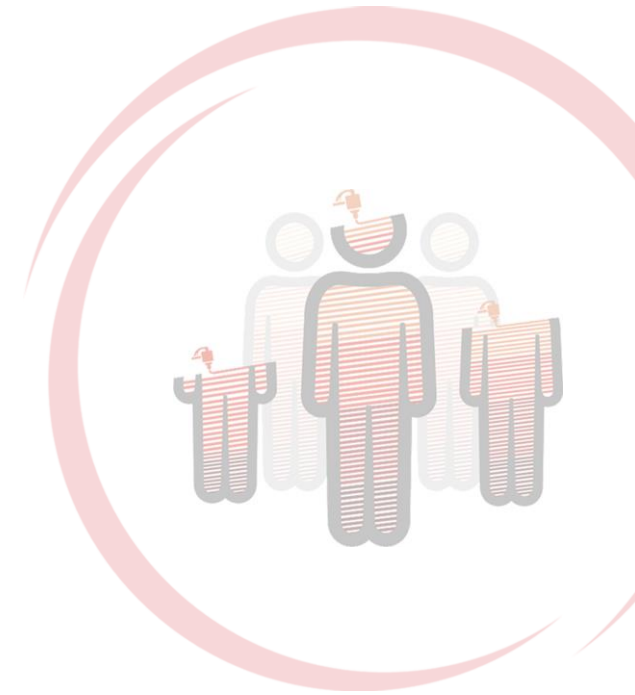




The new European Metal AM Engineer MSc: Curriculum and Implementation

December 10th 2020





Scope of the European Metal AM MSc

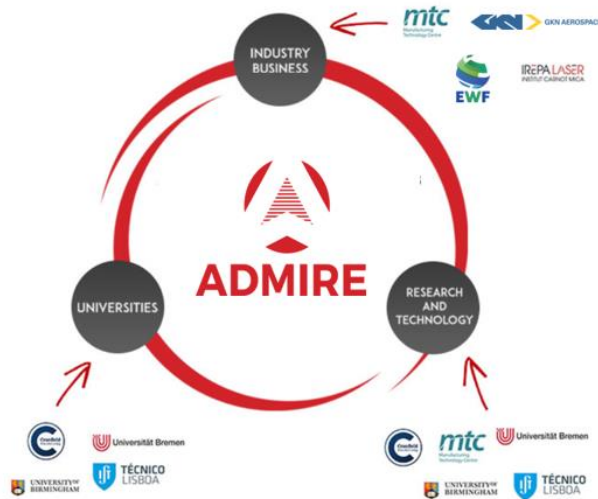
- ✓ AM knowledge scattered among Companies, Universities/Research & Technology institutions, creating several gaps to overcome,
- ✓ Absence of a comprehensive and all-encompassing curricula in HE,
- ✓ Lack of availability of skilled workforce for a wide variety of positions, including Engineers proficient in Metal AM.

No MSc Addressing METAL AM ENG. with European scope!



Main issues

Goal of the European Metal Eng AM MSc

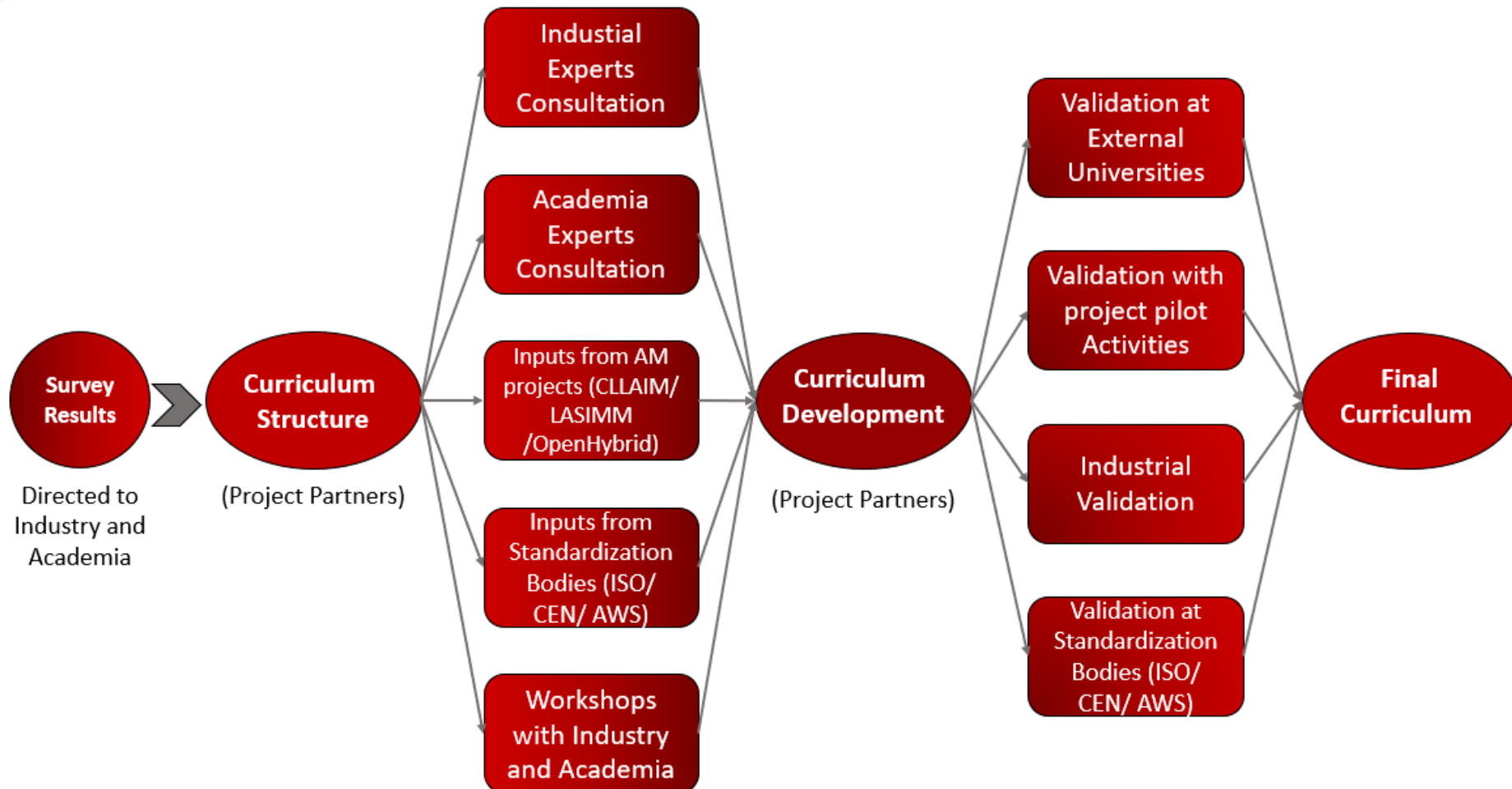


Design a European AM MSc based on:

- ✓ A learner-centered approach and experiential learning
- ✓ Problem-Based Learning (PBL) methods
- ✓ Structural multidisciplinary modules
- ✓ Clearly defined Intended Learning Outcomes (ILOs)



Curriculum Development





Main Challenges

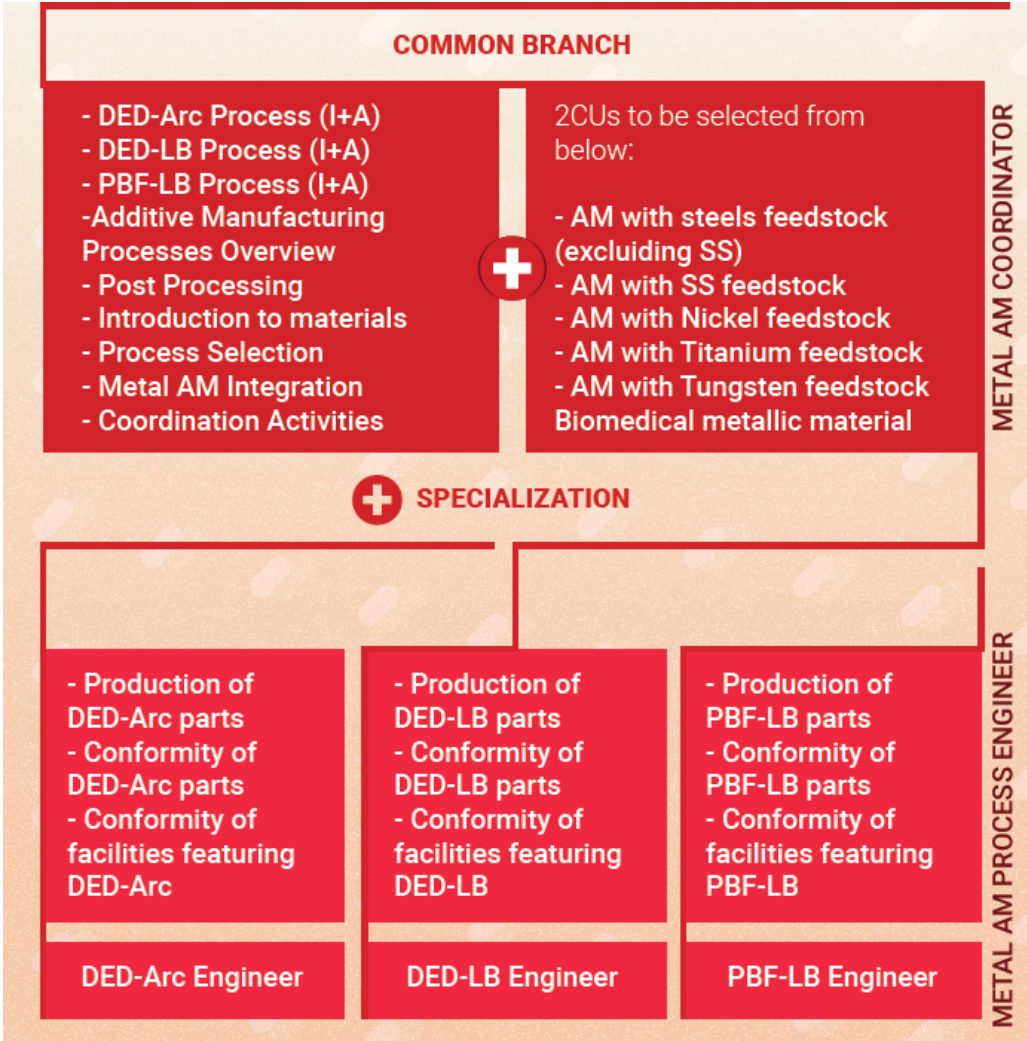
- ✓ European visibility and implementation of the Curriculum
- ✓ Harmonized content lectured at European level
- ✓ Alignment of the curriculum with industry needs
- ✓ Develop a harmonized training curriculum adaptable to each European University's specific objectives
- ✓ Foster mobility of Students
- ✓ The creation of a European Network of Universities and Industrial representatives



European Metal AM Engineer MSc

Metal AM Coordinator
(EQF level 6)

Metal AM Process Engineer DED-Arc
Metal AM Process Engineer DED-LB
Metal AM Process Engineer PBF-LB
(EQF level 7)





European Metal AM Engineer MSc

Specializations/Professional Profiles & Main tasks

Specialization	Professional Profile
Metal AM Coordinator	Assesses the technical adequacy in AM processes to part requirements

Main tasks:

- ✓ **Evaluate manufacturing suitability for customers' requests** defining which processes are fit for the request, based on the application, material, design and cost of the part.
- ✓ **Coordinate the work with the AM Team.**





European Metal AM Engineer MSc Specializations/Professional Profiles & Main tasks

Specialization	Professional Profile
Metal AM Process Engineer in Direct Energy Deposition-Arc (DED-Arc)	Implement the respective process in the manufacturing chain assuring the efficient production and post-processing of additively manufactured parts
Metal AM Process Engineer in Powder-Bed Fusion – Laser Beam (PBF-LB)	

Main tasks:

- ✓ **Evaluate manufacturing suitability for customers' requests** defining which processes are fit for the request, based on the application, material, design and cost of the part.
- ✓ **Apply a wide variety of engineering techniques**, contributing to projects in a teaming environment and compare, investigate, transfer, and adapt procedures, techniques, or methods to new applications.
- ✓ Develop and execute the respective processes' plans, including **validation of design, implementation, pre and post processing operations, assurance of parts conformity and identification of the causes and the corrective actions** of technical production problems.
- ✓ **Coordinate the tasks' distribution between the operators** according to the workplan as well as manage the link between them and the management.



European Metal AM Engineer MSc Specializations/Professional Profiles & Main tasks

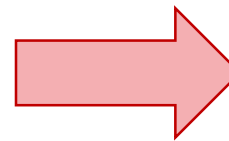
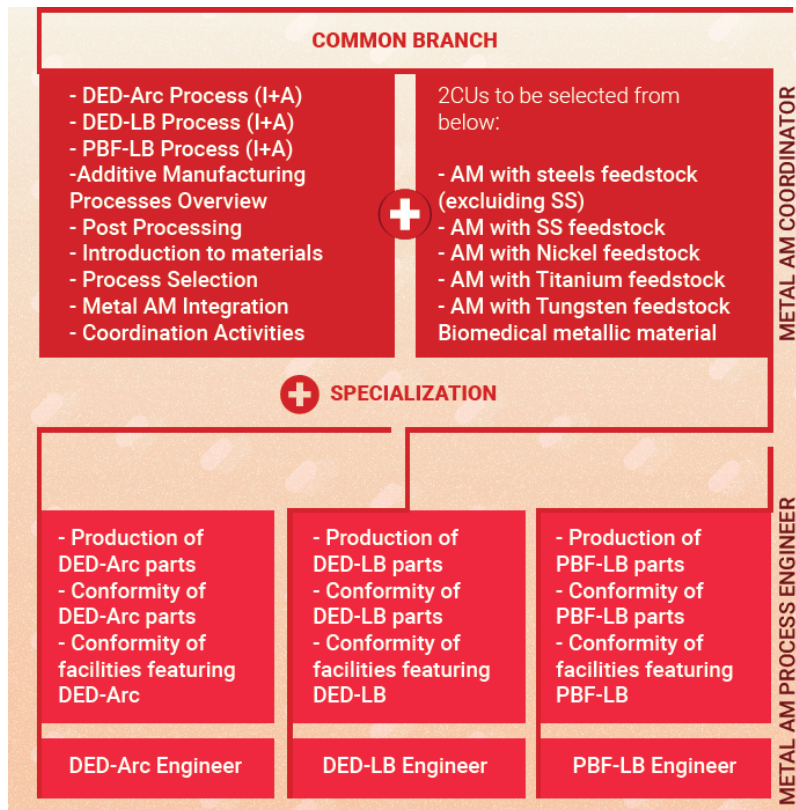
Specialization	Professional Profile
Metal AM Process Engineer in Direct Energy Laser Beam (DED-LB)	Professionals with the specific knowledge, skills, autonomy and responsibility to operate Metal Additive Manufacturing machines using DED-LB Process.

Main tasks:

- ✓ **Develop and execute DED-LB plans** including validation of design, implementation, pre and post processing operations, assurance of parts conformity and identification of the causes and the corrective actions of technical production problems;
- ✓ **Coordinate the tasks' distribution** between the operators according to the workplan as well as manage the link between them and the management.



European Metal AM Engineer MSc Implementation



<https://www.ewf.be/additive-manufacturing>

**International Additive Manufacturing
Qualification System
(EWF)**

Curriculum Alignment with Universities

How to implement these Qualifications in your University and be part of ADMIRE European Network?

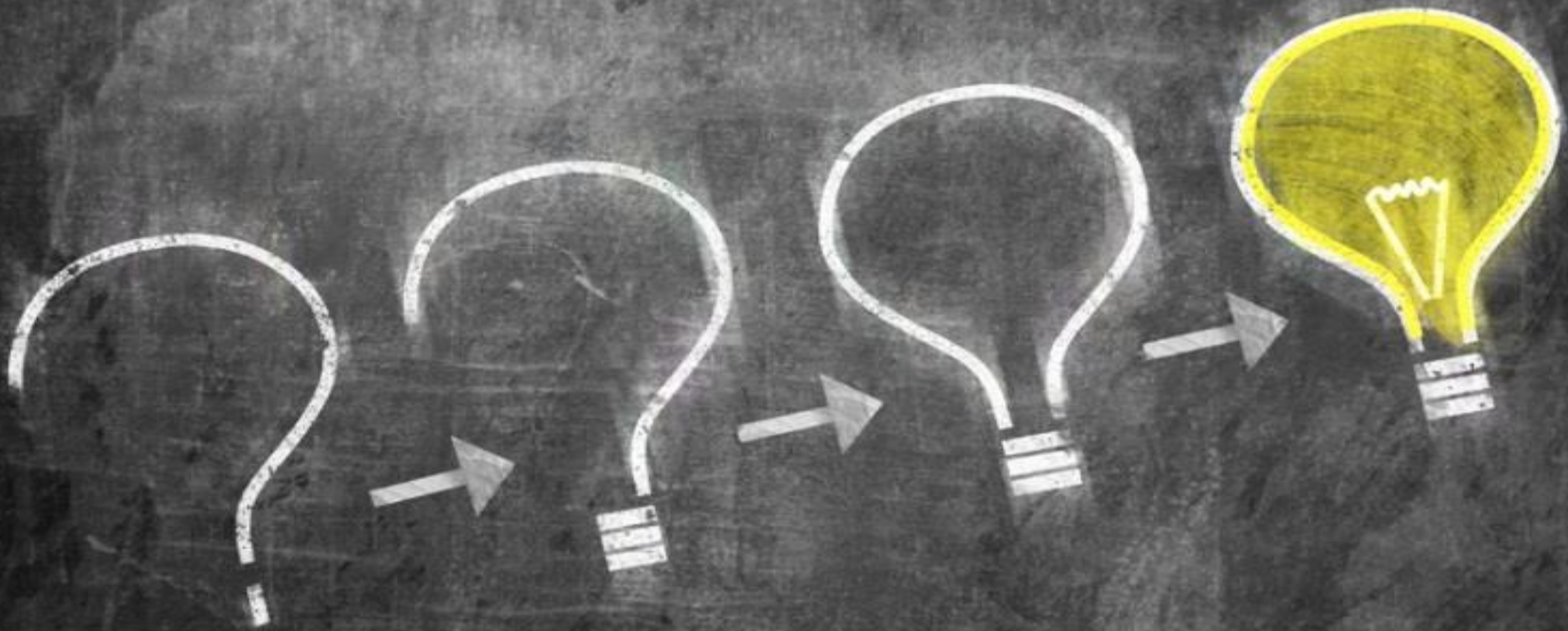




European Metal AM Engineer MSc Implementation

Advantages of implementing the European Metal AM Engineer MSc (Universities/Students/AM Industry)

- ✓ European Universities can implement the European Metal AM Engineer MSc with a similar structure, depending on their resources and experience,
- ✓ By being part of the European Network of Universities, these institutions can cooperate by merging their resources to implement a partial or full European Metal MSc
- ✓ Continuous cooperation with AM Industry
- ✓ Students' mobility between Universities and/or EU Countries
- ✓ Issue of an International Diploma that foster students' employability at Global level.



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