









# The EIT-Labelled Master Programmes in Manufacturing

Be the next manufacturing

Innovator & Entrepreneur

# TABLE OF CONTENTS

MSc in Zero Defect Manufacturing for a Circular Economy Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing	Introduction	3
Do you have a manufacturing business idea?  EIT Manufacturing Alumni  Partner Universities  Our Master Programmes  MSc in Additive Manufacturing for Full Flexibility  Requirements Career prospects  MSc in Zero Defect Manufacturing for a Circular Economy  Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems  Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing  Requirements Career prospects  MSc in Data Science and Al for a Competitive Manufacturing  Requirements  Requirements  Requirements  Career prospects	What do we offer to our students?	4
EIT Manufacturing Alumni  Partner Universities  Our Master Programmes  MSc in Additive Manufacturing for Full Flexibility  Requirements Career prospects  MSc in Zero Defect Manufacturing for a Circular Economy  Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems  Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing  Requirements Career prospects  MSc in Joata Science and Al for a Competitive Manufacturing  Requirements  Carequirements  Carequirements  Career prospects	What to expect?	5
Partner Universities  Our Master Programmes  MSc in Additive Manufacturing for Full Flexibility  Requirements Career prospects  MSc in Zero Defect Manufacturing for a Circular Economy  Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems  Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing Requirements Career prospects  MSc in Data Science and Al for a Competitive Manufacturing  Requirements  Carequirements  Carequirements  Carequirements  Career prospects	Do you have a manufacturing business idea?	6
Our Master Programmes  MSc in Additive Manufacturing for Full Flexibility  Requirements Career prospects  MSc in Zero Defect Manufacturing for a Circular Economy  Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems  Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing  Requirements  Requirements  Requirements  Career prospects	EIT Manufacturing Alumni	7
MSc in Additive Manufacturing for Full Flexibility Requirements Career prospects  MSc in Zero Defect Manufacturing for a Circular Economy Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing Requirements Requirements Requirements Requirements Requirements Requirements Requirements Requirements	Partner Universities	8
Requirements Career prospects  MSc in Zero Defect Manufacturing for a Circular Economy Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing  Requirements Requirements Requirements Requirements Requirements Requirements Requirements Requirements	Our Master Programmes	9
MSc in Zero Defect Manufacturing for a Circular Economy Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing  Requirements  Requirements	MSc in Additive Manufacturing for Full Flexibility	
Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing  Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing  Requirements  Requirements  Requirements	·	10 - 12
Requirements Career prospects  MSc in Digital Manufacturing for Innovative Ecosystems  Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing  Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing  22 - 2 Requirements	MSc in Zero Defect Manufacturing for a Circular Economy	
Requirements Career prospects  MSc in Human-Robot Interaction for Sustainable Manufacturing  Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing  Requirements  Requirements		13 - 15
MSc in Human-Robot Interaction for Sustainable Manufacturing  Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing  Requirements  22 - 2	MSc in Digital Manufacturing for Innovative Ecosystems	
Requirements Career prospects  MSc in Data Science and AI for a Competitive Manufacturing  Requirements	·	16 - 18
Requirements Career prospects  MSc in Data Science and Al for a Competitive Manufacturing  22 - 2 Requirements		19 - 21
<b>Competitive Manufacturing</b> 22 - 2 Requirements	·	
22 - 2 Requirements		
	Requirements	22 - 24

# Introduction

THE MANUFACTURING INDUSTRY IS A GLOBAL BASE FOR PROSPERITY AND KEY TO EUROPE'S ECONOMIC, SOCIAL AND ENVIRONMENTAL SUSTAINABILITY. THE SECTOR IS A MAIN DRIVER OF INDUSTRIAL INNOVATION, JOB CREATION AND GROWTH.

**EIT Manufacturing** is a public-private partnership, co-funded by the European Union and established in 2019. EIT Manufacturing is one of the nine Knowledge and Innovation Communities (KIC) **supported by the European Institute of Innovation and Technology (EIT)**.

Our purpose is to improve people's lives through sustainable manufacturing.

**Our mission** is to connect manufacturing players by promoting talent and entrepreneurship to accelerate sustainable innovation in Europe.

EIT Manufacturing brings together a growing network of top-tier industrial partners, leading academic and research institutions from across the region and innovative startups, scaleups and SMEs.

A key way of transforming knowledge into value is by **overcoming the fragmented nature** of many innovation networks. In order to ensure that innovations reach the market, **industry has the right talent** and entrepreneurs can thrive; EIT Manufacturing connects and integrates the areas of **education**, **innovation and business creation**.

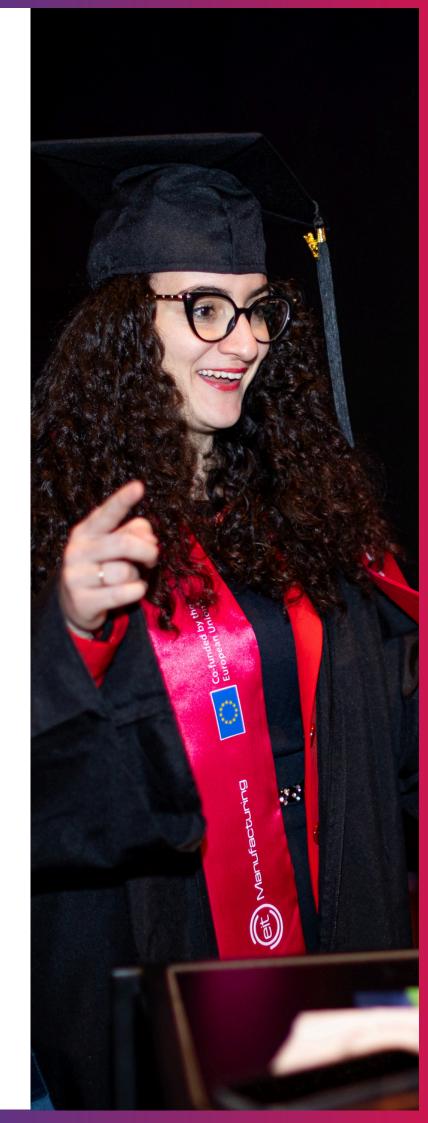
Ultimately, EIT Manufacturing strives to accelerate **faster innovation** with the potential to improve everyday life globally, help meet Europe's ambitious **climate goal**s, and ensure that its workforce is ready for **tomorrow's challenges**.

# What do we offer to our students?

The EIT Manufacturing Master School provides students with a distinctive learning experience in a dynamic setting, emphasizing real-world challenges. Endorsed by the EIT (European Institute of Innovation and Technology), an EU body, the EIT Label is a prestigious certification awarded exclusively to top-tier master's and doctoral programmes.

As a student of an EIT-Labelled programme at the EIT Manufacturing Master School, you will join the largest European manufacturing network, comprising over 170 partner organisations, including higher education professionals, researchers, and industry experts from more than 20 European countries. As an EIT Label student, you will become part of this community, playing a key role in advancing EIT Manufacturing's mission to develop innovative and sustainable manufacturing solutions.

EIT Manufacturing strives to equip a new generation of innovators in Europe with the entrepreneurial mindset needed to design and implement material solutions. You will have the opportunity to collaborate internationally and develop sustainable solutions to critical economic, environmental, and societal challenges. Even after graduation, you will remain connected through EIT Manufacturing and the EIT Alumni network.





# Do you have a manufacturing business idea?

The **EIT Manufacturing Master School** provides extensive support to students with innovative business ideas, helping them transform their concepts into viable ventures. This support includes:

### Inno2Market

→ Our Inno2Market team is dedicated to accelerating the journey of innovative manufacturing solutions from conception to market with a primary focus on bridging the gap between research and commercialisation.

# **EIT Jumpstarter**

→ One of Europe's top <u>pre-accelerator</u> <u>programmes</u> for innovators in the healthcare, agri-food, raw materials, energy, urban mobility, manufacturing industries and the New European Bauhaus. Through the programme you will receive support from the best-inclass mentors and have a chance to win up to €10 000.

# EIT Manufacturing Strada Women

→ Funded by EIT Manufacturing, Strada Women provides women in manufacturing environments with the necessary skills to start and grow their own business or develop their professional careers, whether in academia or industry, rising to management and leadership positions.

# **BoostUp Competitions**

→ EIT Manufacturing organises several BoostUp competitions thoughout the year. For example, <u>BoostUp IBERIA!</u> 2024 was one of the competition series organised to identify and support promising startups based in Portugual and Spain focused on helping companies achieve net zero targets with prize money of €7 000 (1st), €5 000 (2nd), €3 000 (3rd)

# EIT Manufacturing Alumni

The EIT Manufacturing Alumni Community, The Future Club, brings together current and past participants and graduates of EIT Manufacturing's activities with a vision to foster a sense of belonging, connectivity, and collaboration that drives the transformation of the industry towards digital and climate neutral goals.

### <u>Join Us!</u>

### What's in it for you?

- Networking Connect with industry experts and peers.
- Career Support Access training, mentorship, and job opportunities.
- Entrepreneurial Resources Get funding, incubator access, and business guidance.
- Exclusive Events Join innovation-driven conferences and competitions.
- Lifelong Learning Benefit from webinars, courses, and industry insights.

### Also, checkout our bigger alumni network, i.e. **EIT Alumni!**



# Partner universities











University of Applied Sciences and Arts of Southern Switzerland





# **Programmes**

EIT Manufacturing Master School along with seven partner universities offers five Master's programmes that hold the EIT Label. Graduates from all EIT- Labelled programmes are awarded two degrees - one from their entry university and other from their exit university. Also an EIT Label Certificate confirming graduation from an EIT-Labelled programme.







MSc in Additive Manufacturing for Full Flexibility

Know more

MSc in Zero Defect Manufacturing for a Circular Economy

Know more

MSc in Digital

Manufacturing for
Innovative Ecosystems

Know more



MSc in Human-Robot Interaction for Sustainable Manufacturing

Know more



MSc in Data
Science and Al
for a Competitive
Manufacturing

Know more

# MSc in Additive Manufacturing for Full Flexibility

This programme encompasses a diverse range of subjects that collectively form a comprehensive understanding of modern manufacturing. It integrates the study of manufacturing science, delving into the intricate physics behind additive manufacturing processes. Additionally, it covers mechanical design, emphasizing the utilization of design freedoms to craft highly tailored products and services.

Furthermore, the programme explores production management, focusing on the adaptability needed for efficient small-scale production runs. In essence, this curriculum equips students with a holistic knowledge base, spanning from the fundamentals of manufacturing science to the intricacies of product customization and production optimization.

# Programme structure:

In the initial year of their programme, students are obligated to complete 40-50 ECTS credits in technical courses and an additional 10-20 ECTS credits in courses related to Innovation and Entrepreneurship, summing up to a total of 60 ECTS credits.

In the subsequent year, the curriculum comprises 10-20 ECTS credits in technical courses, another 10-20 ECTS credits in Innovation and Entrepreneurship courses, and a substantial 30 ECTS credits devoted to their Master's thesis, resulting in a total of 60 ECTS credits.

## Participating universities





University of Applied Sciences and Arts

**SUPSI** 



Double Diploma	Graduates of this programme will be awarded double Master of Science degree, each from their entry and exit university Graduates will also be awarded the EIT Label Certificate.
ECTS	120 ECTS, 24 months
Language of Instruction	English
Starts in	September
Requirements	The programme is aimed at candidates who have a bachelor's degree with 180 ECTS in B.Sc. degree in Mechanical Engineering, Electrical Engineering, Computer Engineering, Business Engineering, Management Engineering, Computer Science, Information Technology, Industrial Engineering or equivalent degrees. Candidates must also demonstrate English language proficiency.
Tuition fees	Please check <u>here</u>
Application Period	Check <u>here</u> . We recommend Non - EU applicants to apply early for Visa purpose.
Scholarships	Scholarships may cover mobility grants, subsistence support, and fee waivers. They are awarded based on academic performance, gender, RIS country citizenship, and study track.  All students are eligible for scholarships and they don't need to present any specific request for it. The EIT Manufacturing Master School will rank the students and offer the scholarships at the time of the student admission.



"The various events in the programme introduces us to a big network of manufacturing companies and research centres, allowing us to build connections with professionals working on leading technologies that are shaping the future of manufacturing industry."

### — Juan Esteban ARJONA

# PARTICIPATING UNIVERSITIES

- Aalto University (Finland)
- TU Wien (Austria)
- University College Dublin (Ireland)
- University of Applied Sciences and Arts of Southern Switzerland - SUPSI (Switzerland)





# FOR MORE INFORMATION

Write to us at masterschool@eitmanufacturing.eu





Graduates of the **Master in Additive Manufacturing for Full Flexibility** programme are equipped to excel in various roles within the manufacturing sector, focusing on quality assurance and sustainable practices.

### Potential career paths include:

- Process Optimisation: Enhancing additive manufacturing processes to improve efficiency, quality, and costeffectiveness.
- Materials and Product Design: Developing innovative designs that leverage the unique capabilities of additive
  manufacturing, including material selection and structural optimization.
- **Production and Plant Management:** Overseeing manufacturing operations, ensuring seamless integration of additive technologies into production lines, and managing workflow to meet production targets.
- **Project Management:** Leading projects that implement additive manufacturing solutions, coordinating crossfunctional teams, and ensuring timely delivery of objectives.

The competencies gained are applicable across various sectors, including aerospace, automotive, healthcare, energy, and consumer goods. **Graduates are also equipped with the entrepreneurial skills** necessary to establish their own ventures or excel in sales and marketing roles within the additive manufacturing industry. Additionally, the programme provides a good foundation for those interested in pursuing doctoral studies, **leading to careers in engineering research or academia**.



# MSc in Zero Defect Manufacturing for a Circular Economy

This programme encompasses an exploration of manufacturing science, which delves into the underlying physics of equipment and processes. This aspect of the curriculum provides students with a deep knowledge of the fundamental principles that govern the machinery and techniques used in manufacturing. The programme includes a comprehensive study of data analysis. Here, students learn not only how to gather and analyze data but also the methodology for effectively utilizing this acquired process data to enhance and maintain process quality.

In addition, the programme emphasizes process management, equipping students with the skills and knowledge required to oversee and optimize manufacturing processes. This includes an exploration of the flexibility needed for handling smaller production batches, a crucial aspect in today's diverse manufacturing landscape.

# Programme structure:

In the initial year of their programme, students are obligated to complete 40-50 ECTS credits in technical courses and an additional 10-20 ECTS credits in courses related to Innovation and Entrepreneurship, summing up to a total of 60 ECTS credits.

In the subsequent year, the curriculum comprises 10-20 ECTS credits in technical courses, another 10-20 ECTS credits in Innovation and Entrepreneurship courses, and a substantial 30 ECTS credits devoted to their Master's thesis, resulting in a total of 60 ECTS credits.

## Participating universities









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"This programme equipped me with diverse technical skills like analysis, coding, and machine design, along with valuable soft skills such as an entrepreneurial mindset and design thinking. These skills are instrumental as I aspire to launch my own business, and the hands-on experiences have deepened my interest in this field while providing more clarity."

### — Shunyang NING

# PARTICIPATING UNIVERSITIES

- Aalto University (Finland)
- Grenoble INP (France)
- University College Dublin (Ireland)
- University of Trento (Italy)

# Aalto-yliopisto Aalto-universitetet







# FOR MORE INFORMATION

Write to us at masterschool@eitmanufacturing.eu





Graduates of the **Master in Zero Defect Manufacturing for a Circular Economy** programme are well-prepared for a variety of professional roles in the additive manufacturing sector and related industries.

### Potential career paths include:

- Quality Assurance Engineer: Implementing zero-defect strategies to enhance product reliability and minimize waste.
- Process Improvement Specialist: Analyzing and refining manufacturing processes to achieve optimal efficiency and sustainability.
- **Sustainability Manager:** Developing and overseeing initiatives that promote circular economy principles within manufacturing operations.
- **Data Analyst in Manufacturing:** Utilizing data analytics to monitor production processes and ensure adherence to quality standards.
- **Production Manager:** Managing manufacturing operations with a focus on defect prevention and resource efficiency.

The competencies gained are applicable across various sectors, including aerospace, automotive, electronics, and consumer goods. **Graduates are also equipped with the entrepreneurial skills** necessary to establish their own ventures or excel in sales and marketing roles within sustainable manufacturing. Additionally, the programme provides a good foundation for those interested in pursuing doctoral studies, **leading to careers in engineering research or academia**.



# MSc in Digital Manufacturing for Innovative Ecosystems

Throughout the programme, students are exposed to a wide range of new skills in these domains. Key areas covered in this programme encompass modeling and simulation, virtual prototyping, system engineering, industrial processes, and operations. The programme's relevance extends to a variety of fields, with a particular focus on areas such as modeling and simulation.

This allows students to create virtual representations of manufacturing processes; virtual prototyping enabling testing of product designs in a digital environment. System engineering emphasizes the integration and optimization of complex systems; and industrial processes and operations involving the management and improvement of manufacturing processes. The programme's applications are diverse, ranging from the management of cyberphysical systems (CPS) to the effective handling of information systems and digital monitoring, all of which are crucial aspects of modern manufacturing in the era of digital transformation.

### **Participating universities**

University of Applied Sciences and Arts

**SUPSI** 





# Programme structure:

In the initial year of their programme, students are obligated to complete 40-50 ECTS credits in technical courses and an additional 10-20 ECTS credits in courses related to Innovation and Entrepreneurship, summing up to a total of 60 ECTS credits.

In the subsequent year, the curriculum comprises 10-20 ECTS credits in technical courses, another 10-20 ECTS credits in Innovation and Entrepreneurship courses, and a substantial 30 ECTS credits devoted to their Master's thesis, resulting in a total of 60 ECTS credits.

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"This programme significantly improved my communication and teamwork abilities through frequent group projects, where I learned to effectively communicate and listen to peers from diverse backgrounds. On the technical side, it enhanced my skills in mechanical design, lean manufacturing, and I acquired proficiency in Python and coding languages during my thesis project. It provided me with a comprehensive set of competencies and skills"

### — Giada MUSSIDA

# PARTICIPATING UNIVERSITIES

- Grenoble INP (France)
- University College Dublin (Ireland)
- <u>University of Applied Sciences and Arts of Southern Switzerland</u> SUPSI (Switzerland)

# FOR MORE INFORMATION

Write to us at masterschool@eitmanufacturing.eu

University of Applied Sciences and Arts of Southern Switzerland







Graduates of the **Master in Digital Manufacturing for Innovative Ecosystems** programme are well-prepared for a variety of professional roles in the additive manufacturing sector and related industries.

### Potential career paths include:

- **Digital Manufacturing Engineer:** Implementing and managing digital tools and platforms to optimize manufacturing processes.
- **Systems Integration Specialist:** Combining various digital systems and technologies to create cohesive manufacturing ecosystems.
- Innovation Manager: Leading initiatives that introduce cutting-edge digital solutions to enhance manufacturing efficiency and adaptability.
- **Data Analyst in Manufacturing:** Utilizing data analytics to monitor and improve production processes, ensuring quality and efficiency.
- **Cyber-Physical Systems Architect:** Designing and overseeing the implementation of integrated physical processes and digital systems within manufacturing environments..

The competencies gained are applicable across various sectors, including aerospace, automotive, electronics, and consumer goods. **Graduates are also equipped with the entrepreneurial skills** necessary to establish their own ventures within digital manufacturing and digital transformation. Additionally, the programme provides a good foundation for those interested in pursuing doctoral studies, **leading to careers in engineering research or academia**.



# MSc in Human-Robot Interaction for Sustainable Manufacturing

The programme is designed to address contemporary industrial engineering challenges and steer them towards a more sustainable, adaptable, and efficient manufacturing landscape. It achieves this by seamlessly integrating emerging technological trends in automation systems and robotics with the evolving needs of the workforce, both present and future.

One of the programme's key focuses is on the application of artificial intelligence in the context of self-learning robots operating within collaborative environments. This technological innovation empowers the development of novel products and solutions that are not only in tune with the demands of the modern industrial sector but also forward-looking in terms of automation and efficiency.

The impact of this programme extends across the entire product development cycle, from the initial idea conception, through the design phase, rapid prototyping, rigorous testing, and finally, scaling up to mass production within industrial settings.

# Programme structure:

In the initial year of their programme, students are obligated to complete 40-50 ECTS credits in technical courses and an additional 10-20 ECTS credits in courses related to Innovation and Entrepreneurship, summing up to a total of 60 ECTS credits.

In the subsequent year, the curriculum comprises 10-20 ECTS credits in technical courses, another 10-20 ECTS credits in Innovation and Entrepreneurship courses, and a substantial 30 ECTS credits devoted to their Master's thesis, resulting in a total of 60 ECTS credits.

### Participating universities

University of Applied Sciences and Arts of Southern Switzerland

SUPSI







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"The biggest factors that influenced my decision to take the EIT Manufacturing Master School programme were one, the exciting opportunity to be able to experience 2 European countries and their 2 different study styles and two, EIT Manufacturing places a lot of importance on gender inclusion in Manufacturing which is a subject I am very passionate about."

— Maleeha MAQBOOL

# PARTICIPATING UNIVERSITIES

- TU Wien (Austria)
- University of Tartu (Estonia)
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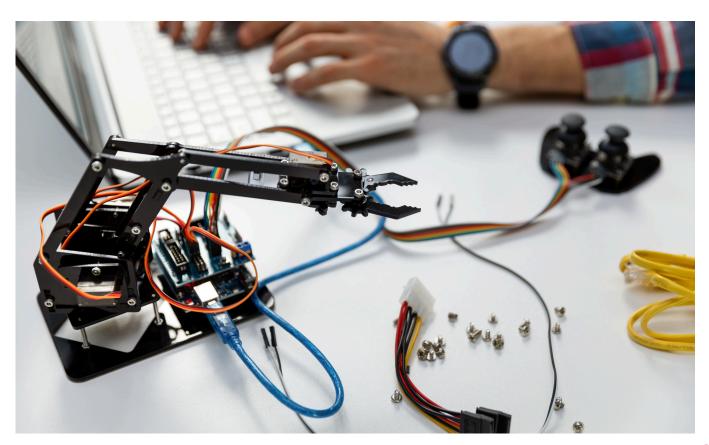


Graduates of the **Master in Human-Robot Interaction for Sustainable Manufacturing** programme are well-prepared for a variety of professional roles in the additive manufacturing sector and related industries.

### Potential career paths include:

- **Robotics Engineer:** Designing, developing, and implementing robotic systems tailored for sustainable manufacturing processes.
- Automation Specialist: Enhancing manufacturing efficiency through the integration of advanced automation technologies.
- **Human-Robot Interaction Designer:** Creating intuitive interfaces and collaborative environments that facilitate seamless interaction between humans and robots.
- **Sustainability Consultant:** Advising organisations on implementing eco-friendly manufacturing practices by leveraging robotics and automation.
- Innovation Manager: Leading projects that introduce cutting-edge robotic solutions to improve manufacturing sustainability and adaptability.

The competencies gained are applicable across various sectors, including aerospace, automotive, electronics, and consumer goods. **Graduates are also equipped with the entrepreneurial skills** necessary to establish their own ventures within robotics and manufacturing and digital transformation. Additionally, the programme provides a good foundation for those interested in pursuing doctoral studies, **leading to careers in engineering research or academia**.



# MSc in Data Science and Al for a Competitive Manufacturing

The programme combines manufacturing science with cutting-edge ICT, equipping students with a deep understanding of technology-driven manufacturing. Key components include:

- **Manufacturing Science:** Fundamentals of processes and equipment physics.
- **ICT Integration:** Adoption of advanced digital solutions for manufacturing.
- Modeling & Simulation: Virtual testing and optimization of production.
- **Virtual Prototyping:** Digital product design for faster, cost-effective development.
- **Service & Systems Engineering:** Designing efficient and adaptable manufacturing systems.
- **Machine Learning:** Developing intelligent systems for automation and predictive maintenance.
- **Data Mining:** Extracting insights to enhance manufacturing efficiency and quality.

# Programme structure:

In the initial year of their programme, students are obligated to complete 40-50 ECTS credits in technical courses and an additional 10-20 ECTS credits in courses related to Innovation and Entrepreneurship, summing up to a total of 60 ECTS credits.

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"In this programme, I look forward to gaining insights into the bottlenecks of the manufacturing industry, recognizing that opportunities and challenges are two sides of the same coin. The practical aspect of learning within the programme, where I engage with industry experts and partners, is particularly appealing to me."

### — Derin GURMAN

### PARTICIPATING UNIVERSITIES

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- University of Trento (Italy)
- University of Applied Sciences and Arts of Southern Switzerland - SUPSI (Switzerland)







**SUPSI** 

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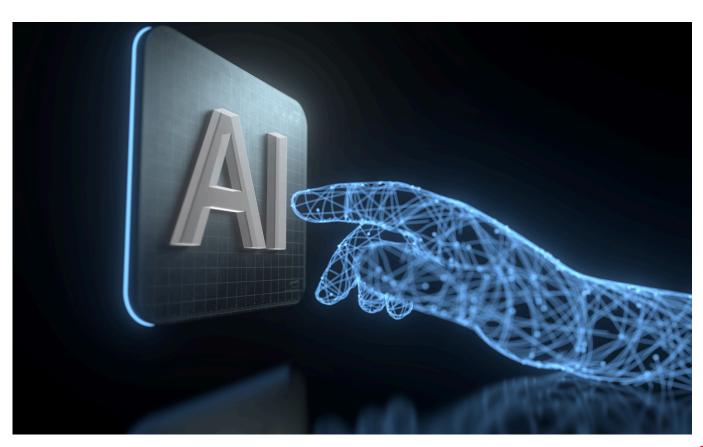


Graduates of the **Master in Data Science and AI for a Competitive Manufacturing** programme are well-prepared for a variety of professional roles in the additive manufacturing sector and related industries.

### Potential career paths include:

- Data Scientist in Manufacturing: Analyzing and optimizing manufacturing processes, quality control, and supply chain management using data science and Al techniques.
- **Digital Manufacturing Specialist:** Transforming traditional manufacturing processes into smart, data-driven systems that are more efficient and cost-effective.
- **Industrial Automation Engineer:** Designing and implementing automation systems that incorporate AI for predictive maintenance, real-time monitoring, and quality assurance.
- **Product Development Manager:** Managing the development of new products and services that incorporate data science and AI, from ideation to commercialization.
- **Strategic Consultant:** Advising companies on leveraging data science and AI to enhance manufacturing processes, improve efficiency, and maintain competitiveness.

The competencies gained are applicable across various sectors, including aerospace, automotive, electronics, and consumer goods. **Graduates are also equipped with the entrepreneurial skills** necessary to establish their own ventures within various manufacturing sectors. Additionally, the programme provides a good foundation for those interested in pursuing doctoral studies, **leading to careers in engineering research or academia**.



Labelled by:



A body of the European Union





Co-funded by the European Union





**EIT Manufacturing ASBL** 

Paris-Saclay, Nano-INNOV, 2 Boulevard Thomas Gobert, 91120 Palaiseau, France



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EIT Manufacturing Master & Doctoral School



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