

# EUR ING TUTORIAL



## Engineers Europe / FEANI

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## Foreword

This tutorial is intended as an internal EE/FEANI document and cannot be complete without the information from the EUR ING SPEC. In this tutorial, the structure of the EUR ING framework, the tools, and the way of working together among NMCs, EMC, and the secretariat are explained. As well, the complementary additions to the framework are given.

Additional information can be added to this document by EMC decision, mainly concerning updating the way of working with recent or changed information, working together improvements within the EMC, NMCs, and the Secretariat.

During the process of making the new documentation, the EMC recognized that working together, both in physical and online meetings, among NMC members, EMC members, and the secretariat is highly appreciated. We hope current and future members will keep this cooperation close to heart.

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When any assistance is required, please contact your EMC ambassador, preferably through videoconferencing.

When it is not clear who your EMC ambassador is, look at  
[List of EMC ambassadors](#)

or please contact the EE/FEANI Secretariat at [Secretariat.general@feani.org](mailto:Secretariat.general@feani.org).

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# ENGINEERS EUROPE

## Contents

|      |                                                                                             |    |
|------|---------------------------------------------------------------------------------------------|----|
| I.   | Introduction .....                                                                          | 4  |
| a.   | European Monitoring Committee (EMC).....                                                    | 5  |
| b.   | National Monitoring Committees (NMCs) .....                                                 | 6  |
| c.   | EE/FEANI Secretariat.....                                                                   | 6  |
| d.   | EUR ING Certificate application tool and register .....                                     | 7  |
| e.   | European Engineering Education Database (EEED).....                                         | 7  |
| II.  | Lifelong learning power of an engineer. ....                                                | 8  |
| III. | EUR ING SPEC additions .....                                                                | 10 |
| f.   | Complementary information to engineering program categories .....                           | 10 |
| g.   | Common types of engineering program and common accreditations .....                         | 11 |
| h.   | Accreditation organizations accepted by the EMC .....                                       | 12 |
| i.   | EUR ING SPEC engineering program accreditation through EMC by program evaluation form ...   | 14 |
| j.   | Professional Registrations accepted by the EMC for sufficient professional experience ..... | 14 |
| k.   | Tool to check for possible protection of engineering titles in EU Countries .....           | 15 |
| l.   | Monitoring the quality of national educational systems .....                                | 15 |
| m.   | Recommendation for procedure for handling complaints about EUR ING.....                     | 16 |
| IV.  | Submissions of engineering programs and HEI to the EEED .....                               | 17 |
| n.   | Basic workflow entering information into the EEED by the NMC .....                          | 17 |
| o.   | Special workflow exceptional cases .....                                                    | 18 |
| V.   | EUR ING Certificate eTool workflow tutorial .....                                           | 19 |
| VI.  | Abbreviations and Definitions .....                                                         | 20 |
| VII. | References .....                                                                            | 22 |
| p.   | Worldwide quality alignment of engineering programs .....                                   | 22 |
| q.   | Structure of the European Education System .....                                            | 23 |
| r.   | European workload frameworks: ECTS.....                                                     | 24 |
| s.   | Accreditation in the European Union.....                                                    | 26 |

## I. Introduction

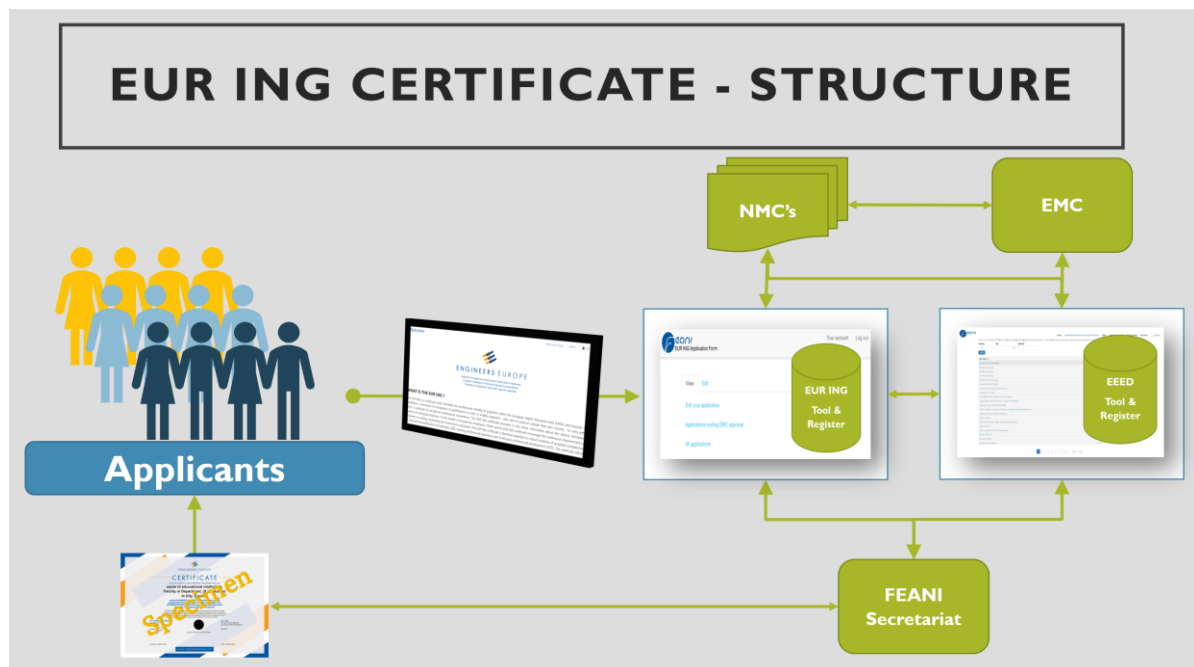
**The purpose of this tutorial** is to inform and facilitate the work of **three groups**:

- ✚ At the international level, the EE/FEANI European Monitoring Committee (EMC).
- ✚ At the national level, EE/FEANI National Monitoring Committees (NMCs), one of each EE/FEANI member state.
- ✚ The EE/FEANI Secretariat.

In order to process applications efficiently, these groups work with **two online tools** and some documents:

- ✚ Working documents: The EUR ING SPEC, a report template for remote maintenance, Excel files for program evaluation (against the EUR ING SPEC), etc.
- ✚ The online EURING Application and Certificate tool.
- ✚ The online European Engineering Education Database (EEED) tool.

The EUR ING system structure can be seen in the following picture and the components will be introduced in the following sections:



### a. European Monitoring Committee (EMC)

The EMC is an EE/FEANI body and is composed of representatives of the members of EE/FEANI. Its main tasks comprise of:

-  Making recommendations to the Executive Board.
-  General policy matters relating to the EUR ING Certificate/Register and the EEED.
-  Review and decide on EUR ING SPEC additions.
-  Review and decide upon applications for the EUR ING Certificate registration.
-  Granting permissions to NMCs for remote updated of the EEED.
-  Review and decide upon the acceptance of programmes to the EEED (where no remote access is currently granted).
-  Each EMC member acts as an EMC Ambassador to several NMCs for NMC questions/comments.

Link to the formal terms of reference for the EMC which were approved by the General Assembly: [LINK](#)

Current document: [List of EMC ambassadors](#)

## b. National Monitoring Committees (NMCs)

The NMC is a national body, established in every EE/FEANI country, and is composed of representatives from national engineering associations, industry, and education. Its main tasks comprise of:

Review of applications for EUR ING Certificate registration

- Review of applications for EUR ING Certificate registration which includes checking all the information given by the applicant and certifying its accuracy and authenticity with respect to education, professional experience, CPD (Continuing Professional Development), and (where appropriate) CLA (Career Learning Assessment), checking that all appropriate instructions with respect to the application form have been followed.

Maintaining EEED programs and HEI information

- To keep the EMC fully informed on the structure of its *Engineering Educational and Professional System* and the standards of the individual Schools and Programs and to report regularly on any changes in structure or national standards.
- Ensure compliance with the requirements of the standard for EEED inclusion.
- Bring forward details of new programs to be considered for inclusion in the EEED. NMCs are asked to submit an annual overview list of programmes submitted based on this scheme, which undergoes a regular general review (every +/- 5 years).
- The NMC is responsible for the information given for inclusion in the EEED in respect of its own country. If this has been approved by the EMC the programme submissions by the NMCs are directly entered into the EEED without undergoing the above procedure based upon programme evaluation sheets.

Current document: [List of NMCs with Remote Maintenance Permission](#)

## c. EE/FEANI Secretariat

The EE/FEANI Secretariat supports all EE/FEANI activities and administers the EUR ING Register and the European Engineering Education Database (EEED).

E-mail: [Secretariat.general@feani.org](mailto:Secretariat.general@feani.org)

#### d. EUR ING Certificate application tool and register

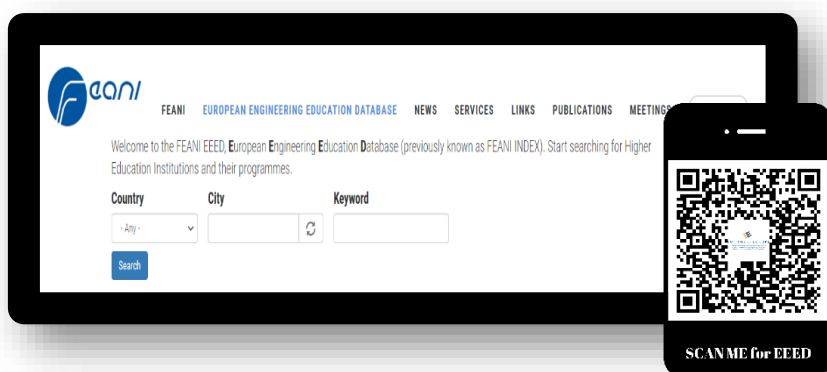
EE/FEANI maintains an online EUR ING application tool and register containing the approved applications. The EUR ING Certificate is valid for 5 years, after which renewal is needed. NMCs will be informed when renewal is needed.

During the period of validity, the holder remains a member of the national organization and observes the provisions of the EE/FEANI Position Paper on Code of Conduct: Ethics and Conduct of Professional Engineers.



#### e. European Engineering Education Database (EEED)

To support the EUR ING Certificate Register, EE/FEANI maintains an online [EEED<sup>1</sup>](https://www.Engineers Europe/FEANI.org/european-engineering-education-database/eeed-database) listing of Engineering programs, which are recognized by ENGINEERS EUROPE/FEANI, at institutions of Higher Engineering Education in the European countries, represented within ENGINEERS EUROPE/FEANI.



<sup>1</sup> <https://www.Engineers Europe/FEANI.org/european-engineering-education-database/eeed-database>

## II. Lifelong learning power of an engineer.

The EMC recognizes that learning during an engineering career is not contained to engineering or technology alone. This short exercise is to create, also towards people who are not engineers, a recognizable and simple indication of the '1000 ECTS lifelong learning power of engineers',

An engineering career path might be typically but not exclusively be framed as follows:



|         |   |                    |   |              |   |          |   |                |
|---------|---|--------------------|---|--------------|---|----------|---|----------------|
| Student | - | Young Professional | - | Professional | - | Expert   | - | Nestor         |
| 5 years | - | 15 years           | - | 15 years     | - | 20 years | - | next 100 years |

**Engineers Salute:** Expert picture: [Kitty O'Brien Joyner](#) - Nestor Picture: [Isambard Kingdom Brunel](#)

The EMC estimates, but does not prescribe, that all engineers are able to learn 1000 ECTS on engineering subjects during their entire life. The reasoning and estimation behind the 1000 ECTS learning power of an engineer can be seen in the table on the next page:





## ENGINEERS EUROPE

| Career phases & Estimated learning time (in ECTS )                                                                                     | Explaining description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  General                                              | A lot of precious time and energy will be needed to learn other than engineering subjects. Typically these will not be relevant for engineering and EUR ING evaluation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|  Student: 180-300 ECTS                                | Basic engineering education. In some countries the basic education /diploma includes the first work experience.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|  Young Professional & Professional & Expert: 300 ECTS | <p>After graduation during work, people educated themselves for about 10% of the time that is 4 hrs per week. A working year is about 40 weeks, so <math>4 \times 40 = 160</math> hours per year. 160 divided by 28 is almost 6 ECTS per year. With a working career of about 50 years that sums up to about 300 ECTS.</p> <p>During life, we all change, from junior to senior, from young to experienced, etc. Learning interests are changing year by year.</p> <p>Fire safety training of EQF level 4 might not be engineering level BUT really important and these kind of hours should also be counted for learning/CPD time.</p> |
|  Professional & Expert: 120 ECTS                    | <p>After the initial start of their career, a lot of engineers start with extra bachelor/master`s education of about 20 hours a week for 4 years besides their daily jobs. 20 hours per week is about 30 ECTS per year.</p> <p>Further education in 'business management' is done very often by engineers.</p>                                                                                                                                                                                                                                                                                                                          |
|  Nestor: 300 ECTS                                   | After retiring a lot of engineers are still discovering new technologies outside their own expertise. While not having to work anymore this is often 8-10 hours per week so about 15 ECTS per year. Retirement lasts on average around 20 years.                                                                                                                                                                                                                                                                                                                                                                                        |

The total estimated learning power of an engineer is more than 1000 ECTS

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<sup>2</sup> 1 ECTS equals 25-30 hours workload.

### III. EUR ING SPEC additions

#### f. EUR ING compliant engineering program category subjects

Engineering programs evolve every year with technology developments. The required content cannot be strictly described. In the table below example subjects are given without trying to be complete.

When new subjects arise, please communicate those to your EMC ambassador or the secretariat for review.

| Categories                                                                                                            | Engineering Category Subjects                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  Natural sciences                    | Physics, Chemistry, Biology, Geology, Agriculture, Environmental<br>..                                                                                                                                                                                                                                                                                                    |
|  Mathematics                         | Linear algebra, analytical geometry, differential and integral calculus, numerical analysis, operational research, discrete mathematics, statistics, numerical systems,<br>..                                                                                                                                                                                             |
|  Engineering sciences and subjects | Analysis, Design Methodologies, Research, Thermodynamics, Tribology, Production Technologies, Automation, Robotics, Drones, CAD/CAM/BIM, Systems Engineering, 3D printing technologies, material sciences, data-management, augmented reality, artificial intelligence, recycling technologies, technical safety, composing technical specifications and documents.<br>.. |
|  Non-technical subjects            | <b>Learning to learn</b> , communication skills, economics, management, team working, law, safety, languages<br>..                                                                                                                                                                                                                                                        |

### g. Common types of engineering program and common accreditations

The following table with examples can help to understand which types of engineering programs and types of accreditations are common with the EE/FEANI national members:

| The 3 sources of accreditation/evaluation of engineering programs:                       |                                                                                               |                                                                                                                                                                                                                                           |                                                                                          |                                                                             |
|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 3 general types of engineering programs of EQF levels and amount of study load (in ECTS) |                                                                                               | 1. By law accredited programs                                                                                                                                                                                                             | 2. By private label accredited programs.                                                 | 3. By EE/FEANI evaluation of programs (Like individual programs.)           |
|                                                                                          | First cycle degree (FCD):<br>EQF level 6,<br>180–240 ECTS credits                             | First cycle degree<br>Usually awarding a bachelor's degree.<br><br>Typical titles at this level:<br>Ingenieur (ing.) (NL)<br>Ingenieur (Ing.) (AUT)<br>dipl. Ing. FH/HES (CH)                                                             | First cycle equivalent<br><br>Examples:<br>The EUR-ACE framework standards.              | First cycle equivalent<br><br>Examples:<br>By evaluation sheet.             |
|                                                                                          | Second cycle degree (SCD):<br>EQF level 7,<br>60–120 ECTS credits                             | Second cycle degree<br>Usually awarding a master's degree.<br><br>Typical titles at this level:<br>Ingenieur (ir.) (NL)<br>Diplomingenieur (DI, Dipl.-Ing) (AUT)                                                                          | Second cycle equivalent<br><br>Examples:<br>The EUR-ACE framework standards.             | Second cycle equivalent<br><br>Examples:<br>By evaluation sheet.            |
|                                                                                          | Second cycle integrated degree:<br>EQF level 6/7<br>ECTS credits will vary across NMC members | Second cycle integrated degree<br>Usually awarding a master's degree.<br><br>Typical titles at this level:<br>Diploma Engineer (with integrated master) (GR)<br>Ingenieur (ir.) (NL) ( <i>prior to 2003.</i> )<br>dipl. Ing. ETH/EPF (CH) | Second cycle integrated equivalent.<br><br>Examples:<br>The EUR-ACE framework standards. | Second cycle integrated equivalent<br><br>Examples:<br>By evaluation sheet. |

## h. Accreditation organizations accepted by the EMC

Engineering programs that hold a formal accreditation of one of the following accreditation agencies can be entered into the EEED database without a separate program evaluation.

| EE/FEANI MEMBER                                                                                                                                                       | HEI<br>Acc         | Program<br>Acc   | ACCREDITATION ORGANIZATION                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|  ENGINEERS EUROPE/FEANI                                                              | No                 | Yes              | <a href="#">EMC</a>                                                                                                                      |
|  ENGINEERS EUROPE/FEANI                                                              | No                 | Yes              | <a href="#">ENAE EUR ACE</a>                                                                                                             |
|  <b>Austria</b> Österreichisches Nationalkomitee der ENGINEERS EUROPE/FEANI          | Yes                | Yes              | <a href="#">Bundesministerium für Wissenschaft und Bildung AQ Austria (Agentur für Qualitätssicherung und Akkreditierung Austria)</a>    |
|  <b>Belgium</b> Comité des Ingénieurs Belges - Belgisch Ingenieurscomité             | No                 | Yes              | CTI<br><a href="#">NVAO</a>                                                                                                              |
|  <b>Bulgaria</b> Federation of Scientific Technical Unions in Bulgaria               | Yes                | Yes              | National Evaluation and Accreditation Agency                                                                                             |
|  <b>Croatia</b> Croatian Engineering Association                                   | Yes                | Yes              | Croatian Engineering Association                                                                                                         |
|  <b>Cyprus</b> EE/FEANI Cyprus National Committee                                  |                    |                  | pending                                                                                                                                  |
|  The <b>Czech Republic</b> Czech Association of Scientific and Technical Societies | No                 | Yes              | National Accreditation Bureau for Higher Education                                                                                       |
|  <b>Denmark</b> Ingeniørforeningen i Danmark                                       | Yes (new standard) | Yes (decreasing) | The Danish Accreditation Institution ( <a href="https://akkr.dk/">https://akkr.dk/</a> )                                                 |
|  <b>Estonia</b> Estonian Association of Engineers                                  |                    |                  | pending                                                                                                                                  |
|  <b>France</b> Ingénieurs et Scientifiques de France                               | Yes                | Yes              | CTI                                                                                                                                      |
|  <b>Germany</b> Deutsches Nationalkomitee der ENGINEERS EUROPE/FEANI               | Yes                | Yes              | Accreditation Council (supported by ten accreditation agencies responsible for the operative realisation of the accreditation processes) |
|  <b>Greece</b> Technical Chamber of Greece                                         | Yes                | Yes              | Hellenic Authority for Higher Education ETHAEE<br><a href="https://www.ethaae.gr/en/">https://www.ethaae.gr/en/</a>                      |
|  <b>Hungary</b> Hungarian Chamber of Engineers                                     | Yes                | Yes              | Hungarian Committee for Accreditation of Higher Education                                                                                |
|  <b>Iceland</b> Association of Chartered Engineers of Iceland                      | No                 | Yes              | (FEANI, ABET) No national accredited authority                                                                                           |
|  <b>Ireland</b> Engineers Ireland                                                  | No                 | Yes              | QQI ( <a href="https://qqi.ie">https://qqi.ie</a> )                                                                                      |

| EE/FEANI MEMBER                                                                                                                                                | HEI<br>Acc     | Program<br>Acc | ACCREDITATION ORGANIZATION                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|----------------------------------------------------------------------------------------------------|
|  <b>Italy</b> Consiglio Nazionale Ingegneri                                   | No             | Yes            | <a href="#">Quacring</a>                                                                           |
|  <b>Kazakhstan</b> Kazakhstan Society of Engineering Education                |                |                | pending                                                                                            |
|  <b>Malta</b> Chamber of Engineers                                            |                |                | pending                                                                                            |
|  <b>Netherlands</b> Royal Netherlands Society of Engineers KIVI               | No<br>(pilots) | Yes            | <a href="#">NVAO</a>                                                                               |
|  <b>North Macedonia</b> Engineering Institution of Macedonia                  | No             | No             | The Agency for Quality in Higher Education <a href="https://www.akvo.mk/">https://www.akvo.mk/</a> |
|  <b>Norway</b> Norwegian National Committee for ENGINEERS EUROPE/FEANI        | Yes            | No             | NOKUT                                                                                              |
|  <b>Poland</b> Polish Federation of Engineering Associations                  |                |                | pending                                                                                            |
|  <b>Portugal</b> Portuguese National Committee for ENGINEERS EUROPE/FEANI     | Yes            | Yes (EUR-ACE)  | Ordem dos Engenheiros                                                                              |
|  <b>Romania</b> The General Association of Engineers in Romania               |                |                | pending                                                                                            |
|  <b>Russia</b> Russian Union of Scientific and Engineering Associations       |                |                | pending                                                                                            |
|  <b>Serbia</b> The Union of Engineers and Technicians of Serbia             | Yes            | Yes            | National Entity for Accreditation and Quality Assurance in Higher Education (NEAQA)                |
|  <b>Slovakia</b> Slovak National Committee for ENGINEERS EUROPE/FEANI       |                |                | pending                                                                                            |
|  <b>Slovenia</b> Slovenian National Committee for ENGINEERS EUROPE/FEANI    | Yes            | Yes            | SQAA (Slovenian Quality Assurance Agency for Higher Education) (nakvis.si)                         |
|  <b>Spain</b> Comite Nacional Espanol de la ENGINEERS EUROPE/FEANI          |                |                | pending                                                                                            |
|  <b>Sweden</b> Swedish National Committee for ENGINEERS EUROPE/FEANI        | Yes            | Yes            | Swedish Council for Higher Education                                                               |
|  <b>Switzerland</b> Schweizer Nationalkomitee für ENGINEERS EUROPE/FEANI    | Yes            | optional       | <a href="#">AAQ</a>                                                                                |
|  <b>Turkey</b> Union of Chamber of Turkish Engineers and Architects         |                |                | pending                                                                                            |
|  <b>Ukraine</b> Union of Scientific and Engineering Associations of Ukraine |                |                | pending                                                                                            |
|  <b>United Kingdom</b> British National EE/FEANI Committee                  | No             | Yes            | Engineering Council                                                                                |

When the accreditation organization is not yet approved by the EMC, the addition can be pursued by the '[Evaluation of Country Education System](#)'.



**i. EUR ING SPEC engineering program accreditation through EMC by program evaluation form**

When an engineering program is not yet approved by any of the organizations mentioned in section o, the approval can be pursued by using the program evaluation forms:

-  [First cycle degree.](#)
-  [Second cycle degree.](#)

After approval, the program can be entered into the EEED (see [Chapter V](#)).

**j. Professional registrations accepted by the EMC for sufficient professional experience**

| Professional registration accepted by the EMC                                                                                                        | ORGANISATION                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
|  <b>Chartered Engineer / Associate Engineer</b> Ireland           | Engineers Ireland            |
|  <b>Chartered Engineer / Incorporated Engineer</b> Netherlands    | KIVI                         |
|  <b>Chartered Engineer / Incorporated Engineer</b> United Kingdom | Engineering Council          |
|  <b>REG A / REG B / REG C</b> Switzerland                         | SIA, Swiss Engineering, etc. |
|  <b>Ingenieur [Ing.]</b> Austria                                  | BMBWF, BFI, WIFI etc.        |
|                                                                                                                                                      |                              |

Note: some registrations can be temporarily whilst others can be permanent, depending on national regulations.

## k. Tool to check for possible protection of engineering titles in EU Countries

The tool to check for possible protection of engineering titles in EU Countries is the following:

<https://ec.europa.eu/growth/tools-databases/regprof/index.cfm?action=homepage>



## l. Monitoring the quality of national educational systems

An **EMC working group**, consisting of 2-3 EMC members, will evaluate every five years the educational system in the country and the working procedures of the NMC.

The written report includes:

-  a brief description of the educational system in the country
-  a description of the QA system and accreditation procedures in place
-  a description of the workflow used in NMCs to update the INDEX
-  a recommendation to EMC

The report template to be used for this is: [Template 'Evaluation of Country Education System'](#)

In the exceptional case, the EMC WG will need to visit the NMC according to an agreed agenda, in which case all expenses of the Working Group will have to be arranged by the respective National Member.



### **m. Recommendation for procedure for handling complaints about EUR ING**

Complaints are broadly defined. They may include unethical and/or unprofessional practices as an engineer, failure to comply with EUR ING requirements such as the maintenance of CPD, nonpayment of fees, etc.

If EE/FEANI receives a complaint from a third party regarding EUR ING:

1. The Secretary General should first verify whether the concerned EUR ING was registered on a national basis in a country such as the UK (Chartered Engineers). In this case, the national body could take appropriate steps/disciplinary measures.
2. If this is not the case the following procedure applies. The Secretary General will :
  -  send a copy of the complaint to the EMC Chair and the respective NMC;
  -  reply to the complainer
  -  inform the concerned EUR ING that a complaint has been made and include a copy of the response but without sending the actual complaint and request a written response to the complaint.
  -  The disciplinary measures of the respective NMC will be applied and/or escalated to the EE/FEANI Secretariat for final resolution if necessary

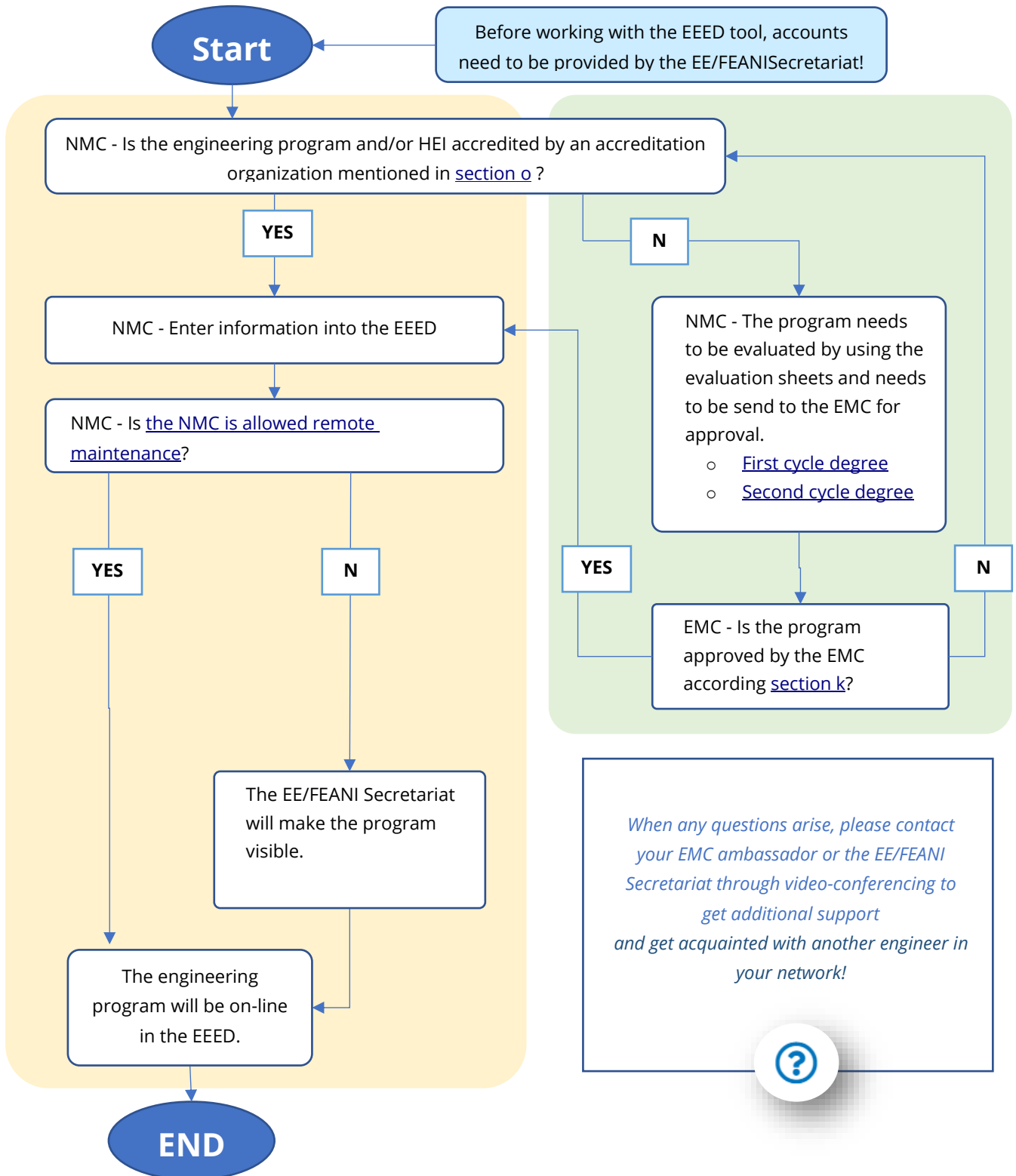
In any case, close consultation with the respective NM/NMC is vital. The communication with the concerned EUR ING and complainer will generally be made through ENGINEERS EUROPE/FEANI.





## IV. Submissions of engineering programs and HEI to the EEED

### n. Basic workflow entering information into the EEED by the NMC



EMC and NMC members require an account to modify the contents of the EEED database. To the applicable people an account will be provided by the EE/FEANI Secretariat.

<http://Engineers Europe/FEANI.eeed.eu>



|                                                                                                                                                                               |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| FEANI EEED                                                                                                                                                                    | Login |
| Welcome to the FEANI EEED, European Engineering Education Database (previously known as FEANI INDEX). Start searching for Higher Education Institutions and their programmes. |       |

Select the applicable menu options in the top left corner of the screen and proceed.

|                             |                                   |            |
|-----------------------------|-----------------------------------|------------|
| HEI                         | Programme                         | Help       |
| Search / Edit<br>Create HEI | Search / Edit<br>Create programme | FEANI EEED |

*A \* asterisk indicates it's a mandatory field to be filled in.*

*The question mark signs in the screens gives additional support.*



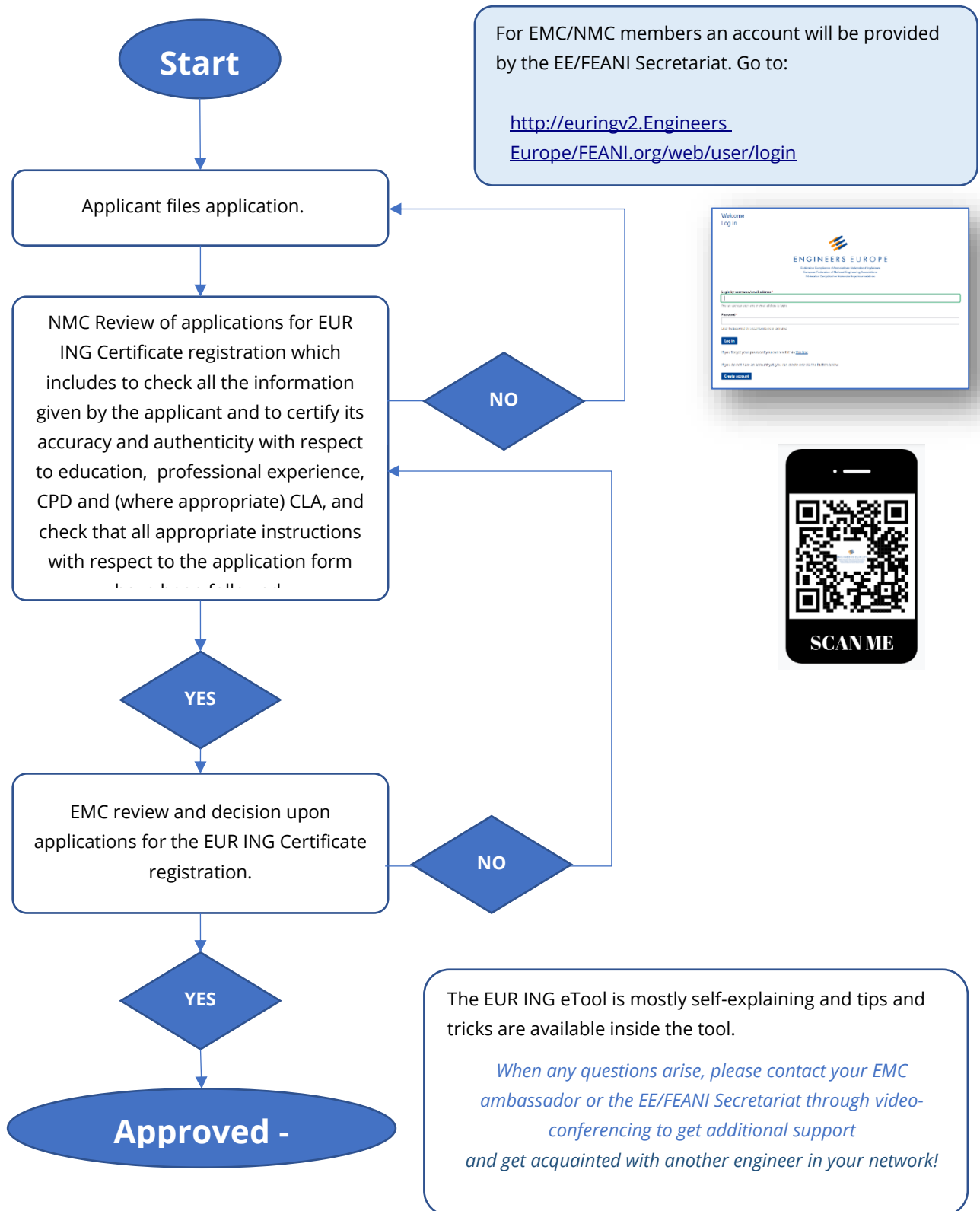
## o. Special workflow exceptional cases

In exceptional cases (inclusion of programmes from a new EE/FEANI Member; new types of programmes; ...) and submissions above the amount of 7 programmes combined with no remote maintenance permission of the member country, the EMC nominates a Working Group (WG) that will select a representative sample of 7 programmes for which programme evaluation sheets will be asked from the NMCs. This is being done to make the work manageable.

In the exceptional case, the EMC WG will need to visit the NMC according to an agreed agenda, in which case all expenses of the Working Group will have to be arranged by the respective National Member.



## V. EUR ING Certificate eTool workflow tutorial





## VI. Abbreviations and Definitions

|                                     |                                                                                                                                                                                                                                                      |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CLA                                 | Career Learning Assessment                                                                                                                                                                                                                           |
| CPD                                 | Continuing Professional Development, timely personal development in technical and non-technical topics.                                                                                                                                              |
| Competence                          | The knowledge, skills, and attitude needed to perform a specific task in a specific environment.                                                                                                                                                     |
| Course                              | An assembly of lectures, tutorials, and other learning environments in which one or more subjects are studied                                                                                                                                        |
| EB                                  | EE/FEANI Executive Board                                                                                                                                                                                                                             |
| ECTS                                | European Credit Transfer System <sup>3</sup>                                                                                                                                                                                                         |
| Education                           | Learning leading to a diploma in an engineering program, provided by a university or another establishment of higher education, accepted by ENGINEERS EUROPE/FEANI.                                                                                  |
| EE                                  | Engineers Europe                                                                                                                                                                                                                                     |
| EEED                                | List of Higher Education Institutions (HEI) and Engineering Programs recognized by ENGINEERS EUROPE/FEANI                                                                                                                                            |
| EEED Procedures                     | EMC Procedures to analyse proposals from National Members                                                                                                                                                                                            |
| EHEA                                | European Higher Educational Area <sup>4</sup>                                                                                                                                                                                                        |
| EMC                                 | EE/FEANI European Monitoring Committee                                                                                                                                                                                                               |
| ENIC-NARIC                          | European network of national agencies for the recognition of foreign university diplomas <sup>5</sup>                                                                                                                                                |
| EUR-ACE                             | Certification of European Engineering Programs by ENAEE <sup>6</sup>                                                                                                                                                                                 |
| EUR ING                             | Registered trademark.                                                                                                                                                                                                                                |
| EQF                                 | European Qualification Framework <sup>7</sup>                                                                                                                                                                                                        |
| FCD                                 | First Cycle Degree                                                                                                                                                                                                                                   |
| GA                                  | EE/FEANI General Assembly                                                                                                                                                                                                                            |
| HEI                                 | Higher Education Institution                                                                                                                                                                                                                         |
| National engineering associations   | This includes institutions, societies, and associations.                                                                                                                                                                                             |
| NM                                  | National Member                                                                                                                                                                                                                                      |
| NMC                                 | National Monitoring Committee                                                                                                                                                                                                                        |
| Professional Engineering Experience | Continuous Learning gained during working life after the completion process by current development in engineering and particularly specialism. CPD can be acquired in a variety of ways through seminars, meetings, discussions, further study, etc. |
| Program                             | An assembly of courses leading to an award in recognition of the satisfactory completion of the program.                                                                                                                                             |

<sup>3</sup> [https://ec.europa.eu/education/resources-and-tools/european-credit-transfer-and-accumulation-system-ects\\_en](https://ec.europa.eu/education/resources-and-tools/european-credit-transfer-and-accumulation-system-ects_en)

<sup>4</sup> <http://www.ehea.info/>

<sup>5</sup> <https://www.enic-naric.net/>

<sup>6</sup> <https://www.enaee.eu/>

<sup>7</sup> <https://europa.eu/europass/en/european-qualifications-framework-eqf>



## ENGINEERS EUROPE

|         |                                                                                                                            |
|---------|----------------------------------------------------------------------------------------------------------------------------|
| SCD     | Second Cycle Degree                                                                                                        |
| SCI     | Second Cycle Integrated Degree                                                                                             |
| Subject | A topic or area of study. For example, Mathematics, Technical Drawing, Chemistry, etc.                                     |
| VET     | Vocational Education and Training, as the third pillar besides scientific universities and universities of Applied Science |
| WG      | Working Group                                                                                                              |

## VII. References

These appendices give some extra information for current and future readers.

### p. Worldwide quality alignment of engineering programs

There are two main public processes according to which the quality of engineering programs are aligned:

The [Bologna process](#) is a series of ministerial meetings and agreements between European Countries to ensure comparability in the standards and quality of higher-education qualifications. The process has created the European Higher Education Area (EHEA) under the Lisbon Recognition Convention. It is named after the University of Bologna, where the Bologna declaration was signed by education ministers from 29 European Countries in 1999. The process was opened to other countries in the European Cultural Convention of the Council of Europe, and governmental meetings have been held in Prague (2001), Berlin (2003), Bergen (2005), London (2007), Leuven (2009), Budapest-Vienna (2010), Bucharest (2012), Yerevan (2015), Paris (2018), and Rome (2020).

The [Washington accord](#) is an international accreditation agreement for undergraduate professional engineering academic degrees between the bodies responsible for accreditation in its signatory countries and regions. Established in 1989, the full signatories as of 2020 are Australia, Canada, China, Costa Rica, Hong Kong, India, Ireland, Japan, Korea, Malaysia, New Zealand, Pakistan, Peru, Philippines, Russia, Singapore, South Africa, Sri Lanka, Taiwan, Turkey, the United Kingdom, and the United States.

Diplomas from outside the EE/FEANI area (EHEA) can be recognized by a European host country according to the [ENIC-NARIC](#) agreement, as authorized by the respective national ministry of education. For the EHEA (most EE/FEANI members) states the Bologna process is followed.

In some member states the institutes are accredited, incl. the authority to issue study programs on their own, in other member states only the programs are accredited (incl. stakeholder feedback and quality assurance). In addition, private accreditations can be proof of the quality of engineering programs. At the moment the EUR-ACE accreditation of [ENAE](#) is accepted by ENGINEERS EUROPE/FEANI.

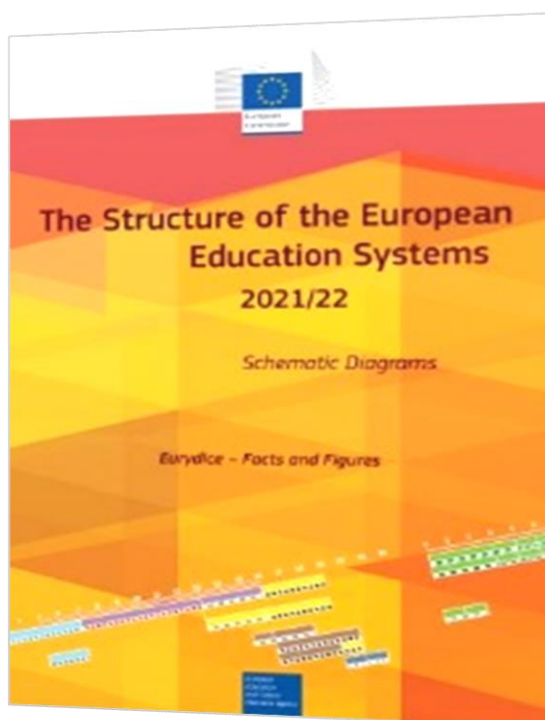


ENGINEERS EUROPE

## q. Structure of the European Education System

See the link for more information on an excellent visualisation of the structure of the European Education System.

[https://eacea.ec.europa.eu/national-policies/eurydice/content/structure-european-education-systems-202122-schematic-diagrams\\_en](https://eacea.ec.europa.eu/national-policies/eurydice/content/structure-european-education-systems-202122-schematic-diagrams_en)



## r. European workload frameworks: ECTS

EE/FEANI has adopted the **European Credit Transfer System (ECTS)**<sup>8</sup> to quantify and measure the workload expected from a student to pass a subject. According to ECTS, one full-time academic year of studies corresponds to 60 credits and credits embrace the full student workload, including classes, individual work, and exams.

**In general** 1 ECTS is equivalent to a workload of 25 to 30 hours and 60 ECTS is equivalent to a workload of 1680 hours (based on the EMC assumed workload of 28 hours).

The Framework for **Qualifications of the European Higher Education Area (EQF)**<sup>9</sup> provides descriptors for three cycles agreed by the ministers responsible for higher education. Each cycle descriptor offers a generic statement of typical expectations of achievements and abilities associated with qualifications that represent the end of that cycle.

The descriptor for the first cycle, usually awarding a bachelor's degree, corresponds to the learning outcomes for EQF level 6.

The descriptor for the second cycle, usually awarding a master's degree, corresponds to the learning outcomes for EQF level 7.

Note that a PhD (EQF level 8) is recognized as professional research experience including CPD.

The route mostly used for the EUR ING starts with a secondary education (level 5), granting a general or a specific admission to tertiary education. However, countries with a fully developed **vocational qualification path (VET)** may have higher technical schools, which are also considered tertiary education on level 6 (equivalent to 120 ECTS) and award a diploma as technologist. After 3 or more years in professional practise, technologists may earn the title engineer by passing a state examination or similar recognition procedure. Some national qualification frameworks may even foresee a VET examination of level 7 (e.g. as a construction supervisor or other senior technologist).

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<sup>8</sup> [https://ec.europa.eu/education/resources-and-tools/european-credit-transfer-and-accumulation-system-ects\\_en](https://ec.europa.eu/education/resources-and-tools/european-credit-transfer-and-accumulation-system-ects_en)

<sup>9</sup> <https://europa.eu/europass/en/european-qualifications-framework-eqf>





Some member countries within the European Higher Education Area have different scales from which the following picture is taken:

## Correspondences between UK and Irish frameworks with European qualifications frameworks

Within Europe, two overarching qualifications frameworks exist to which the national qualifications frameworks of the UK and Ireland relate: The European Qualifications Framework (EQF) and the Framework for Qualifications of the European Higher Education Area (FQ-EHEA) also known as the Bologna Framework.

**Table 1** shows the correspondence of levels established between national qualifications frameworks and the EQF:

| European Qualifications Framework (EQF) | Framework for Higher Education Qualifications in England/ Northern Ireland (FHEQ) | Regulated Qualifications Framework England/ Northern Ireland (RQF) | Credit and Qualifications Framework for Wales (CQFW) | Scottish Credit and Qualifications Framework (SCQF) | The National Framework of Qualifications for Ireland (NFQ IE) |
|-----------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------|
| 8                                       | 8                                                                                 | 8                                                                  | 8                                                    | 12                                                  | 10                                                            |
| 7                                       | 7                                                                                 | 7                                                                  | 7                                                    | 11                                                  | 9                                                             |
| 6                                       | 6                                                                                 | 6                                                                  | 6                                                    | 10/9                                                | 8/7                                                           |
| 5                                       | 5/4                                                                               | 5/4                                                                | 5/4                                                  | 8/7                                                 | 6                                                             |
| 4                                       |                                                                                   | 3                                                                  | 3                                                    | 6                                                   | 5                                                             |
| 3                                       |                                                                                   | 2                                                                  | 2                                                    | 5                                                   | 4                                                             |
| 2                                       |                                                                                   | 1                                                                  | 1                                                    | 4                                                   | 3                                                             |
| 1                                       |                                                                                   | E3                                                                 | E3                                                   | 3                                                   | 2/1                                                           |
|                                         |                                                                                   | E2                                                                 | E2                                                   | 2                                                   |                                                               |
|                                         |                                                                                   | E1                                                                 | E1                                                   | 1                                                   |                                                               |

**Table 2** shows the outcome of verifying the compatibility of higher education frameworks for Scotland (FQHEIS/SCQF), for England, Wales and Northern Ireland (FHEQ) and for the NFQ for Ireland (NFQ IE) with the FQ-EHEA as follows:

| Typical higher education qualifications within each level | FHEQ level | FQHEIS/ SCQF level | NFQ IE level | Corresponding FQ-EHEA cycle                         |
|-----------------------------------------------------------|------------|--------------------|--------------|-----------------------------------------------------|
| Doctoral degrees                                          | 8          | 12                 | 10           | Third cycle (end of cycle) qualifications           |
| Master's degrees (including Integrated Master's)          | 7          | 11                 | 9            | Second cycle (end of cycle) qualifications          |
| Postgraduate diplomas                                     |            |                    |              | Intermediate qualifications within the second cycle |
| Postgraduate certificates                                 |            |                    |              |                                                     |
| Bachelor's degrees with honours /Honours Bachelor Degrees | 6          | 10                 | 8            | First cycle (end of cycle) qualifications           |
| Irish Higher Diplomas                                     |            |                    |              |                                                     |
| Bachelor's degrees/ Ordinary Bachelor Degree              |            | 9                  | 7            | Intermediate qualifications within the first cycle  |
| Graduate diplomas                                         |            |                    |              |                                                     |
| Graduate certificates                                     |            |                    |              |                                                     |
| Foundation Degrees (for example FdA, FdSc)                | 5          | 8                  | 6            | Short cycle qualifications                          |
| Diplomas of Higher Education (DipHE)                      |            |                    |              |                                                     |
| Higher National Diplomas (HND)                            |            |                    |              |                                                     |
| Irish Higher Certificates                                 | 4          | 7                  |              | Intermediate qualifications within the short cycle  |
| Higher National Certificates (HNC)                        |            |                    |              |                                                     |
| Certificates of Higher Education (CertHE)                 |            |                    |              |                                                     |

For more information on compatibility with these frameworks see: [http://ec.europa.eu/eqf/home\\_en.htm](http://ec.europa.eu/eqf/home_en.htm) and [www.enic-naric.net](http://www.enic-naric.net).

## s. Accreditation in the European Union

Caused by the abundant (mis)use of many non-transparent quality markings/logos/certificates by organizations/companies in the past, in 2008 the EU came up with <https://european-accreditation.org/>:

### European Accreditation System

**Definition of Accreditation (Regulation 765/2008)**

Accreditation shall mean an attestation by a national accreditation body that a conformity assessment body meets the requirements set by harmonised standards and, where applicable, any additional requirements including those set out in relevant sectoral schemes, to carry out a specific conformity assessment activity.



12 November 2019 6

EA EUROPEAN ACCREDITATION

*BE AWARE, this is about the 'conformity assessment **bodies**', not about the quality markings/ logos/ certificates themselves!*

Awarding the EUR ING Certificate will be a process of 'conformity assessment'. Many high-tech companies and quality companies already have an accreditation based on 765/2008.

### EA Members

|                     |                  |                  |
|---------------------|------------------|------------------|
| DPA, Albania        | ESYD, Greece     | NA, Norway       |
| AA, Austria         | NAH, Hungary     | PCA, Poland      |
| BELAC, Belgium      | ISAC, Iceland    | IPAC, Portugal   |
| BAS, Bulgaria       | INAB, Ireland    | RENAR, Romania   |
| HAA, Croatia        | ACCREDIA, Italy  | ATS, Serbia      |
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| CAI, Czech Republic | LA, Lithuania    | SA, Slovenia     |
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| DAKKS, Germany      | RvA, Netherlands | UKAS, UK         |

### EA Members

|                            |                |                 |
|----------------------------|----------------|-----------------|
| ALGERAC, Algeria           | EGAC, Egypt    | SEMAG, Morocco  |
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| AZAK, Azerbaijan           | ISIRAC, Israel | TUNAC, Tunisia  |
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12 November 2019 11 12

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