

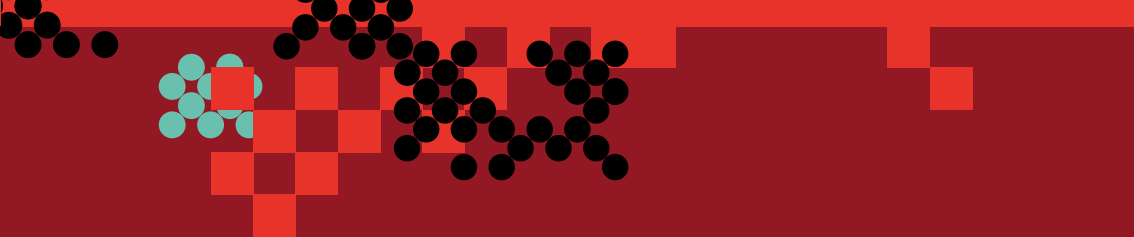


UNIVERSITÀ  
DEGLI STUDI  
FIRENZE

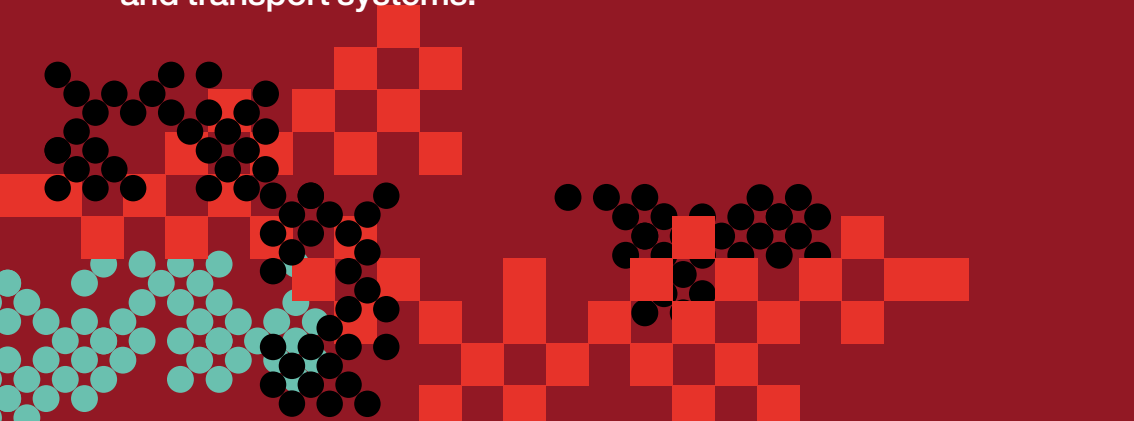
Scuola di  
Ingegneria

master  
of science

# mechanical engineering for sustainability



The Master of Science in Mechanical Engineering for Sustainability MES (2-year program) aims to train Mechanical Engineers with a specialized background in different disciplines related to sustainability to support the societal and industrial transition to more sustainable living, productive and organizational paradigms. The MSc program offers three different curricula in the areas of:

- **Design:** focusing on product development with a structured innovation approach, comprehensive life cycle analysis and design, and production with the most sustainable technologies.
  - **Energy technologies:** understanding the generation and management of renewable energies and storage technologies, as well as the design methods and tools for system components and balance of plant.
  - **Mobility:** developing the next generation of electric vehicles, while digging into sustainable mobility, automated vehicles and transport systems.
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## admission requirements

For admission to the Master of Science in Mechanical Engineering for Sustainability a student must hold a Bachelor 's Degree in one of the following Italian Bachelor's Classes (or an equivalent degree awarded abroad):

- Civil and Environmental Engineering (L-7 Class)
- Information Engineering (L-8 Class)
- Industrial Engineering (L-9 Class)

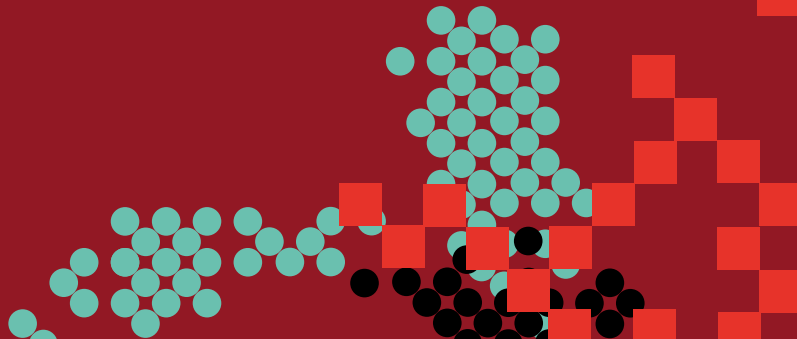
For the verification of personal preparation requirements the Commission will call you up for an interview. The interview will cover subjects related to mechanical design, applied mechanics, industrial design, machines, and energy systems.

Applicants, who have obtained the degree required for access to the MSc in an institution located in the countries of the European Union (or in Norway, Iceland, Liechtenstein, Switzerland, Republic of San Marino, Vatican City, Great Britain -indicated as "affiliated

countries"), may be exempted from the interview if an adequate number of credits in teachings related to the above subjects is reported in their curriculum of studies.

Applicants, who have obtained the degree required for access to the MSc in an institution located outside of the European Union or the affiliated countries will be evaluated on the basis of the mark reported on the said degree or, in the absence of the indication of the mark, on the basis of the weighted average of the examination marks, which must be above a threshold value. These values are published at [www.ing-mes.unifi.it/p146.html](http://www.ing-mes.unifi.it/p146.html)

Applicants must also hold at least a B2 certification for English language in reading and listening awarded no later than 5 years prior to the enrollment date by the Language Centre of the University of Florence or by other internationally recognized organizations.



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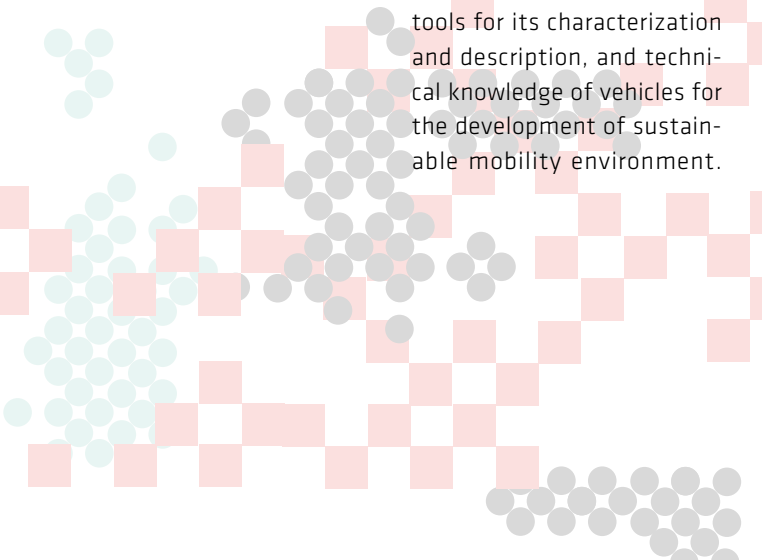
The traditional background of a mechanical engineer is enriched with competences on legislation and methods in the field of sustainability and circular economy. The program implements modern teaching approaches to steepen the learning curve and to facilitate the knowledge application to industry relevant case studies. Specific attention is given to project works, developed in teams, and assigned in cooperation with industrial partners.





# what you learn

In the Master Degree of Mechanical Engineering for Sustainability, you will learn:

- the multidisciplinary normative, methodological, technological and instrumental context related to the ecological transition of systems, services and products;
  - methodologies, technologies and tools for the sustainable development of a product, process or service;
  - advanced design tools for modelling and simulation of components or systems;
  - tools for statistical analysis of data and their processing;
  - methods and tools for teamwork;
- (optionally and alternatively, based on the selected curriculum)
    - systems and methods for virtual representation, modelling and 2D and 3D geometric reconstruction;
    - the main renewable energy sources and energy storage systems, as well as the criteria for their integration with conventional production systems;
    - thermodynamic, thermo-fluid-dynamic, thermo-chemical and electrical phenomena underlying the main energy conversion systems;
    - the mobility system, its constitutive elements and the tools for its characterization and description, and technical knowledge of vehicles for the development of sustainable mobility environment.
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# what you will do

The MSc provides a variety of careers in the mechanical engineering field, with specific focus on the fast-growing market of sustainability, where qualified engineers are requested. Moreover, it is an open door on further studies at PhD level and a future in research.

Career opportunities are global and rapidly increasing because of the widespread environmental concerns and the massive investments of the European Community in energy transition and environmental protection through the Next Generation EU program.



# traineeship and final examination

final examination

In the second year of the MSc, a traineeship of 12 ECTS is envisaged, to be carried out in public or private companies, organizations or research centers.

The final examination consists in the defense of a thesis on a subject agreed with two university lecturers/professors and developed with original contributions by the student. If this activity is conducted externally, in companies or organizations (typically in a joint effort with an external traineeship), the university lecturers cooperate with a company expert who will act as a tutor.



## offices and contacts

### **Santa Marta**

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### **Plesso Didattico Morgagni**

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