

***Enhance Engineers to Professionals
and
Understand the Relevance of Accreditation.***

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WEC

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Chairman FEANI/European Monitoring Committee***



Variety of Academic Titles in Europe for Engineers/Resume

Akademiingeniør
Bachelor of Arts
Bachelor of Engineering
Bachelor of Science
Civilingeniør
Civilingenjör
Diplom-Ingenieur
Diplom-Ingenieur ETH
Diplom-Ingenieur (FH)
Diplomi-Insinöör
Diplomirani Inženir
Doktor-Ingenieur
Dottore in Ingegneria

Engenheiro
Europa-Ingenieur
Ingenieur (grad.)
Ingeniør
Inginer
Insinööri
Ingeniero Químico
Ingeniero Superior
Ingeniero Técnico
Ingénieur civil
Ingénieur diplômé
Ingénieur industriel
Ingénieur technicien

Inženyr
Inžinier
Inżynier
Magister Inżynier
Master of Arts
Master of Engineering
Master of Science
Okleveles mérnök
Okleveles üzemmérnök
Sivilingeniør
Teknikfræðingur
Teknikumingeniør
Verkfræðingur

... makes comparison very difficult

Enhance Engineers to Professionals

Engineering degree(s)

- Engineers who are proficient in the more theoretical aspects dealing with research, original concepts and their creation (*more theoretically orientated*)
- Engineers who have a firm understanding of engineering principles and an ability to apply them (*more applications oriented*).

Enhance Engineers to Professionals

- Engineering has two main components, engineering knowledge, the “know what”, and engineering process, the “know how”.
- ***Engineering Knowledge*** - is the growing body of facts, *experience and skills* in science, engineering and technology disciplines; *coupled to an understanding of the fields of application*.
(academic (projects) and professional (practice) related)
- ***Engineering Process*** - is the creative process which applies knowledge *and experience* to seek one or more solutions to meet a requirement, solve a problem, and then *exercise informed judgment to implement the one that best meets constraints*.
(academic (projects) and professional (practice) related)

Both components show differences in the academic and professional environment

*Professional Engineers show
generic competences*

- an ability to serve society through a sound understanding of engineering principles based on a study of mathematics, scientific and technological subjects,
- an ability to apply theoretical and practical methods to the analysis and solution of engineering real life problems,
- a facility for multi-disciplinary working, with managerial and communications skills.

Access to the profession

In the European Union, each EU country is alone responsible for defining the Education/Formation/Academic Title as well as to regulate or not the *access to the profession*.

- **Education and access to the profession are not EU domain of responsibility**
- **The principles of ‘Bologna’ are implemented on their national interpretation**
- ***However, in some EU countries:***
 - **1st cycle is not an “Engineer”:** not authorized to work as an Engineer.
 - **Professional engineer Title given in after assessment of an engineer (long cycle) professional experience (Chartered Engineer)**

Knowledge and/or Competences

Competence:

‘the ability, derived from a base of proven knowledge and practice, to do a particular activity to a prescribed standard’.

Thus it is mainly concerned with what people understand and can **do** rather than what they *know* and is a dynamic combination of attributes, abilities and attitudes.

HOW, WHERE, WHEN and by WHO is this assessed?



FEANI: The European *Professional Engineer* Organization
***representing:* > 3.5 million European Professional Engineers**
(30 EU countries, including Russia)

Objectives (derived from Feani Objectives)

- **Formal recognition of Academic Degrees in Engineering in Europe**
- **Acknowledgment in the business community in Europe (and worldwide)**
- **Free movement within Europe (and worldwide)**
- **Improve career development**
- **Network of peers**



FEANI Contribution to Mobility, Recognition and Acknowledgement of Professional Qualifications to support career and free movement

Topic: INDEX database, EUR ING title, EngineerING Card

FEANI Committee : The European Monitoring Committee (EMC)

Experts in European engineering professional system and education:

- **Check and approve entry of programmes in the INDEX proposed by the NMC**
- **Award EUR ING Title**
- **Monitor the quality of the Professional Card**

Enhance Engineers to Professionals

INDEX

A. FEANI INDEX (started in 1980)

The INDEX is a FEANI proprietary system: The acceptance process is done by FEANI experts

- Contains today a list of +/- 1,000 HE institutes with +/- 10,000 engineering programmes accredited by FEANI, fulfilling the mandatory requirements for the EUR ING title
- Minimum requirements for the formation of an engineer:
 - ***Basic Sciences: a minimum of 20% of the overall ECTS***
 - ***Mathematics: a minimum of 24 ECTS***
 - ***Engineering Subjects: a minimum of 50-60% of the overall ECTS***
 - ***Non-technical subjects: a minimum of 10% of the overall ECTS***

2011 Topic:

- Development from program input analysis to and/or competence based analysis and/or country analysis.
- **EUR-ACE labelled programmes are inserted in the FEANI INDEX.**



FEANI Contribution to Mobility, Recognition and Acknowledgement of Professional Qualifications to support career and free movement

EUR-ACE

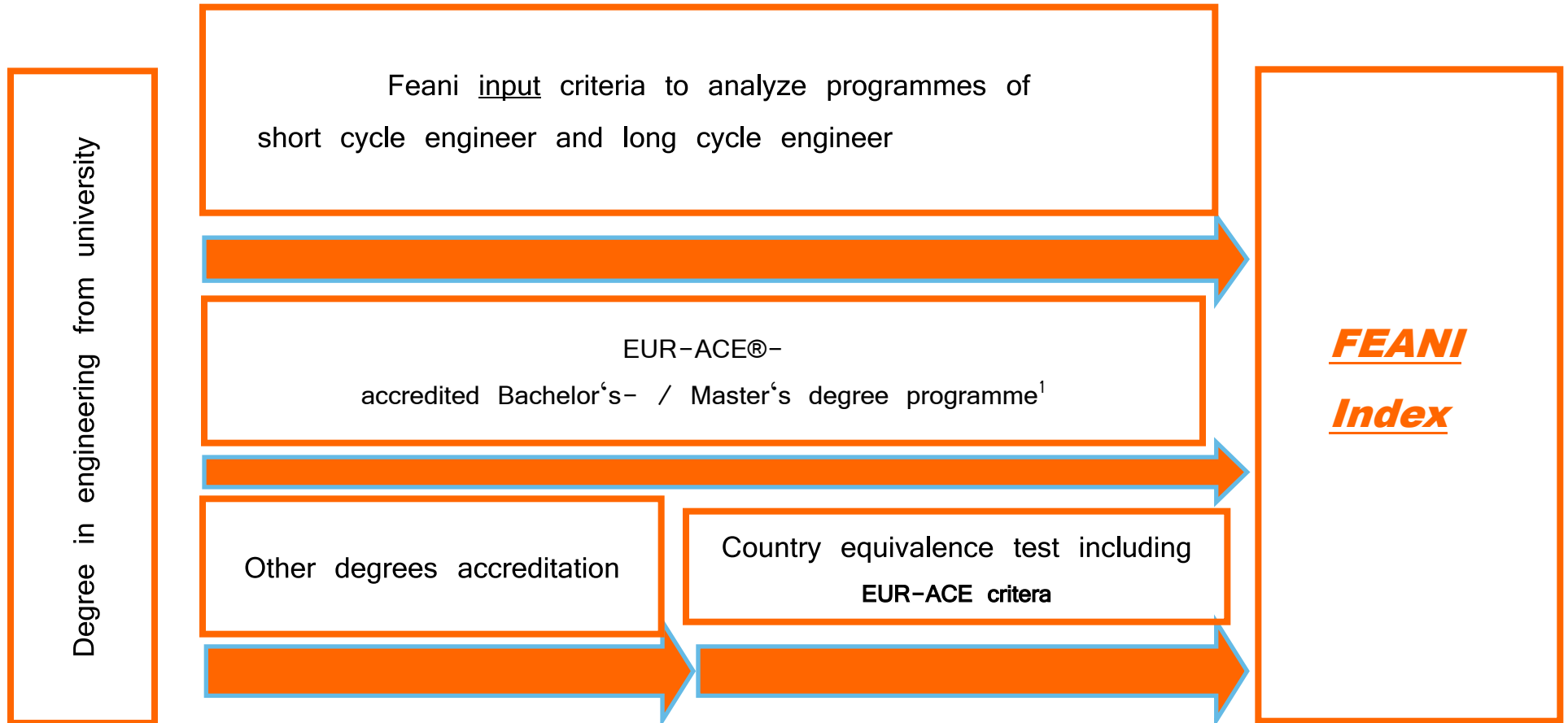
Framework Standards: based on programme outcomes

(academic competences) as:

Knowledge and Understanding

- **Engineering Analysis**
- **Engineering Design**
- **Investigations**
- **Engineering Practice**
- **Transferable (personal) Skills**

Requirements



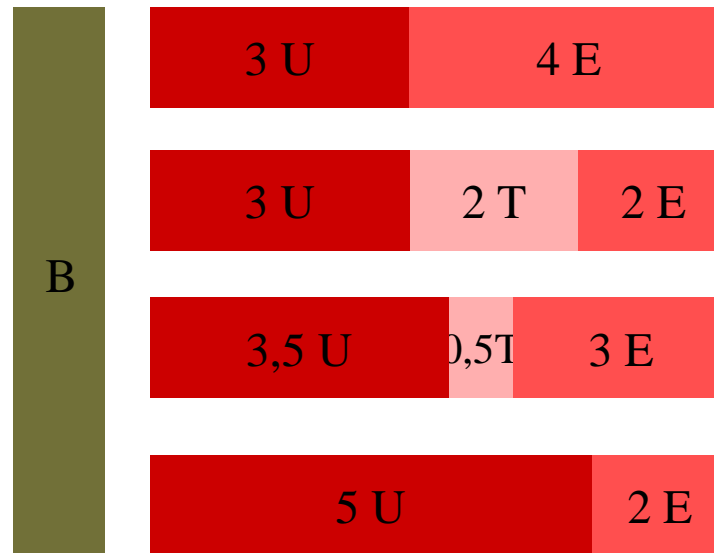
¹ EUR-ACE = European Accredited Engineering

FEANI Contribution to Mobility, Recognition and Acknowledgement of Professional Qualifications to support career and free movement

The FEANI EUR ING title

7 years of Formation: **Education** **U** **between 3 and 5 years**
Training **T**
Experience **E** **minimum 2 years**

The FEANI professional formation framework:



- 01. Name/Titel
Surname/Title
- 02. Vorname Given Name
- 03. Geburtsdatum
und -ort
Date and Place
of Birth
- 04a. Ausstellungsdatum
Date of Issue
- 04b. Gültig bis
Date of expiry
- 05. Verbandszugehörigkeit
Member of Association/
Organisation
- 06. Ausweisnummer
ID Number
- 07. Unterschrift
Signature
- 08. Schlüssel für
Qualifikationen
Key for Qualifications



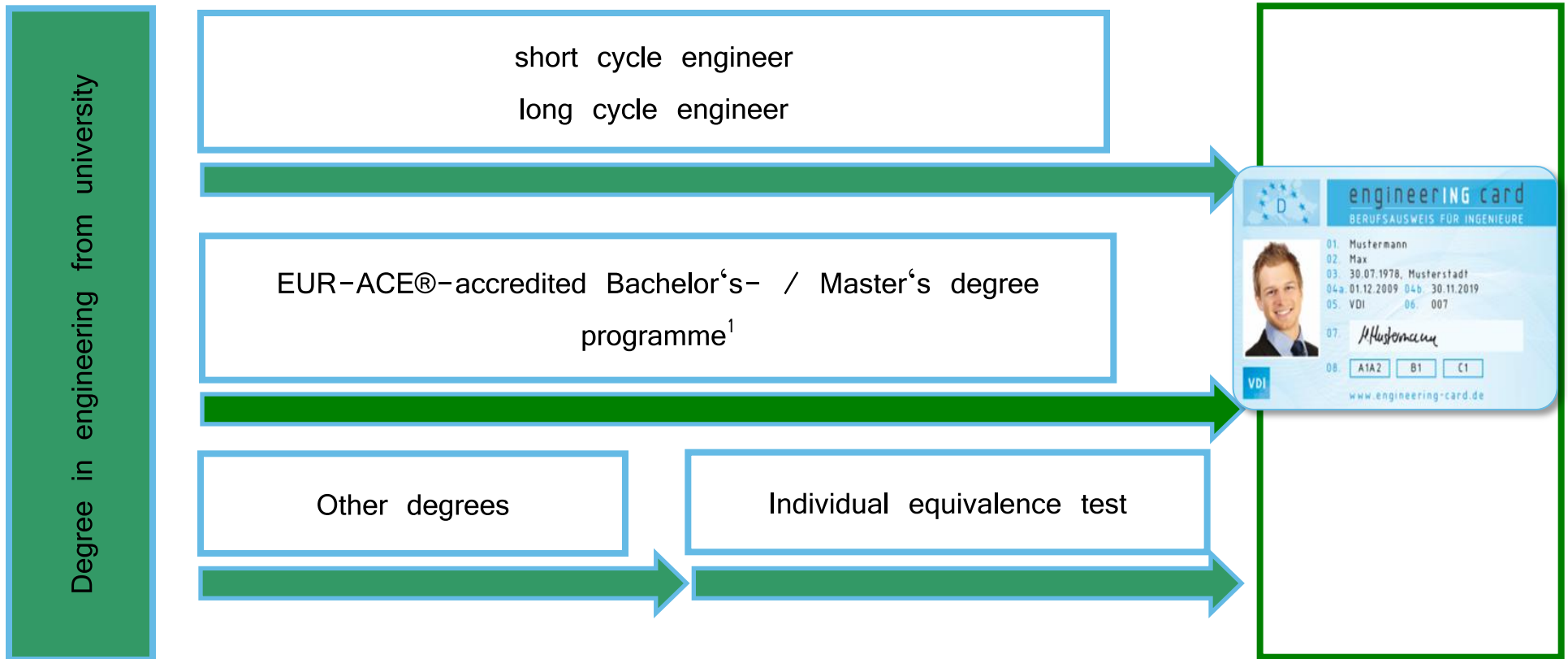
08.		
	Studium Academic studies	Datum Date
A1	Bachelor/Diplom [FH]	30.07.2003
A2	Master/Diplom [TU/TH]	27.11.2005
A3	Dr.-Ing.	
	Berufserfahrung Professional Experience	
B1	Unternehmen Free Economy	X
B2	öffentl. Dienst Civil Service	
B3	selbstständig Self-employed	
	Weiterbildung Further Education	Anzahl Number
C1	Seminar mit Teilnahmebescheinigung Tutorial with Certificate of Attendance	1
C2	Seminar mit Abschlussprüfung Tutorial with Final Exam	
C3	Fortbildung mit Zeugnis Advanced Education with Certificate	



engineerING card

More Mobility for Engineers in Europe

Requirements To Be Met?



¹ EUR-ACE = European Accredited Engineering

- ***Do you accept the concept of Difference in Excellence:***
- ***Europe academic qualifications and professional qualifications show diversity***
- ***Europe engineers is not one unified concept***
- ***Engineering knowledge and engineering know how relate to both academic and professional components***
- ***Professional Engineers in Europe show some common competences***

- ***Are you understanding the relevance of :***
- ***European recognition of Academic Degrees in Engineering***
- ***Acknowledgment in the business community in Europe (and worldwide)***
- ***Support of free movement for job opportunities within Europe***
- ***Improvement of international career development***
- ***Network of peers***

- ***Do you support the relevance of Index***

- ***Do you support the relevance of the EUR ING concept***

- ***Do you support the professional Engineering Card?***

***Then you enhance Engineers to Professionals and
do you recognize the Relevance of Accreditation***