EUR ING STANDARD FOR PROFESSIONAL ENGINEERING COMPETENCE

(EUR ING SPEC)

ENGINEERS EUROPE

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ENGINEERS EUROPE

I. EUR ING SPEC

The EUR ING SPEC defines the ENGINEERS EUROPE measure on engineering programs and lifelong learning of engineers during their education, in their work environment, and through their careers. EUR ING SPEC intends to align to the recognition of qualifications in the spirit of European Directive 2005/36/EC on the recognition of professional qualifications. Awarding an engineering program into the EEED database is proof the engineering program complies with the EUR ING SPEC.

Awarding the EUR ING Certificate to an engineer declares that an applicant did comply with the requirements in the EUR ING SPEC. The EUR ING Certificate facilitates the professional mobility of engineers within the European Higher Education Area (EHEA) and beyond in order to enable engineers - who wish to practice outside their own country - to carry with them a certificate of recognized professional competence.

The EUR ING SPEC comprises of:

a. EUR ING Certificate and trade name
b. Use of the EUR ING with the national title
c. EUR ING Certificate Applicants and holders prerequisites
d. EUR ING compliant engineering programs
e. EUR ING compliant engineering programs: Awarding accreditation
f. Level of education and successive experience requirements (incl. professional development requirements CLA)
g. Subjects and ECTS requirements of formal and/or informal learning/continuing professional development
h. EUR ING compliant professional registrations
i. Professional Competences

a. EUR ING Certificate and trade name

ENGINEERS EUROPE and its EUR ING Certificate encourage the continuous improvement of engineers by setting, monitoring and reviewing its standards. The EUR ING Certificate is therefore awarded on robust evidence of acquired competence, i.e. educational qualifications (knowledge), skills, training, professional experience, and continuous professional development (CPD). The EUR ING Certificate provides in this sense information about and across the various formation systems of individual engineers, for the benefit of prospective employers.

Awarding the EUR ING Certificate typically but not exclusively comprises of:

1. The provable completion of a EUR ING SPEC compliant engineering program or equivalence.
2. A provable number of years experience working as an engineer or equivalence.
3. Provable and ongoing formal and/or informal learning/continuing professional development presented according to the engineering competences.

The certificate will be awarded with an initial validity of five (5) years and can be renewed.

b. Use of the EUR ING with the national title

It is important to consistently use the correct way of writing EUR ING (and not Eur Ing etc.). The EUR ING may be used with the national title (academic or professional) regarding the national regulations.

c. EUR ING Certificate Applicants and holders prerequisites

Eligible to register as a EUR ING are professionals who meet the ENGINEERS EUROPE prerequisites:

- Applicants must have exemplifying formal qualifications (degrees, diplomas of Higher Education Institutions) in combination with some years of professional experience or have an equivalent career learning assessment.
- Applicants must be a member of an ENGINEERS EUROPE member National Engineering Association in their country of residence or initial engineering education country or native country.
- Members of Affiliated Members cannot submit EUR ING applications.

Note: When a diploma/degree is initially obtained outside the ENGINEERS EUROPE area, a formal evaluation from the country of residence needs also to be added to the EUR ING application.

After acquiring the EUR ING Certificate, the holder:

- During the period of certificate validity, the holder remains a member of the national organization.
- Observes the provisions of the ENGINEERS EUROPE Position Paper on Code of Conduct: Ethics and Conduct of Professional Engineers.

Note: It is respected that in some member countries national regulations may prevent to apply for EUR ING in the absence of a formal engineering education.

d. EUR ING compliant engineering programs: content categories and study load

The EUR ING compliant engineering program contains a general minimum study load of at least a total of 180 ECTS comprised of a suitable and balanced study load of the following categories:

Initial Engineering Program Categories	Typical but not exclusive balanced study load
Natural sciences	10 %
Mathematics	20 %
Engineering sciences and subjects	60 %
Non-technical subjects	10 %

Note: For an individual person a EUR ING compliant engineering program may be built up out of various combinations of FCD, SCD, and other engineering courses in accordance with local regulations and developments in education.

e. EUR ING compliant engineering programs: Awarding accreditation

The accreditation of engineering programs inside the EUR ING SPEC, are awarded either:

- by a national members formal national accreditation organization or
- an EMC recognized accreditation organization.
- the EMC

When a member state deems a program as a 'non-engineering' program it can still comply with the requirements of the EUR ING SPEC and the EMC can give the accreditation within EUR ING.

f. Level of education and successive experience requirements (incl. professional development requirements CLA)

Education based on EQF[1] - Level and CLA	Typical Relevant Experience (Pre if applicable and Post Education)
EQF 7	Experience (typically 2 to 5 years)
EQF 6	Experience (typically 5 to 7 years)
EQF 5	Experience (typically 7 to 10 years)

Part time experience has to add up to the minimum of the periods mentioned in the table above.

For Career Learning Assessment (CLA) the typical relevant experience is 7 to 10 years. This is likely to commence at a point when the EUR ING Candidate has become established in their engineering career, most probably when they have reached 20 years of age.

Note: a PhD (EQF level 8) is recognized as professional research experience.

In most member states the engineering title is not a protected profession although in some member countries complementary laws may only allow to carry the engineering and EUR ING titles when additional conditions are met.

Type of CLA	Comments
Work-based Learning	Professional development undertaken through routine work activities
In-company training courses or lectures	Taken in a lecture room or in a virtual environment
Formal post graduate academic courses	All such activities will involve some form of assessment.
External training courses	Recognised institution or training provider

[1] https://europa.eu/europass/en/european-qualifications-framework-eqf

g. Subjects and ECTS requirements of formal and/or informal learning/continuing professional development

It is considered that the minimum of 100 hours per 5 years (average of 20 hours per year) is the minimum total of CPD for an engineer.

Type of CPD	Comments
Work-based Learning	Professional development undertaken through routine work activities.
In-company training courses or lectures	Taken in a lecture room or in a virtual environment.
Formal post graduate academic courses	All such activities will involve some form of assessment.
External training courses	Recognised institution or training provider.

Other CPD Activities may include (without definition of any min. and max. hours)

Service in professional engineering organization activities	May include serving in a volunteer capacity on boards and committees; being a member on higher education accreditation visits; assisting with CPD audits; mentoring a colleague for work experience purposes; contributions to participation in technical standards.
Technical visits or external assignments	Must be able to demonstrate how it has extended knowledge and skills related with the profession.
Updating professional development based in individual study	For any learning activity undertaken it is necessary to demonstrate how it has extended knowledge and skills related with the profession.
Preparation and presentation of a technical paper in a conference	Papers subject to critical peer review prior to publication.
Preparation and technical publication in a journal or a book	Publication must be related with the profession.
Teaching or instructing in CPD related activities with the profession	This type is not considered for engineers that are members of higher education or research institutions.

h. EUR ING compliant professional registrations

Professional registrations other than EUR ING may also contain reviews on continuous professional development or career learning assessments. When such a review is of the same quality as the EUR ING review the EMC can decide to accept such a professional registration certificate as proof of sufficient professional experience.

To not break the continuity of professional development, it is reasonable such a certificate should not be older than 1 year.

i. Professional Competences

Engineers aware of their professional responsibilities must strive to achieve competence in all 6 categories, although achieving all 6 is not mandatory and can depend on the applicant's discipline:

Competence	Explaining description
Knowledge and Understanding	A thorough knowledge of the principles of engineering, based on mathematics and a combination of scientific subjects appropriate to their discipline
Engineering Analysis	An ability to apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.
Investigations	An awareness of continuous technical change and the cultivation of an attitude to seek innovation and creativity within the engineering profession.
Engineering Design	Knowledge of the use of existing and emerging technologies relevant to their field of specialization. Knowledge of standards and regulations appropriate to their field of specialization.
Engineering Practice	A general knowledge of good engineering practice, in their field of engineering and the properties, behaviour, fabrication and use of materials, components and software.
Transferable Skills	An understanding of the engineering profession and an obligation to serve society, the profession and environment, through commitment to apply the appropriate code of professional conduct. An ability in engineering economics, quality assurance, maintainability, and use of technical information and statistics. An ability to work with others on multidisciplinary projects. An ability to provide leadership embracing managerial, technical, financial, and human considerations. Communication skills and an obligation to maintain competence by continuous professional development (CPD). Fluency in European languages sufficient to facilitate communication when working throughout Europe.

Note: As a recommendation for a professional level of competences the descriptors of the European Qualifications Framework (EQF) level 6 or above can be used.