What does the EUR-ACE® Bachelor and Master label stay for?

ENAEE Conference
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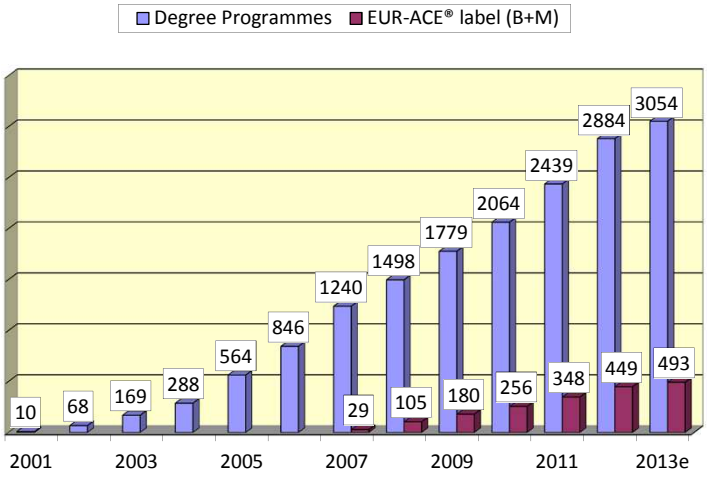
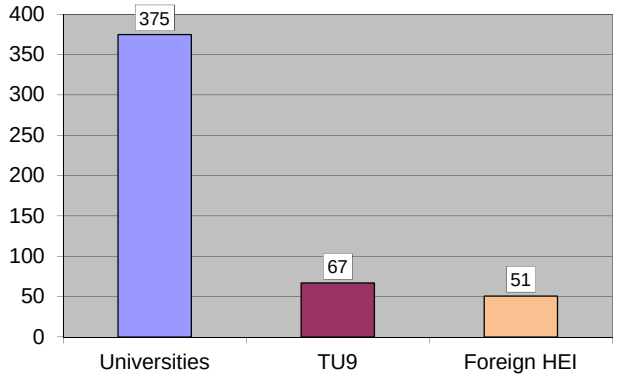
Dr.-Ing. Martin Molzahn
ASIIN Accreditation Commission for Degree Programmes

EUR-ACE® label: increasing demand

Programmes accredited by ASIIN (June 2013)



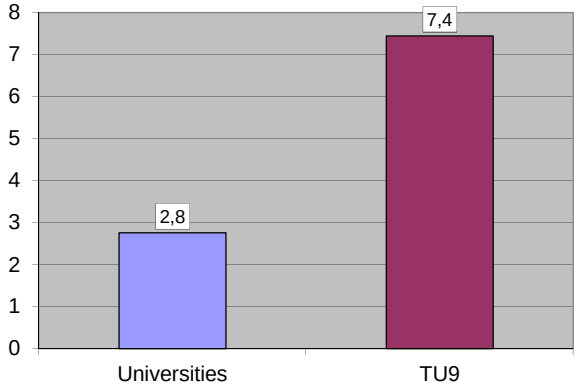
EUR-ACE® label has been asked by ….



TU9: leading German Institutes of Technology

June 2013

EUR-ACE® label per HEI in Germany



TU9: leading German Institutes of Technology

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What does the EUR-ACE® label stay for?

- To summarize
  - HEIs are asking increasingly for a EUR-ACE® label
  - Leading Institutes of Technology (in Germany) have done so more than the bulk of universities
- Everything okay?
  - Peers and accreditation bodies sometimes have difficulties, to decide whether a degree programme is really an engineering programme or not → FEANI, Professional Card?
  - The EUR-ACE® label seems to be not subject-specific enough to become recognized e.g. in the USA (NCEI, Feb. 2013)
  - The message of the EUR-ACE® label seems to be not as obvious as it should be

What does the EUR-ACE® label stay for?

- Outline:
  - Introduction
  - EUR-ACE® Label - ENAEE definitions
  - Engineering Degree Programmes ?
  - EUR-ACE® Framework Standards
  - Crucial learning outcome: Engineering Design
  - Proposals for EUR-ACE® Claims
  - Conclusions

EUR-ACE® label - ENAEE definitions

ENAEE-Webpage:

- EUR-ACE® is the European quality label for engineering degree programmes at First Cycle (Bachelor) and Second Cycle (Master) level
- The EUR-ACE® system encompasses all engineering disciplines and profiles, is internationally recognized and facilitates both academic and professional mobility

My questions:

- Is that description sufficient?
- What is an engineering degree programme?

Engineering Degree Programmes (?)

- Without any doubt:
  - Civil Engineering
  - Electrical Engineering / Information Technology
  - Mechanical / Process Engineering
  - Interdisciplinary programmes: e.g. Mechatronics
- From case to case:
  - Chemical Engineering – sometimes Applied Chemistry
  - Industrial / Management Engineering – sometimes Economics
- With some doubts:
  - Agronomy ?
  - Computer Engineering – mostly: Informatics
  - Geodesy / Surveying ?

EUR-ACE® Framework Standards

Six Engineering Programme Outcomes:

- Knowledge and Understanding
- Engineering Analysis
- Engineering Design
- Investigations
- Engineering Practice
- Transferable Skills

Again my questions:

- Are those outcomes precise enough?
- Can they be helpful as standards?
- What is needed to compete successfully with other engineering accreditation bodies, e.g. in the USA?

Crucial learning outcome: Engineering Design

- To become more precise and subject-specific ENAEE should sharpen the crucial learning outcome Engineering Design:
  - Holistic outcome
  - Systemic outcome
  - Makes use of all knowledge and competencies in the fundamentals, e.g. mathematics, natural sciences, mechanics, thermodynamics, material sciences, design basics, subject-related engineering topics ….

➢ HEIs should be asked to show with subject-specific examples, how they will achieve competences in Engineering Design

➢ If impossible to define examples for a discipline, a degree programme can not be looked at as an engineering programme

Engineering Design – subject-specific examples

- Civil Engineering:
  - Design of buildings, bridges, tunnels, hydrotechnics etc.
- Electrical Engineering / Information Technology:
  - Design of analogue and digital electric and electronic circuits, devices and products etc.
- Mechanical Engineering:
  - Design of machinery, equipment etc.
- Process Engineering:
  - Design of (physical, chemical, biological) production processes, design of process flow diagrams (PFD), design of key apparatus and equipment (e.g. reactors, columns …) etc.
- Others: ???

Further challenge for ENAEE

- To increase
  - Visibility
  - Professional recognition of EUR-ACE® accredited programmes
  - To compete successfully with other accreditation bodies especially in the Anglo-American world

➢ ENAEE should formulate concise claims for both labels

EUR-ACE® Claims: proposals

- The EUR-ACE® - Bachelor label confirms, that a degree programme offers a broad and sound education in subject-specific competencies as Knowledge and Understanding, Engineering Analysis, Engineering Design, Investigations, Engineering Practice, and Transferable Skills suitable as entry into an engineering profession.
- The EUR-ACE® - Master label confirms, that a degree programme offers a deepening and broadening education in subject-specific competencies as Knowledge and Understanding, Engineering Analysis, Engineering Design, Investigations, Engineering Practice and Transferable Skills suitable to fulfil advanced engineering tasks.

Conclusions

- There are two additional challenges for ENAEE
  - To sharpen the EUR-ACE® criteria, e.g. by explicitly asking for subject-specific examples for the crucial learning outcome Engineering Design
  - To formulate concise claims for the EUR-ACE® labels

Thanks a lot for your attention