EUR-ACE: A System of Accreditation of Engineering Programmes Allowing National Variants

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Presentation Outline

1. **Outcome-Based Accreditation of Engineering Programmes**

2. **The EUR-ACE Accreditation System**

3. **Authorization of Accreditation Agencies for Awarding the EUR-ACE Label**

4. **Conclusions**

Outcome-Based Accreditation of Engineering Programmes

- **Programme outcomes:** statements defining the knowledge, skills, and attitudes that students must have acquired by the time they graduate.

- **Outcome-based accreditation** requires the **HEIs to show evidence** that their graduates have acquired the **minimum programme outcomes** specified by the accreditation agency.

- Examples of internationally recognized common framework standards for programme outcomes for engineering programmes:
  - **The EUR-ACE Framework Standards [1].**
  - **Graduate Attributes defined by the International Engineering Alliance (IEA) for Washington Accord, Sidney Accord and Dublin Accord graduates [2].**

- **"The aim is to harmonise the criteria, and create common knowledge and higher education spaces, while ensuring the specific idosyncrasy of the national domestic contexts."**

Felipe Petra, **Secretary of State for Research (Spain)**

5.04.2011, INQAAHE 2011 Conference, Madrid

EUR-ACE® Accreditation System

- **Provides the basis for awarding a common quality label (the EUR-ACE® label) to engineering programmes**

- **It is maintained by the European Network for Accreditation of Engineering Education (ENAEE), a not-for-profit association founded in 2006**

- **Does not substitute for national standards**

- **It is essentially a bottom-up system for international recognition of national accreditation:**
  - National/regional agencies accredit the educational programmes
  - ENAEE authorizes these agencies to add the EUR-ACE label to their accreditation, after checking that their procedures and requirements satisfy the EUR-ACE Framework Standards

Sample EUR-ACE® Label

•The relevant programme is designated as a
FIRST [or **SECOND] CYCLE EUROPEAN-ACCREDITED ENGINEERING programme;**

•The respective graduates can call themselves either

EUR-ACE® **Bachelor**

or

EUR-ACE® **Master**

This is to certify that the Bachelor programme

Bilgisayar Mühendisliği

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provided by

Anadolu Üniversitesi
Mühendislik - Mimarlık Fakültesi

accredited by

MÜDEK

from **30 September 2009** until **30 September 2014**

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 (ENAEE)

MÜDEK For the Association for Evaluation and Accreditation of Engineering Programs-Mühendislik Eğitim Programları

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The President
Prof. Ing. Giuliano Augusti, Sc.D.

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Refik Üreyen

Brussels, 30 June 2009

Istanbul, 30 June 2009

EUR-ACE® Framework Standards
for the Accreditation of Engineering Programmes

The EUR-ACE Framework Standards were developed as a "synthesis" between existing national Standards and specify the minimum Programme Outcomes to be satisfied. They:

- are valid for all branches of engineering and all profiles
- distinguish between **First** and **Second Cycle** programmes, as defined in the European Qualification Frameworks
- are applicable also to "**integrated programmes**", i.e. programmes that lead directly to a Second Cycle degree
- describe the abilities that the graduates must achieve (i.e. **Programme Outcomes**) but not how they should be taught
- can accommodate national differences of educational and accreditation practice

EUR-ACE® Framework Standards Programme Outcomes

- **The EUR-ACE® Framework Standards distinguish between First Cycle and Second Cycle degrees:**
  - 21 programme outcomes for First Cycle degrees and
  - 23 for Second Cycle degrees,

- **grouped under the following six headings:**
  1. Knowledge and Understanding
  2. Engineering Analysis
  3. Engineering Design
  4. Investigations
  5. Engineering Practice
  6. Transferable (personal) Skills

EUR-ACE Programme Outcomes Example: Engineering Analysis

First Cycle graduates should have:

- the ability to apply their knowledge and understanding to identify, formulate and solve engineering problems using established methods;
- the ability to apply their knowledge and understanding to analyse engineering products, processes and methods;
- the ability to select and apply relevant analytic and modelling methods.

Second Cycle graduates should have:

- the ability to solve **problems that are unfamiliar**, **incompletely defined**, and have **competing specifications**;
- the ability to formulate and solve problems **in new and emerging areas of their specialisation**; the ability to use their knowledge and understanding to **conceptualise engineering models, systems and processes**;
- the ability to **apply innovative methods in problem solving**.

EUR-ACE® Framework Standards: Criteria Used for Assessment

- **The EUR-ACE® Framework Standards require the assessment of a programme considering 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**

- **Specifies the assesment criteria for each item above**

- **Specifies the applicable Programme Outcomes**

Authorization of Accreditation Agencies for Awarding the EUR-ACE Label

- **ENAEE membership is *not* a prerequisite for the authorization to award the EUR-ACE label.**

- **Accreditation agencies seeking this authorization will need to provide evidence that**

  - their standards and procedures comply with the ENAEE Standards and Guidelines for Accreditation Agencies [3] and

  - the programmes which they accredited fulfil the programme outcomes as set out by the EUR-ACE Framework Standards.

- **ENAEE offers a mentoring service to all new applicants for this authority.**

Agencies Authorised by ENAEE to Award the EUR-ACE® Label

- **As of March 2011, seven Agencies have been authorized by ENAEE and have awarded more than 700 EUR-ACE® Labels:**
  - ASIIN (Germany)
  - CTI (France)
  - Engineering Council (UK)
  - Engineers Ireland (Ireland)
  - MÜDEK (Turkey)
  - OE (Portugal)
  - RAEE (Russia)
- **5 more agencies are currently being reviewed for authorization:**
  - ARACIS (Romania)
  - KAUT (Poland)
  - NVAO (Netherlands & Flanders)
  - OAQ (Switzerland)
  - SKVC (Lithuenia)
- **Furher counties are showing interest:** Italy, Denmark, Finland

Authorization Process [3]

- **Any accreditation agency interested in the authorization fills in and submits the ENAEE Application Form for Accreditation Agencies[4] to the ENAEE**

- **ENAEE EUR-ACE Label Committee forms a 3 member Review Team to review the application.**

- **Review team prepares a review report after making the following inspection visits to the Applicant Agency:**

  - participate as observers to at least two accreditation visits made by the Applicant.

  - participate as observers to a meeting of the decision making body of the Applicant.

- **EUR-ACE Label Committee considers the review report and decides to/not to recommend to the ENAEE Administrative Council that the Applicant should be authorised to award the EUR-ACE label.**

Conclusions

- **Outcome-based programme accreditation assures that an educational programme is not only of acceptable academic standard, but also that it prepares graduates who are able to assume relevant roles in the job market.**

- **Specifying the <u>minimum programme outcome</u> requirements to be met and participation of none-academic stakeholders in the accreditation process is a guarantee to this effect.**

- **An internationally recognized qualification like the EUR-ACE Label, added to the national accreditation, will facilitate job mobility.**

- **EUR-ACE Accreditation System allows national differences and appropriate distinction between the cycles.**

- **The fact, that common Standards for programme accreditation could be implemented throughout Europe is a matter of great pride for ENAEE.**

References

[1] EUR-ACE Framework Standards for the Accreditation of Engineering Programmes, 05.11.2008, www.enaee.eu

[2] International Engineering Alliance Graduate Attributes and Professional Competencies, ver.2, 18 June 2009, www.washingtonaccord.org

[3] ENAEE Standards and Guidelines for Accreditation Agencies, 19.04.2007, www.enaee.eu

[4] ENAEE Application Form for Accreditation Agencies –Authorisation to Award the EUR-ACE® Label, 19.04.2007, www.enaee.eu

Thank you for your attention

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