

# Smart and Sustainable Industry

FA6



# Contacts



**Prof. Marco Tarabini**

[marco.tarabini@polimi.it](mailto:marco.tarabini@polimi.it)



## Track description

The most pressing challenges of manufacturing industries are related to the adoption of sustainable practices and to the reduction of waste and greenhouse gas emissions. Smart and Sustainable Industry track prepares highly qualified mechanical engineers for developing solutions in the fields of industry 4.0, efficient manufacturing processes and sustainable components' production. The courses have a strong focus on hands-on learning and experimentation, to improve the students' practical knowledge. Team working on topics and projects involving the local industries will play an important role in the students' learning process.





# Skills

Students will learn how to:

- innovate the mass production of components
- optimize the industrial energy systems
- select sustainable materials for engineering applications
- design automation & robotic systems for sustainable production
- use data analysis and artificial intelligence





# FA6: Core Courses

Course Title	YEAR	SEM	ECTS	ECTS GROUP
Energy Systems for Sustainable Engineering	1	1	5	5
Data Analysis for Mechanical Systems B	1	1	5	5
Control and Actuating Devices for Mechanical Systems	1	1	10	10
Machine Dynamics	1	1	5	5
Machine Design and Construction	1	2	10	10
Materials for Sustainable Industry	1	1	5	5

# FA6: Track Specific Courses

Course Title	YEAR	SEM	ECTS	ECTS GROUP
Sustainable Manufacturing Processes	1	1	10	10
Design and Management of Production Systems	1	2	10	10
Vision Based 3D Measurements	2	1	5	35
Collaborative Robotics	2	1	5	
Robotics and Mechatronics	2	1	5	
Lightweight Design of Mechanical Systems	2	1	5	
Computer Aided Design and Mechanical Prototyping	2	2	5	
Finite Element Method based Optimization of Manufacturing Processes	2	1	5	
Logistics Management	2	1	5	
Laboratory of Materials and Damage Analysis	2	1	5	
Technologies for Artificial Intelligence	2	1	5	

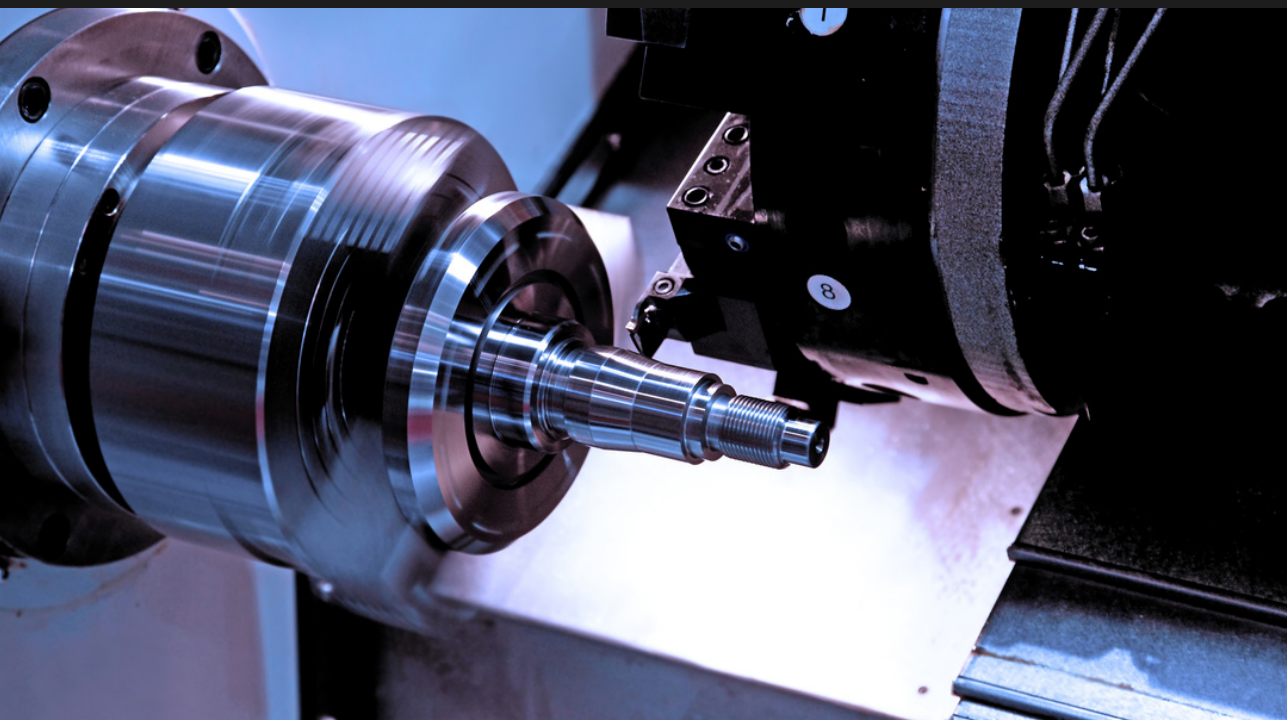


# FA6: Lab Experiences

**Simulation and  
metamodeling of  
metal-forming  
operations**

**Study of advanced  
materials and of  
the techniques to  
analyse/prevent  
the service  
damages**

**Design and manage  
production systems  
in the context of  
digitalization and  
sustainability  
megatrends**





# FA6: Lab Experiences

Design and test of solutions for rehabilitation/assistive/ resistive device

Anomaly-detection as-a-service: identifying vibrations in production machinery

Digital Twins and Prototypes of Real Products

Design of a factory smart warehouse based on autonomous mobile robots

