EIT Manufacturing Master School

Call for Master Thesis in 2024

Type of action: EIT Manufacturing EDUCATION - EMPOWER
Deadline model: single-stage
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EIT Manufacturing

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1 General Information: EITM Master School outlook

The EIT Manufacturing Master School offers a unique and excellent high education programme, with international and inclusion mindset, to graduate the next generation of Manufacturing Innovators and Entrepreneurs. The Master School programmes merge manufacturing technical and technological aspects with innovation and entrepreneurship teaching, in the context of the global societal challenges, such as circular economy, industrial innovation, sustainability, and so on. The EIT Manufacturing Master School adopts a practical learning by doing approach, through activities at Teaching and Learning Factories, through internships, projects and thesis at industrial premises, and through Innovation and entrepreneurship focused Summer Schools, in order the students to put immediately in practice the new knowledge, gathered in the class, in a real work and research context. The international studies at two different universities and the interaction with the EIT Manufacturing community complement and complete the educational offer.

All EIT Manufacturing Master School programmes allow the students to develop:

- Capability to implement engineering expertise and advanced technologies to create new or improved methods, techniques, products and services in the manufacturing field, in line with the customer target sector and the global societal challenges.

- Transversal skills and capabilities, such as constructive communication, leadership, complex problem setting, problem solving and decision making, to collaborate in international and diverse contexts, to manage projects and teams, to find new solutions and innovate the manufacturing offer.

- Business understanding and entrepreneurship to boost their future careers and to create innovative start-ups.

These capabilities are defined for the Master School programmes directly by the EIT through specific Overarching Learning Outcomes (OLOs), defined in the next sections.

The EIT Manufacturing Master School Programmes on going in 2023 are:

- People and Robots for Sustainable Work
- Additive Manufacture for Full Flexibility

- Zero-Defect Manufacture for a Circular Economy
- Platforms for Digitalized Value Networks
- Data Science and AI for Competitive Manufacturing

Students spend one year in a university (ENTRY university) and a second year in another university in a different country (EXIT university). Entry and exit university combinations are available in annex 3 In the final part of the second year students are requested to spent few months in a company (whatever size: large, medium, SME, startup) to run their master thesis,, in collaboration with the 2 universities.

At the end of their studies the students receive two degrees directly by the universities (double degree) and the EIT label certificate from EIT Manufacturing, as an international recognition of their high-quality education curriculum.

1. Master School partner Universities

The EITM Master School partner Universities public contacts can be found at EIT Manufacturing partners web page: https://eitmanufacturing.eu/partners/

List of those partners is available here below.

Aalto University School of Engineering	Aalto University (Aalto), Finland
CENTRALE NANTES	Ecole Centrale de Nantes (ECN), France
Mondragon Unibertsitatea Goi Eskola Politeknikoa Faculty of Engineering	Mondragon Unibertsitatea (MU), Spain
POLITECNICO MILANO 1863	Politecnico di Milano (POLIMI), Italy
University of Applied Sciences and Arts of Southern Switzerland SUPSI	University of Applied Sciences and Arts of Southern Switzerland (SUPSI), Switzerland

	Technische Universität Wien (TU Wien), Austria
	University College Dublin (UCD), Ireland
	Grenoble Institute of Technology and Management (G INP), France
	Università degli studi di Trento (UNITN), Italy
	University of TARTU (TARTU), Estonia

2. EIT Manufacturing's flagships

The EIT Manufacturing's four flagships are:

1. Human-machine co-working for socially sustainable manufacturing
2. Flexible production systems for competitive manufacturing
3. Low environmental footprint systems & circular economy for Green manufacturing
4. Digital & collaborative solutions for innovative manufacturing ecosystems

3. Overarching Learning Outcome (OLO) for EITM Master School Programmes

EIT Overarching Learning Outcome (OLOs): see table below

EIT OLOs
EIT OLO 1 - Entrepreneurship skills and competencies
The capacity to identify, synthesize and act upon opportunities and ideas to create social, cultural and financial value for others, including translating innovations into feasible business solutions, with sustainability at their core, and to lead and support others in this process.
EIT OLO 2 - Innovation skills and competencies
The ability to evaluate the research experiences combined with the knowledge, ideas and technology of others to create, test and implement new or significantly improved products, services, processes, policies, new business models or jobs, and to mobilise system innovation to contribute to broader societal change, while evaluating the unintended consequences of innovation and technology.
EIT OLO 3 - Creativity skills and competencies
The ability to extend boundaries and systematically explore and generate new ideas and to inspire and support others in this process and contribute to the further development of those ideas.
EIT OLO 4 - Intercultural skills and competencies
The ability to engage and act internationally and to function effectively – in research and other activities – across cultures, sectors and/or organisations, to think and act appropriately and to communicate and work with people from different cultural and organisational backgrounds.
EIT OLO 5 - Making value judgments and sustainability competencies
The ability to identify short- and long-term future consequences of plans and decisions from an integrated scientific, ethical and intergenerational perspective and to merge this into their professional activities, moving towards a sustainable and green society.
EIT OLO 6 - Leadership skills and competencies
The ability of decision-making and leadership based on a holistic understanding of the contributions of Higher Education, research and business to value creation.

In addition to the above, students are requested develop knowledge and capabilities about digitalization aspects, IPR concepts and ethical conduct of business.

2 Master Thesis

To fulfil the degree requirements for the EITM Industrial Master Thesis at EITM Master School, students are required to complete a 30 ECTS (1 ECTS=25 hours, including offline work by the student) credit Industrial research project during the Spring/Summer of 2023 at company premises. The minimum time spent by the student at industrial premises is 15 ECTS, meaning 2,5 months (375 hours in total). **The maximum and recommended time spent by the student at industrial premises is 30 ECTS, meaning 5 months (750 hours in total, including time for the thesis**

documentation preparation).

The student has to be supervised by an industrial mentor/supervisor and by at least one academic member from the exit university. In any case the thesis must be valid also for the entry university of the student, in order to provide the double degree.

The scope and objectives of the thesis project will be defined and agreed in advance of the project commencement by the student(s), the company and the academic supervisor(s). Depending on the number of projects received, either a single student will be assigned or teams of 2-3 members will be formed to work on the proposed project.

The scope of the project should be related, but not limited to, to the fields of Zero-Defect Manufacturing for a Circular Economy, Additive Manufacturing For Full Flexibility, Platforms For Digitalised Value Networks, and People and Robots for Sustainable Work, Data Sciance and AI for Competitive Manufacturing and the application of some aspect of their taught modules: Business information systems, Operations Management, Engineering Decision Support Systems, Marketing Management, Supply Chain Management, Manufacturing Simulation and Robotics, Project Management, Organisation Behaviour, Circular Materials, Data Analytics for Quality Control, AI innovative modules, Data Science analysis, Novel algorithims, etc.

The Industrial Master project involves the student(s) coming on site, for a minimum of 15 and a maximum of 30 ECTS, to collect data / make observations, run practical experiments, eventually conducting desk based research and writing the thesis documentation . The thesis is expected to start in early 2024, according to the exit university rules, in order the students to be able to graduate in 2024 graduation rounds. The outcomes can be generally recommendations a physical/virtual prototype, a roadmap for implementation, etc. They will be reported in a final report. The thesis report could be public, according to university needs. For this reason, a specific Non-Disclosure Agreement will be signed by the company and the student, and eventually by the universities as well.

Participating companies are not requested to pay the students (unless required by national law), but they are encouraged to sponsor a project, such as a paid internship.

An example of topics undertaken by students in recent years in similar programmes is listed below:

- Implementation of lean six sigma in the Pharmaceutical sector
- Safety stock analysis in the semiconductor industry
- Improving time recording practices

- Quantifying facility expansion opportunity in the frozen food sector
- Takt time analysis for operations optimisation
- The analysis and optimisation of the process used to scan and prepare digital cushion models
- Improving the Supplier Qualification Process using the Six Sigma Approach
- Inventory management analysis in the dairy industry
- Designing a robotic finger for pick and place operations.
- Environmental/sustainability performance assessment of products and processes
- Maintenance planning and optimization
- Supply chain performance assessment
- Lifecycle assessment and carbon footprinting of products and manufacturing and supply chains.
- Data analytics in manufacturing/service operations and supply chains

In order to understand scientific requirements, the participating companies can contact each Master programme coordinator listed here below:

EITM Master Programme	Programme Coordinator	Contact
People and Robots for Sustainable Work	Eñaut Muxika, Mondragon university, Spain	emuxika@mondragon.edu
Additive Manufacture for Full Flexibility	Mika Salmi, Aalto university, Finland	mika.salmi@aalto.fi
Zero-Defect Manufacture for a Circular Economy	Pezhman Ghadimi, University Collage of Dublin (UCD), Ireland	pezhman.ghadimi@ucd.ie
Platforms for Digitalized Value Networks	Donatella Corti, SUPSI, Switzerland	donatella.corti@supsi.ch
Data Science and AI for Competitive Manufacturing	Catherine Da Cunha, ECN, France	catherine.da-cunha@ec-nantes.fr

1. Open Call description

The current open call focuses on collecting project proposals by participating companies about the final Master thesis to be done at industrial premises by end of -summer 2024, according to university academic year organization. **Companies proposing the thesis projects are requested to host the student at their premises and to assign a supervisor to support and monitor the student during the work.** The supervisor will keep the contact with the academic supervisor during the master thesis period. The students will be spending time at the university premises as well to do data analysis, report writing, desk research etc.

Thesis topic: The thesis topic must be in the context of the 4 Master programmes listed above and linked to manufacturing. The thesis topic must also have a scientific relevance. For more info see section 2.
Duration: 30 ECTS – 5 months
Delivery time: Thesis project must be delivered by end of summer 2024 according to the academic requirements of EITM Master partners universities. Please note each university has different calendar requirements, so a verification with the university thesis timeframe requirement will be done.
Partnership: min 1 company. All company sizes are allowed, including startups.

- Thesis projects at multiple sites are allowed;
- Thesis projects at multiple companies are allowed.

thesis project proposals: min. 1 thesis project, max 5 thesis projects per company can be submitted.
Sponsorship: Companies are not requested to sponsor the student. Anyway, since the students don't have a monthly allowance for the expected duration of the project, companies are encouraged to provide additional sponsorship on voluntary base or if requested by either national laws or internal rules. This information must be included into the proposal.
Hosting: Companies must host the students at their premises during the thesis project, providing the student with the possibility to be involved into a real working context. In case a student needs an accommodation, companies are requested to support the student in finding an accommodation prior of the student arrival.
Travels: Companies are not requested to cover student travel costs to reach the company premises at the beginning of the project and to go back home at the end of the project. Anyway companies must cover travel costs of the student, if these are requested to fulfil the thesis project within the period of the project.
Students per project: Thesis projects can be carried out by either 1 single student or by a group of students (max. 3 students). Companies must declare how many students are able to host at their premises at the same time for each thesis project.
Industrial supervisor: Companies are requested to appoint a supervisor to mentor, support and monitor the student during the project and to act as a reference for the EITM master school.
Other: EITM Master students have several nationalities, including extra-European countries, such as Pakistan, Iran, etc. Companies are requested to list if they have any restriction in hosting

students from specific countries, according to company/State rules.

IMPORTANT NOTE: Please note EIT Manufacturing reserves the right to either cancel the open call and/or to not select any project proposals, in case of any reason that may impact the Master School programmes. EIT Manufacturing will inform the companies immediately through its communication channels, such as Agora. Eventual submitted proposal won't be evaluated and the contact person will be informed via e-mail, wherever possible.

3 Who can apply

This call is open to companies of whatever size (for instance enterprises, SMEs, startups). Both EIT Manufacturing partners and external companies can apply..

4 Conditions and documents

1. **Eligible countries:** according to Horizon Europe framework.

For Associated Countries eligibility, please consult your National Contact Point.

For UK Partners and Linked Third Parties, and consortiums involving UK entities please consult your National Contact Point.

2. **Eligibility conditions:** being a company with an office within Europe.

3. **Evaluation criteria, student assignment and process:**

The thesis project proposal will be evaluated by the Master School university partners, according to their thesis academic requirements, mainly related to link to the EITM Master programmes and scientific relevance of the project.

Student assignement will be initially done directly from each academic programme supervisor and according to student preferences. The master programmes coordinators have the possibility to negotiate with the companies some adaptations of the projects in case to ensure a better fit with the master's requirements.

Please note during the submission time, companies have the opportunity to clarify initial doubts with the Master programmes coordinators, listed in section 2.

Evaluation process

1. Indicative timetable for evaluation and thesis agreements:

    - Deadline for submitting applications: 2nd November 2023 17:00:00 Brussels time
    - Evaluation period: November 2023
    - Information to applicants: 15th December 2023
    - Expected Thesis project start: January – April 2024

5 Submission

Proposal template is available in ANNEX 1.
Proposals can be submitted at any time from the launch of the call until 17:00 (Brussels Time) of the of the closing day as indicated in the timeline section of this document.

All applications must be submitted via submission platform. Please note that the template in annex 1 is for your reference, but **you must fill in all the fields in the submission portal. In case of specific details, you can upload a dedicated file, but not the proposal template.**

The link for the submission is:

https://eitmanufacturing.submittable.com/submit/269902/open-call-for-industrial-master-thesis-projects

Submission instructions are available in ANNEX 2. Please note:

- No further extensions will be granted.
- The submission system allows to submit more than one proposal through the same e-mail address

Multiple proposals submissions

In case of more than one thesis project proposal from the same company, please note, EITM will accept at maximum 5 proposals per company, considering the arrival order.

In case of questions, problems and info, please contact: masterschool@eitmanufacturing.eu

6 GDPR

Applications and participants data are treated according the EIT Manufacturing GDPR rules: https://eitmanufacturing.eu/privacy-policy/

By submitting your proposal you agree to all those rules.

7 Appeals and Complaints

Appeals about the proposal evaluation process can contact the EITM Master School office not later than two days after receiving the results of the evaluation: masterschool@eitmanufacturing.eu

ANNEX 1: Proposal Template

Please note all the fields are mandatory, with the exception of the thesis details document.
In yellow you can find instructions and details to fill each field.

Master Thesis template

Thesis Project Title

Thesis Project Supervisor

- Name
- Surname

Include here the info about the thesis project supervisor. The person can be different than the submitting one.

Thesis supervisor e-mail address

Include here the thesis supervisor e-mail address

Company name

Company acronym

Company size

Drop down list

Location where the thesis will take place

Please include here the address where the thesis will take place

Overall Aim of the Thesis Project

This should be a concise (one or two sentences only) overview of the project's purpose and objectives.
E.g. "To quantify the risk associated with product's X supply chain and devise a strategy to mitigate that risk."

Master Programme reference

Please choose the most appropriate Master programme your thesis proposal fits in

Field of application of the thesis

Please indicate the field of applications (mechanics, management, electronics, robotics,…).

Thesis Project Outcomes

Here you should indicate the key deliverables of the project, e.g. what specifically would you like the project to achieve? How will the project make a difference to your organisation?
Examples:
1. A state of the art review of the current market leaders
2. A strategy document for our organisation
3. A roadmap for implementation of recommendations

4. Industry 4.0 warehouse implementation
etc.

Methods and tools

Please include here info about tools/methods (if any) are needed/must be used for the project (matlab, python, statistical process control, business canvas,…). This is important to understand if the student has the proper background to reach the objectives.

START Date of the Thesis Project

The thesis could start between January and April 2024, depending from the university calendar. Please enter a proposed starting date. Exact date will be agreed with the student.

END Date of the Thesis Project

Please enter a proposed date, to understand the timeframe of the project. Exact date will be agreed with the student.

Number of students

Please enter how many student you expect to work at this thesis project. We don't recommend more than 3 students per thesis project

Student financial support

Please enter here if you want to provide a salary to the student during the thesis project. Students don't have any monthly allowance, so we would recommend to financially support the students, if possible.

Accommodation support

EITM Master students could come from abroad, so it is possible they need to find an accommodation to work on the project thesis. Please include here info how you can eventually support the student to find an accommodation prior of the project official start.

Travel requirements and support

Besides any sponsorship details please include here info about any travel requirements during the project and what kind of support is provided to the student to cover the costs. Please note this not includes travel costs the student spend to reach your company premises at the beginning of the project and to go back home at the end of the project.

Other requirement and restrictions

Please include into this section any requirement from your company for the student and university in addition to what included above (for instance special NDAs, one to one contract with students, trilateral agreement with universties, etc.). At the same time, please, include here also any kind of restriction you have in hosting the students, not already listed above (i.e. timeframe, restrictions in collaboration with specific nationalities due to country or company rules, etc.)

Thesis details (optional)

If you have any document with a detailed description of the thesis topic, please upload it

ANNEX 2: Submission Instructions in Submission system

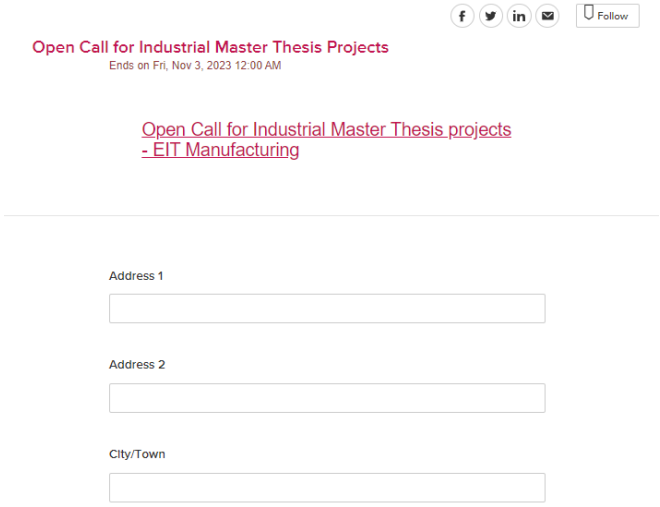
Proposals are submitted through the submission system

The SUBMISSION LINK is:

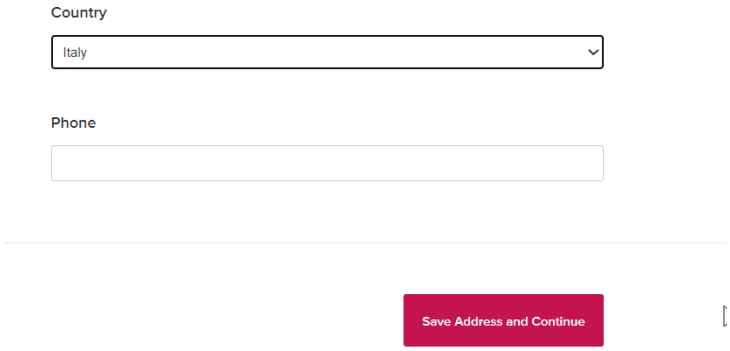
https://eitmanufacturing.submittable.com/submit/269902/open-call-for-industrial-master-thesis-projects

In order to submit the proposal you must have an account into Submittable.
If you don't have the account, the portal will allow to create one.

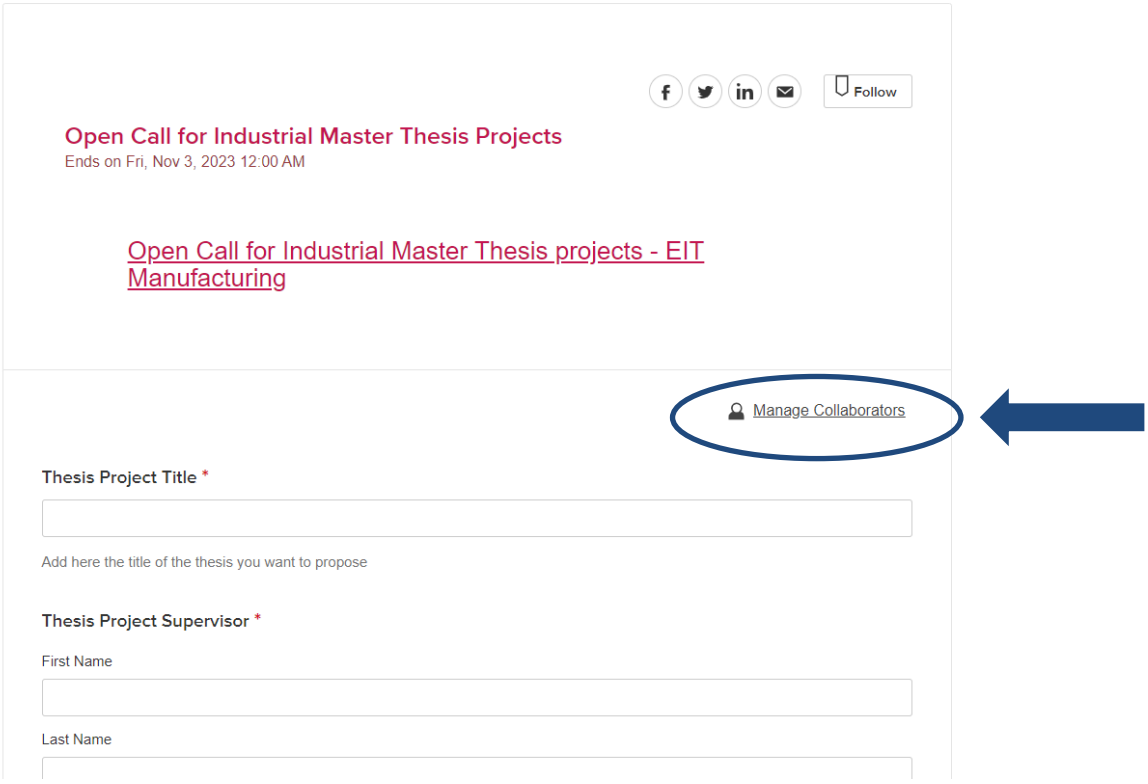
Once logged in, you will be requested to enter your address info:



Once done, click Save Address and Continue. See screenshot below.

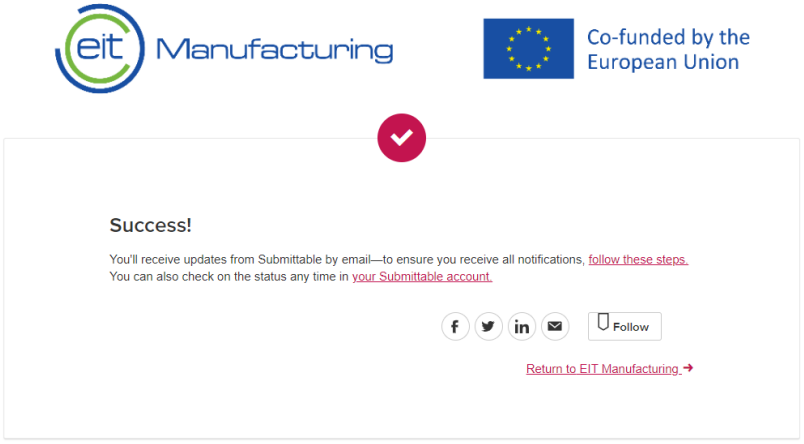


The proposal template will open. You can now fill all the mandatory fields. Please note you can allow collaborators to work on the proposal, using tab: “Manage Collaborators”.



You can save the proposal in draft, you don’t have all the details at once, but remember to click SUBMIT to officially submit your Master Thesis project proposal.

You will receive a notification about your submission.



ANNEX 3: University combinations

For cohort 2022-24, the following entry exit combinations are active per programme.

- MSc "People and Robots for sustainable work" programme:

ENTRY	EXIT
Mondragon – 2022/23 Máster Universitario en Robótica y Sistemas de Control.	TU Wien – 2023/24 Diplomingenieur/Master of Science in Robotics
SUPSI – 2022/23 Master of Science (MS) in Engineering	TU Wien – 2023/24 Diplomingenieur/Master of Science in Robotics

- MSc "Additive Manufacturing for Full Flexibility" programme:

ENTRY	EXIT
UCD – 2022/23 Master of Engineering (ME) in Manufacturing Engineering	Aalto – 2023/24 Diplomi-insinööri, Diplomingenjör, Master of Science (Technology)
Aalto – 2022/23 Diplomi-insinööri, Diplomingenjör, Master of Science (Technology)	TU Wien – 2023/24 Diplomingenieur/ Master of Science
POLIMI – 2022/23 Laurea Magistrale degree (equivalent to Master of Science), Mechanical Engineering	TU Wien – 2023/24 Diplomingenieur/ Master of Science
UCD – 2022/23 Master of Engineering (ME) in Manufacturing	SUPSI – 2023/24 Master of Science (MS) in Engineering

Engineering	

- MSc “Zero Defect Manufacturing for a Circular Economy” programme:

ENTRY	EXIT
Aalto – 2022/23 Diplomi-insinööri, Diplomingenjör, Master of Science (Technology)	Grenoble INP – 2023/24 Master of Industrial Engineering
UCD – 2022/23 Master of Engineering Science (Manufacturing), Manufacturing Engineer (ME)	Aalto – 2023/24 Diplomi-insinööri, Diplomingenjör, Master of Science (Technology)
Grenoble INP – 2022/23 Master of Industrial Engineering	Aalto – 2023/24 Diplomi-insinööri, Diplomingenjör, Master of Science (Technology)
POLIMI – 2022/23 Laurea Magistrale degree (equivalent to Master of Science), Mechanical Engineering	Grenoble INP – 2023/24 Master of Industrial Engineering

- MSc “Platforms for Digitalized Value Network” programme:

ENTRY	EXIT
UCD 2022/23 Master of Engineering (ME) in Manufacturing Engineering	ECN 2023/24 Master of Science in Industrial Engineering, Smart and Connected Enterprise
POLIMI 2022/23 Master of Science in Management Engineering	ECN 2023/24 Master of Science in Industrial Engineering, Smart and Connected Enterprise
POLIMI 2022/23 Master of Science in Management Engineering	SUPSI 2023/24 Master of Science (MS) in Engineering

- MSc “Data Science and AI for Competitive Manufacturing” programme:

ENTRY	EXIT
ECN 2022/23 Master of Science in Industrial Engineering, Smart and Connected Enterprise	UNITN 2023/24 Master of Science in Computer Science
SUPSI 2023/24 Master of Science (MS) in Engineering	UNITN 2023/24 Master of Science in Computer Science