

EUR-ACE: A Framework for Accrediting Engineering Higher Education in Europe

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Outline

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Aims of EUR-ACE

- Add European label
- Improve quality of education
- Trans-national recognition
- Facilitate recognition
- Mutual recognition



EUR-ACE Partners

European Engineering Associations

**FEANI, SEFI, CESAER, EUROCADRES, ENQHEEI,
UNIFI/TREE**

National Accreditation Agencies

**Germany, France, Ireland, Italy, Portugal,
Romania, Russia, UK.**



EUR-ACE Outputs

- **Standards for European Engineering Accreditation**
- **Template for Publishing Results**
- **Proposal for a European Accreditation Agency for Engineering**
- **Financial Plan for Agency**



Timetable

- **September to November 2004: collect information on present practices**
- **December 2004 to February 2005: consult on draft framework**
- **March and April 2005: Refine framework**
- **May to October 2005: Test framework**
- **November and December 2005: Finalise report**

Context

- **Bologna Process: BFUG report A Framework for Qualifications of the European Higher Education Area**
- **'Dublin' Descriptors proposed by the Joint Quality Initiative**
- **Different national requirements for recognition of engineering professionals**
- **Washington Accord: mutual recognition of accredited engineering degrees by a group of eight countries**



Examples of National Systems

- **France: Since 1934 Commission des Titres d'Ingénieur (CTI) has granted 'habilitation' to appropriate engineering programmes**
- **Italy (and others): Conformity to the rules of the Ministry of Education means that the programme is automatically accredited**
- **Ireland and UK: Professional engineering institutions are licenced to carry out accreditation**



Programme Outcomes

The Framework specifies the Programme Outcomes that must be satisfied for accreditation.

- **Valid for all branches of engineering**
- **Applicable to both first and second cycle programmes**
- **Describes what is to be achieved but not how**
- **Accommodates national differences of educational and accreditation practice**



Six Programme Outcomes

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

Knowledge and Understanding (1)

First cycle graduates should have

- Knowledge and understanding of science and mathematics principles in their field
- Systematic understanding of key aspects and concepts of their field
- Coherent knowledge of their field, some at the forefront
- Awareness of the multidisciplinary context of engineering

Knowledge and Understanding (2)

Second Cycle Graduates should have

- All of the First Cycle requirements
- In-depth knowledge and understanding of their field
- Critical awareness of forefront of field

Engineering Analysis (1)

- **Solution of problems consistent with their level of knowledge and understanding**
- **Problems involve identification, specification, selection of method, implementation**
- **Methods include mathematical analysis, computation, experiment**
- **Includes health and safety, environmental, societal, commercial constraints**

Engineering Analysis (2)

First Cycle

- Apply knowledge and understanding to solve problems using established methods
- Select and apply relevant methods

Engineering Analysis (3)

Second Cycle

- **Solve problems that are unfamiliar and ill-defined**
- **Solve problems in new and emerging areas of field**
- **Conceptualise engineering models, systems and processes**
- **Use innovative methods to solve problems**

Some Features

- **Integrated programmes (5 years in France, 4 years masters in UK) have to satisfy both first and second cycle requirements**
- **Where there is an established national accreditation system which covers the programme outcomes, no need for HEI visits**
- **Graduation from an accredited degree does not imply that engineering formation is complete**



Accreditation Procedure

- **HEI submits self-assessment document**
- **3 person accreditation team visits HEI for two days to evaluate evidence**
- **Guidance notes for HEI and accreditation team**
- **Recommendation to Accrediting Agency for decision**



Testing

- **Framework (second tentative version) is being tested in countries with national agencies using existing visits**
- **Possible trials also in countries without a national agency**
- **Language differences limit amount of testing**

After EUR-ACE

- **Plan for a European Engineering Accreditation Agency**
- **Will EUR-ACE be able to accommodate engineering education throughout Europe?**
- **Which Europe?**
- **Will EUR-ACE framework be consistent with the standards of the Washington Accord**



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