclude institutional accreditation: on the contrary, it may become easier if an overall system of QA authorizes only quality HEIs to deliver academic degrees.

In this context, ENAEE has adopted as its own the “EUR-ACE Framework Standards for the Accreditation of Engineering Programmes”, which were elaborated by the EUR-ACE project on the basis of a synthesis of the standards used by project partners.

The EUR-ACE Framework Standards (in short, EAFS from now on), like most modern educational Standards, are outcome-based, i.e. define which capacities or abilities must be acquired rather than what and how it must be taught, an approach that has four direct advantages:

1. it respects the many traditions and methods of engineering education in Europe;
2. it can accommodate developments and innovation in teaching methods and practices;
3. it encourages the sharing of good practice among the different traditions and methods;
4. it can accommodate the development of new branches of engineering.

The EAFS are consistent with the whole Bologna Process, and in particular with the Dublin Descriptors³, with both European HE Qualifications Frameworks (QF-EHEA and EQF-LLL)⁴ and with the Standards and Guidelines for Quality Assurance in the European

³ Joint Quality Initiative (JQI, 2004), Shared ‘Dublin’ Descriptors for Short Cycle, First Cycle, Second Cycle and Third Cycle Awards; www.jointquality.org (Descriptors: general descriptors).

⁴ QF-EHEA (2005), A Framework for Qualifications of the European Higher Education Area, Bologna Working Group on Qualifications Frameworks, Ministry of Science, Technology and Innovation, Denmark, available on the site of the Bologna Follow-up Group at <http://www.ond.vlaanderen.be/hogeronderwijs/bologna/documents/QF-EHEA-May2005.pdf>

EQF-LLL (2008), The European Qualifications Framework for Lifelong Learning (EQF), Recommendation of the European Parliament and of the Council, 23 April 2008, available on the site of the European Commission at http://ec.europa.eu/education/lifelong-learning-policy/doc44_en.htm

Higher Education Area (European Standards and Guidelines, ESG)⁵, and also take into account the EU Directive on the Recognition of Professional Qualifications⁶. Indeed, satisfying the EAFS implies substantial satisfaction of the ESG (save some procedural items, e.g. student participation and publication of assessment reports), while the EAFS address the generic qualification dimensions of the Qualification Frameworks, specifying and expanding them on each level with regard to engineering.

Hence, the EAFS require each engineering programme for which a Higher Education Institution seeks accreditation or reaccreditation to be consistent with legal national requirements and have in place:

- programme educational objectives consistent with the mission of the Higher Education Institution and the needs of all interested parties (such as students, industry, engineering associations, etc.) and programme outcomes consistent with the programme educational objectives and the EAFS programme outcomes;
- a curriculum and related processes which ensure achievement of the programme outcomes;
- academic and support staff, facilities, financial resources and cooperation agreements with industry, research institutions and other Higher Education Institutions adequate to accomplish the programme outcomes;
- appropriate forms of assessment which attest the achievement of the programme outcomes;
- a management system able to ensure the systematic achievement of the programme outcomes and the continual improvement of the programme.

Correspondingly, the EAFS require that the assessment of a programme submitted for accreditation considers at least the following items:

1. Needs, Objectives and Outcomes;
2. Educational Process;
3. Resources and Partnerships;
4. Assessment of the Educational Process;
5. Management System

and for each item specify the criteria to be assessed.

The EAFS Programme Outcomes distinguish between First Cycle (FC) and Second Cycle (SC) degrees, and identify 21 outcomes for First Cycle degrees and 23 for Second Cycle degrees, grouped under six headings, namely:

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

In some European countries, in addition to the distinction between FC and SC degrees, engineering degrees are characterised by profiles (typically distinguished between “research-oriented” and “professionally-oriented”); moreover, accreditation distinguishes

⁵ European Association for Quality Assurance in Higher Education (ENQA), ‘Standards and Guidelines for Quality Assurance in Higher Education’ (ESG); www.bologna-bergen2005.no/Docs/00-Main_doc/050221_ENQA_report.pdf

⁶ Directive 2005/36/EC of the European Parliament and of the Council on the recognition of professional qualifications, 07/09/2005, Official Journal of the European Union, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:255:0022:0142:EN:PDF>

between engineering branches (disciplines) in some countries, and not in others. Therefore, in order to be as flexible and comprehensive as possible, and not to exclude any European-compatible accreditation system, the EAFS encompass all engineering disciplines and profiles, and distinguish only between First and Second Cycle degrees (FCD, SCD); moreover, the Standards are also applicable to the accreditation of programmes (conventionally termed “Integrated Programmes”) leading directly to a Second Cycle degree (that can be denoted “Integrated Master”).

The EAFS can accommodate all these differences but they must be interpreted and, if necessary, somewhat adapted to reflect the specific demands of different branches, cycles and profiles: indeed, several branch-specific outcomes are being currently elaborated by specialized groups, for e.g. civil engineering⁷, electrical engineering⁸, chemical engineering⁹, aeronautical engineering¹⁰, etc. Indeed, it is to be expected that “Academics, in close cooperation with student representatives and employers, will continue to develop international descriptors, learning outcomes and reference points for a growing number of subject areas.”¹¹

ENAE welcomes these developments, but intends to keep as its Standards only the EAFS, valid for the whole engineering field. Branch-specific criteria may be imposed or suggested by the individual national accreditation agencies as they see it necessary. Also, additional branch specific labels, elaborated by selective and recognised HEI networks, would not be in conflict with the “general” EUR-ACE engineering labels.

In designing their curricula, the Higher Education Institutes (HEIs) should remain free to follow indications by specialized groups and/or to formulate programmes with a particular emphasis and/or character, including new and innovative programmes, and to prescribe conditions for admission into each programme.

The EAFS are published on the ENAE website www.enaee.eu and are kept continuously up-to-date, in collaboration with ENAE member organizations and national Agencies, taking into account developments on the European and the global scene.

4. THE EUR-ACE® ACCREDITATION SYSTEM

The EUR-ACE Framework Standards (EAFS) intend to provide a common reference framework serving as the basis for the award of a common European quality label (the EUR-ACE® label), and not to substitute for national standards. Consequently, the EUR-ACE® accreditation system is essentially a bottom-up system for the “European Recognition of National Accreditation”: national (or possibly regional) agencies accredit the educational programmes, and ENAE authorizes (“*meta-accredits*”) them to add the EUR-ACE® label to their accreditation, after checking that their procedures and requirements satisfy the EUR-ACE Framework Standards. Hence the authority remains with national

⁷ ECCENET (2006), EUCEET II - European Civil Engineering Education and Training II, European Council of Civil Engineers, <http://www.eccenet.org/Activities/Edu-Train.html>

⁸ EIE- Surveyor Thematic Network: Reference Point for Electrical and Information Engineering in Europe <http://www.eie-surveyor.org/>

⁹ EFCE (2005), European Federation of Chemical Engineering (EFCE) Recommendations for Chemical Engineering Education in a Bologna Two Cycle Degree System, 2005, www.efce.info/Bologna_Recommendation.html

¹⁰ PEGASUS Partnership of a European Group of Aeronautics and Space Universities <http://www.pegasus-europe.org>

¹¹ The Bologna Process 2020 - The European Higher Education Area in the new decade; Communiqué of the Conference of European Ministers Responsible for Higher Education; Leuven and Louvain-la-Neuve, 28-29 April 2009 http://www.ond.vlaanderen.be/hogeronderwijs/bologna/conference/documents/Leuven_Louvain-la-Neuve_Communique_April_2009.pdf

bodies but by agreeing a pan-European meta-framework there is the opportunity to build up cross-border recognition.

Like the EAFS, the EUR-ACE[®] label distinguishes between First-Cycle (FC) and Second-Cycle (SC) degrees; the SC label is awarded also to degrees obtained via “Integrated Programmes” (i.e. programmes leading directly to a Second-Cycle degree). Consequently, the authorization (“*meta-accreditation*”) must specify if the Agency is authorized to deliver FC and/or SC labels.

Each EUR-ACE[®] label is awarded to a specific programme by means of a certificate using a form approved by the ENAEE Administrative Council and signed by the ENAEE President and by an official of the Accrediting Agency. Each certificate is subject to a “label fee” fixed by the ENAEE General Assembly.

The graduates of an EUR-ACE[®]-accredited programme can define themselves as either “EUR-ACE[®] Bachelor” or “EUR-ACE[®] Master”, respectively if they have obtained a First-Cycle or Second-Cycle (or equivalent) degree.

For the time being, the EUR-ACE system is limited to the accreditation of First-Cycle and Second-Cycle engineering degrees, but ENAEE will monitor the possibility and opportunity of accrediting other engineering programmes, including Doctoral and Continuing Education programmes.

ENAEE has established a permanent Committee, the “EUR-ACE Label Committee”, tasked with assessing (and periodically re-assessing) the Agencies that want to be authorized to award the EUR-ACE label, making proposals to this effect to the Administrative Council, and in general assuring the quality of the EUR-ACE system and fostering its spread. The Label Committee is constituted by a representative of each EUR-ACE Agency, and is normally chaired by a member of the ENAEE Administrative Council.

As of September 2009, seven national Agencies are authorized to award EUR-ACE labels, namely:

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| • ASIIN ¹² (Germany) | (authorized since November 2006) |
| • Engineers Ireland | ” ” |
| • RAEE ¹³ (Russia) | ” ” |
| • Engineering Council-UK | ” ” |
| • CTI ¹⁴ (France) | ” ” |
| • Order of Engineers ¹⁵ (Portugal) | ” ” |
| • MÜDEK ¹⁶ (Turkey) | (authorized in January 2009) |

Further Agencies can be authorized by the ENAEE Administrative Council following relevant proposals by the EUR-ACE Label Committee. “General” QA/accreditation Agencies (i.e. not specific for the Engineering field) can be authorised to deliver EUR-ACE labels depending on their treatment of Engineering programmes.

The EUR-ACE Agencies are authorized to award EUR-ACE labels in any country allowed by their internal rules. The ENAEE Administrative Council must be kept informed of any award procedure outside their own country.

¹² Fachakkreditierungsagentur für Studiengänge der Ingenieurwissenschaften, der Informatik, der Naturwissenschaften und der Mathematik e.V.

¹³ Russian Association for Engineering Education

¹⁴ Commission des Titres d'Ingénieur

¹⁵ Ordem dos Engenheiros

¹⁶ Association for Evaluation and Accreditation of Engineering Programs

ENAAE is committed to do whatever possible to strengthen the EUR-ACE system and to spread it into more countries, without compromising its quality. In countries without a national system for accrediting engineering programmes, the establishment of a new national “engineering accreditation agency” can be encouraged; alternatively, national “general” QA/accreditation agencies can be solicited to integrate the EUR-ACE criteria into the accreditation of engineering programmes and thus fulfil the requirements for becoming EUR-ACE Agencies themselves; in the meantime, accreditation certificates and EUR-ACE labels can be awarded by one of the existing EUR-ACE Agencies.

5. THE GLOBAL CONTEXT

The geographical area of concern for ENAAE is obviously Europe (in both meanings of EU and EHEA). However ENAAE intends to be present also on the global scene, in order to foster worldwide mobility and employment of European engineering students and graduates.

In this context, ENAAE will consider participating in initiatives for trans-national recognition of engineering degrees and qualifications, promoting comparative studies between the EAFS and other national and international Standards, facilitating possible extensions of the EUR-ACE system and/or establishment of EUR-ACE-like accords outside the EHEA, etc.

To this end, ENAAE has already established contacts with and participated actively in meetings of other global actors of engineering education and accreditation, like the International Engineering Alliance (IEA) and the International Federation of Engineering Education Societies (IFEES).

ENAAE is committed to enhance and develop these contacts and exchanges.

6. MOTIVATIONS FOR PARTICIPATING AND SUPPORTING THE EUR-ACE[®] SYSTEM

If coupled with rigorous quality assurance (QA) rules, programme accreditation (defined in the Introduction) assures that an educational programme is not only of high academic standard, but also that it prepares graduates who are able to take on relevant roles in the job market. The participation of non-academic stakeholders in the process of setting standards and subsequent quality assurance procedures is a guarantee to this effect.

An internationally recognized qualification like the EUR-ACE[®] label, added to such an accreditation, facilitates both academic and professional mobility: indeed, by awarding the EUR-ACE[®] labels well-qualified Accreditation Agencies throughout Europe acknowledge that the concerned programmes satisfy the educational requirements necessary to enter the engineering profession at the respective level.

Hence, all engineering education stakeholders are motivated to participate in and support the EUR-ACE[®] system. In particular,

- **employers** are guaranteed of quality graduates from an EUR-ACE[®]-accredited programme, without the necessity of direct knowledge of the contents and outcomes of the educational programmes the graduates have followed: indeed, the EUR-ACE label may be an easy-to-read complement to the “Diploma Supplement” (not yet in force in every country).
- **Higher Education Institutions** can promote their EUR-ACE[®]-accredited programmes stating that their learning outcomes have been recognized as satisfactory from both the academic and the professional viewpoint;

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- engineering and technology **students** are guaranteed the quality and professional relevance of the EUR-ACE[®]-accredited degrees. Moreover, once graduated from an EUR-ACE-accredited programme, they can define themselves as either **EUR-ACE[®] Bachelor** or **EUR-ACE[®] Master**, if they have obtained respectively a First-Cycle or a Second-Cycle (or equivalent) degree.
 - **engineers' professional organizations** can be satisfied about the educational requirements of the EUR-ACE[®] graduates entering into their registers. Indeed, FEANI already includes automatically the EUR-ACE-accredited programmes in its Register, and therefore the graduates are potential holders of the Eur-Ing qualification.