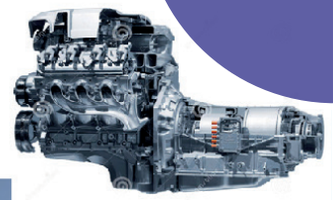
WHY TO ENROLL ?

A unique curriculum of studies

The Master's degree in mechanical engineering for the Environment and the Energy (IMEA) has been designed to educate professionals with studies between the mechanical engineering and energy conversion systems engineering. The target is to offer innovative contents of high qualification with a solid and rigorous methodological approach.
The IMEA graduates have good opportunities of employment (95% of people with a permanent position within three years after the degree, source Almalaurea database 2018), thanks to the possibilities to work in several sectors, as the industrial, the civil, the consultancy and services ones.
The points of strength are: the diversified educational offer (more than 22 courses of specialization on three curricula), the offer for internships/traineeships before the degree and the master thesis (6 months) for all the students at Italian and foreign companies or at national and international research institutes (Erasmus+ programs, bi-lateral agreements among Universities).

Examples of final products: high efficiency and green energy conversion systems and hybrid engines



Links

General Info for International student mobility
www.international.unina.it/welcome-message/

School "Politecnica e delle Scienze di Base"
www.scuolapsb.unina.it

Department of Industrial Engineering
www.dii.unina.it

Masters' studies in Mech Eng for Energy and Environment
meccanica.dii.unina.it

For more info: mail to the course coordinator
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neapōlis

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
SCUOLA POLITECNICA E DELLE SCIENZE DI BASE

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ENGINEERING

MASTER'S DEGREE IN
MECHANICAL ENGINEERING FOR ENERGY AND ENVIRONMENT
IMEA

DIPARTIMENTO DI INGEGNERIA INDUSTRIALE

updated to May 2020

LEARNING OUTCOMES

An engineer graduated from this Master degree course will be able to face design problems typical of the mechanical engineering sector, particularly related to: the design of components and plants for the production and conversion of energy, the design and optimization of powertrain units, the thermo-economic optimization of energetic systems and the environmental impact audit, the analysis of the most innovative options for the energy production from renewable sources or polygeneration systems.
These competences cross different fields of the industrial, civil and services areas, including the consultancy area.
The student can choose among three pre-defined training paths: 1) **Design and management of systems for energy conversion**; 2) **Energy efficiency**; 3) **Internal combustion engines**, or can design his own training path under the guidance of the degree dean.

UNINA racing team supported by students and teachers of the IMEA course

The offer of traineeships covers all the interested students (2017 year data/ 175 traineeships: 50% for the Campania region, 25% in the remaining part of Italy, 21% inside Europe (excluding Italy) and 4% extra Europe).
Great attention is paid to carry-out educational activities to enrich transversal knowledge and skills (CAD drawing, industrial automation, electronics), the placement interviews (meetings with experts) and the acquisition of soft skills (English language, teamwork, lab activities, use of software: Matlab, Amesim, Ansys-Fluent, Comsol).

TRAINING PLAN

FIRST YEAR	**CFU**
Heat transfer	9
Thermodynamics and fluidynamics of Machines	9
a course from list A below*	12
a course chosen from list B below**	9
Path "Design and managament of systems for the energy conversion"	
Internal combustion engines	9
Energetics	9
Path "Energy efficiency"	
Energetics	9
Advanced modeling of thermodynamic systems	9
Path "Engines and propulsion systems"	
Internal Combustion Engines	9
Powertrain systems for the automotive sector	9

SECOND YEAR	
Path "Design and managament of systems for the energy conversion"	
Models and techniques for refrigeration	9
Gas turbines plants	9
Path "Energy efficiency"	
Advanced technologies for the energy conversion	9
Thermofluidynamics measurements	9
Path "Engines and propulsion systems"	
Modeling and optimization of internal combustion engines	9
Hydraulic and air power systems	9
2 courses chosen from list B below**	18
Other educational activities	3
Placement	9
Master thesis	15

List A *

Combustion	12
Electrical systems for the energy sector	12
Economics and management engin. part I	6
Economics and management engin. part II	6

List B **

Path "Design and managament of systems for the energy conversion"
Vapor generators, Applied acoustics, Design of machines, HVAC systems

Path "Energy efficiency"
Experiments and environmental impact of machines, Vapor generators, HVAC systems, Computational thermo-fluidynamics

Path "Engines and propulsion systems"
Experiments and environmental impact of machines, Applied acoustics, Design of machines, Computational thermo-fluidynamics

JOBS AND CAREER OPPORTUNITIES

The Master degree in Mechanical Engineering for the Energy and the Environment aims to train the following professional roles, which can work in several sectors both at national and international level.

- Designer of systems and components for the energy conversion for the industrial and the civil sectors
- Expert for the production and the conversion of energy from traditional and renewable sources
- Responsible for the management of the energy in industrial and civil sectors
- Expert for the design and optimization of fluid machines
- Expert for the design and optimization of the powertrain units
- Expert of the building thermophysics and the technological plants serving the buildings of the civil and industrial sectors

CAMPUS AREA

Teaching activities, labs, libraries and offices of the Department of Industrial Engineering are located in Napoli (Fuorigrotta) close to the San Paolo stadium.