



EWF 25TH ANNIVERSARY
13 - 17 NOVEMBER 2017 OEIRAS, PORTUGAL

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Uptake the EWF International Qualifications by Higher Education Institution

Conference on International Sectoral Qualifications

15 November,

Congress Cantwer Tagus Park, Oeiras



European Welding Engineer

- International Sectoral Qualification offered in the market for 25 years by EWF
- Used in 46 countries in the world (30 European and 16 non European)
- More than 100 000 diplomas awarded



Countries where there is collaboration between Universities and the EWF member and/or Authorised Nominated Body

In Europe



Noruega



Suécia



Alemanha



Hungria



Espanha



Bulgaria



Portugal



Turquia



Rússia



Croacia



Servia

Non European



Japão



Australia



Canada (Technologist, in a Coledge)



Brasil



Reasons for Collaboration

- Integration of welding courses in the Universities, for post graduation and/or MSc courses under their authority
- Training centers in the EWF system need support for implementation of parts of the EWF courses (e.g. Labs, equipments) - joint ventures for total or parcial courses
- Benefits of the double degree, MSC and international pos graduation



Other cases

- The University of Lulea in Sweden has collaborated in the development of the EWF guidelines for qualification of Laser Materials Processing professionals and is an ATB (Authorised Training Body) on the EWF System for these qualifications.
- A similar case has occurred in Finland with the Welding Designer guideline is awarded with the collaboration with Laperanta University



Linking VET and HE

EWF and its members have been involved in the **MANUMOBILE** project, where a methodology was developed to link Vocational Education and Training (**VET**) at top level with Higher Education (**HE**).



VET Qualification

A set of rules to be followed by a VET qualification was proposed to facilitate its analysis and give the HE awarding bodies the confidence of its quality and reliability.





VET Qualification

Items to include in the definition of a Vocational Qualification:

1. Routes to Qualification
2. General Access Conditions
3. Qualification Guideline (Theoretical and Practical Education)
4. Others (Other relevant aspects can be included in appendixes)



Qualification Guideline (Theoretical and Practical Education)

QUALIFICATION DESCRIPTION: General description of the (welding coordinators) qualifications according to the European Qualifications Framework.

EQF LEVEL: That will be granted with the qualification



| QUALIFICATION | KNOWLEDGE | SKILLS | COMPETENCES | EQF LEVEL (EQF L) | WORKLOAD (WL) |
|------------------------|---|---|--|-------------------|--|
| INTERNATIONAL ENGINEER | Highly specialised and forefront knowledge (Able to deduce and explain in depth) including original thinking, research and critical assessment of theory, principles and applicability of | Specialised problem solving skills including critical and original evaluation (Able to predict, deduce and create), which will allow choosing or developing the best technical and economical solutions that should be applied in, in complex and unpredictable conditions. | Manage and transform the in a highly complex context. Will act as the full responsible person for the definition and revision of the and related personnel's tasks. | 7 | To be filled in after the description of the LOs |

Qualification Guideline (Theoretical and Practical Education) An example

MODULE (COMPETENCE UNIT): Describes the expected learning outcomes (knowledge, skills and competences) of a given Module (competence unit) (e.g. Competence Unit 1), according to the EQF level.

| LEARNING OUTCOMES – Module I – Welding processes and equipment | | | | | |
|--|---|--|--|---------------------|--------------|
| QUALIFICATION | KNOWLEDGE | SKILLS | COMPETENCES (Autonomy and responsibility) | WORKLOAD (hours) | EQF LEVEL |
| INTERNATIONAL ENGINEER | Highly specialised knowledge (able to deduce, detail and explain) and critically assess | Highly specialised problem solving skills including critical and original evaluation (able to predict, deduce and create) to define/to develop the best technical and economical solutions, in complex and unpredictable conditions. | Manage processes and applications and create new strategic approaches in a highly complex context. Act as the full responsible person for the definition, management and revision of personnel tasks. | XXXXXX | 7 |

Qualification Guideline (Theoretical and Practical Education) An example

SUBJECT - Describes the expected learning outcomes (knowledge, skills) of a given Subject, according to the EQF level

| SUBJECT 1.1 General introduction to welding technology | | | | | | |
|--|-----------|--|------------|-----|-----|-----|
| Objective for IWE and IWT: Understand in detail the developments in welding processes including accepted terminology, standards and abbreviations. | | | | | | |
| Objective for IWS and IWP: Gain basic knowledge of the different welding processes including terminology, standards and abbreviations. | | | | | | |
| | | Qualification Level | EWE | EWT | EWS | EWB |
| | | Teaching hours | 3 | 3 | 1 | 1 |
| KNOWLEDGE (knowledge application-Scope) | | | | | | |
| History | | | X | X | - | - |
| General applications for welding | | | X | X | X | X |
| Schematic presentation of welding processes | | | X | X | X | X |
| Brief description with characteristics | | | X | X | - | - |
| Applicability of the most common welding processes | | | X | X | - | - |
| Abbreviations used for welding processes | | | X | X | X | X |
| Hints in use for welding processes | | | X | X | X | X |
| Welding positions and Terminology (ISO 6947, ISO 17659) | | | X | X | X | X |
| Symbolic representation of joints (overview)..... | | | X | X | X | X |
| Classification of welding processes (ISO, CEN and national standards).... | | | | | | |
| 1.1 General introduction to welding technology- LEARNING OUTCOMES | | | | | | |
| Qualification | EQF Level | SKILLS (cognitive and practical application) | WL (hours) | | | |
| INTERNATIONAL ENGINEER & INTERNATIONAL TECHNOLOGIST | 6 | Explain the range of application of most common welding processes providing concrete examples for each range of application. | XXXXXX | | | |
| | | Associate all welding processes to their common abbreviation and identification code. | | | | |
| | | Associate the welding positions to their identification codes. | | | | |
| | | Differentiate the weld joints types applications. Justify in detail all the differences between each major type of welding process (e.g. fusion arc, resistance, flame, forge, etc.). | | | | |
| | | Explain in detail the applications for each weld joint type. | | | | |



Permeability between VET&HE: An example for the Engineer level

- The EWE course currently provides a qualification of **European/International Welding Engineer** and is referred in ISO 14731 as leading to **Welding Coordinator certification**.
- These recognitions enable professionals to perform welding jobs in any country.
- This course is taught in the same model in 37 countries of the 26 European countries and is recognised by the IIW and EWF





Permeability between VET&HE: An example for the Engineer level

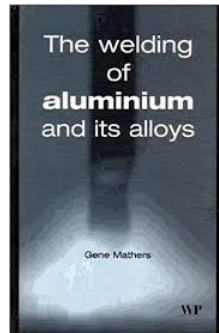
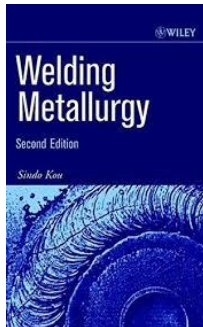
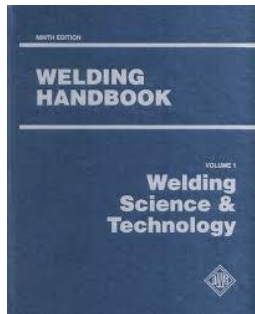
- In 2008, there was an Agreement Between Nova University of Lisbon and ISQ to award a combined degree VET and HE
- The European/International welding engineering course was integrated in the Syllabus of a new MSc course in “Welding Engineering”.





Structure of the course

- The course is structured in two components:
 - A curricular part: following closely the guidelines developed by the European Welding Federation (EWF) where ISQ is a member and the Authorised Nominated Body (ANB) in Portugal. and
 - A part devoted to the elaboration of the dissertation, on a subject contemplated in the curricula of the course.





Responsability of the course

- The scientific, pedagogical and curricular part responsibility of the Master degree in Welding Engineering is of FCTUNL
- Curricular part has also the collaboration of ISQ professionals, qualified academically with the degree of Doctor.
- The responsibility of the disciplines is ensured by a teacher with a doctorate degree..... however, some modules of curricular units can be taught by teachers with the degree of master and/or with recognised professional experience.



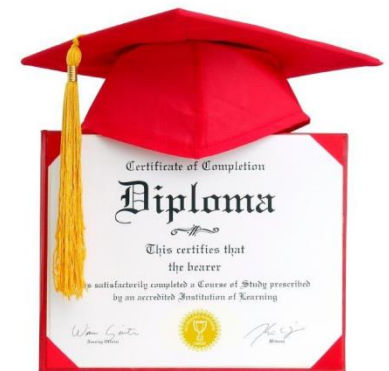
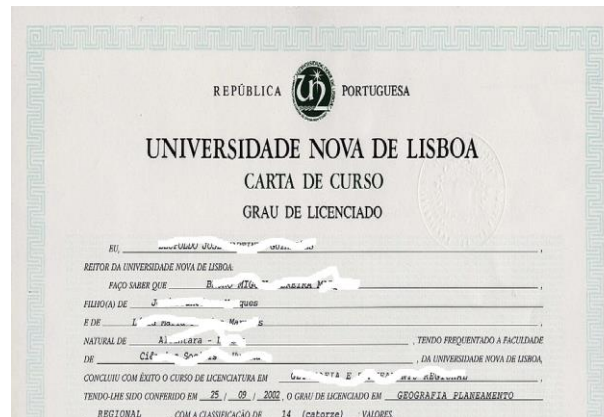
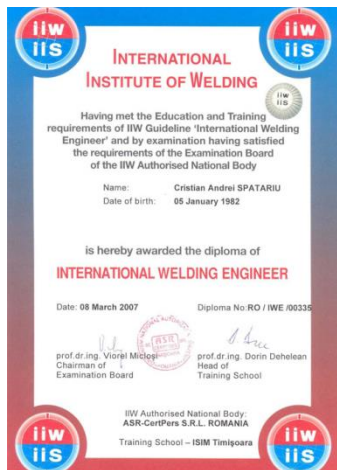
Evaluation rules

- Consist of a theoretical and oral examination, of the responsibility of the ANB.
- The students who follow the curricular part and obtain approval according to the guidelines/rules, will obtain diploma of the International Welding Engineer and the diploma of European Welding Engineer awarded by ISQ, as an ANB of EWF.
- The Diploma in Welding Engineering gives access to the preparation of the dissertation.



Master's Degree awarded by FCTUNL

- The Master's Degree in Welding Engineering will be awarded after approval in all disciplines that are included in the curricular part of the 2nd cycle program, corresponding to a total of 78 ECTS and to the preparation, presentation, discussion and approval of a dissertation corresponding to a total of 42 ECTS.



An Agreement between HE and VET should include:

1. Objectives of the study Cycle
2. Description of the Human (scientific, pedagogical and teaching quality requirements) and materials resources of the organization
3. Brief statement of the number of credits attributed to each curricular unit based on the total work load (hours)
4. Summary of the total number of credits and the consequent program duration
5. Summary demonstration of the appropriateness of the program and the teaching methodologies to the program learning outcomes (LOs)
6. Adequacy to the Course Objectives
7. Description of the learning units



Permeability between HE and VET

- A similar approach can be taken for other courses in different topics than “welding Technology”.



**THANK
YOU
FOR YOUR CONTINUOUS
SUPPORT**



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