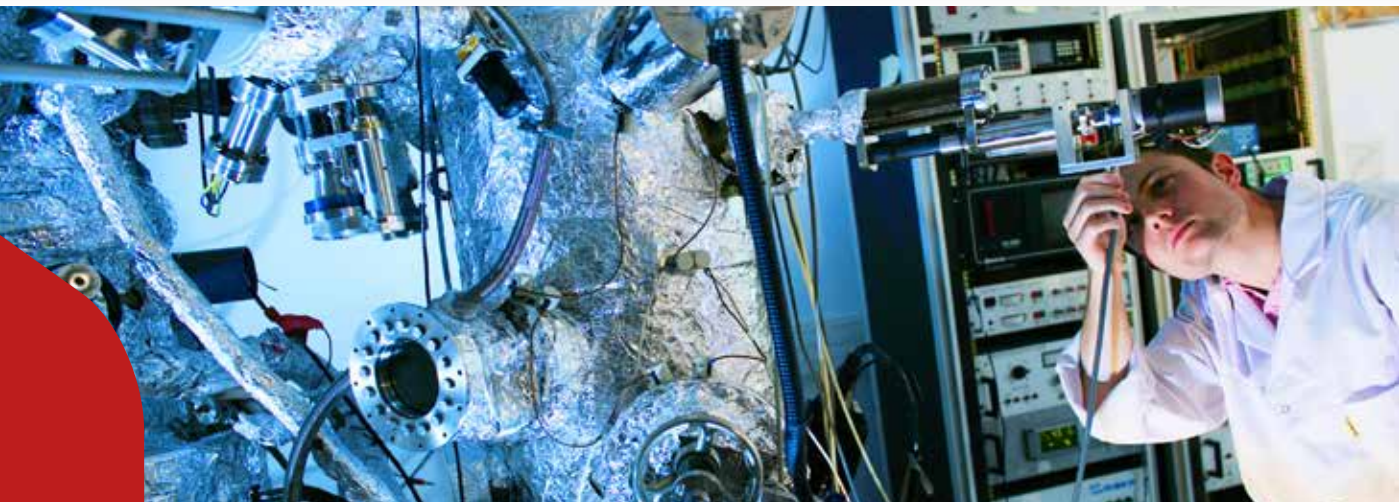


# Master of engineering in Materials Science and Engineering



## PRESENTATION

Dedicated to master students, Materials Science and Engineering (MSE) specialty aims at providing high-level academic and **project-oriented** education about the **design**, the **characterization** and the **processing** of all classes of materials (metals, ceramics, polymers, composites). This program develops skills necessary for forming, shaping and combining materials, and for understanding the **relationships between material microstructure and their physical, physicochemical and mechanical properties** and to analyze the materials lifecycle and degradation process in the context of sustainable development so as to respond to contemporary industrial and social requirements. Teachings are based on MSE program of Phelma Engineering School and on the **FAME AIS, AMIS and MaNuEn international masters** which enable special emphasis on structural materials, functional materials sustainability and materials used in a nuclear environment, respectively.

## INDUSTRIAL SECTORS

This program forms a new generation of students with **multidisciplinary and transdisciplinary profile** to be competent in the areas of **physical chemistry, mechanics and physical modeling** allowing them to fill the following roles: materials scientist, project manager, engineering consultant and engineer for production, R&D, products or quality in various industrial sectors such as transport (automobile industry, avionics, trains, etc.), electrical and nuclear energy, materials and metallurgy (polymers, ceramics, composites and metals), microelectronics, surface treatment and coatings.

## RESEARCH

Research in Materials Science and Engineering is vibrant, relevant, and varied. There are major research centers that cut across the boundaries of the MSE department. Among them the **Centre of Excellence of Multifunctional Architected Materials (CEMAM)** is devoted to the design, creation, and the fundamental understanding of new **multifunctional materials** and improved performances that will underlie the technologies of the future. CEMAM is the brainchild of **SIMAP, LEPMI, and LMGP**, three academic laboratories specializing in Materials Science and Process Engineering.

# ASSETS

Materials Science and Engineering courses ensure an intensive and innovative training based on the **strong coupling training / academic / industry**. The program relies on a very active research community providing a highly interdisciplinary environment. Students work closely with faculty through several **lab projects** and **lab practices** in state-of-the-art facilities (cleanroom, advanced characterization tools, modeling project in close connection with industry). They engage them in a depth reflexion on environmental and social transitions during a year-long project.



## PRESS RANKINGS



Shanghai  
Since 2020, Grenoble INP - UGA has contributed to the international ranking of the University of Grenoble Alpes  
Shanghai Global 2022  
Grenoble Alpes University ranked among the 150 best universities in the world and in the top 5 of French universities.



QS 2023 ranking by theme: Grenoble INP - UGA makes good progress in the field of engineering and technology  
Grenoble INP - UGA has made good progress in the overall field of "engineering and technology", moving up 74 places to 93rd position worldwide and 5th position in France, making it the leading institution outside the Paris region. The institute has made eight appearances in this ranking.



REUTERS

Grenoble INP - UGA leader in 2 lists from Reuters Ranking 2019

- Most innovative universities in Europe
- 2<sup>nd</sup> of the French Engineerings Schools
  - 13<sup>th</sup> in France

Grenoble INP - Phelma, UGA is the school for scientific diversity. It offers its students courses in various fields with a promising future:

- **Microelectronics and nano-technologies** (electronics, nanosciences, materials, health),
- **Decarbonated energy** (nuclear energy, photovoltaic, electrochemical storage),
- **Information technology** (digital communication, image and signal processing, telecommunications, computing and networks, Internet of Things, artificial intelligence),
- **Innovative materials** (for aeronautics, automobiles, sport & leisures, health, microelectronics, energy),
- **Biotechnology and biomedical engineering** (medical imagery and therapy, implantable devices),
- **Sustainable development** (decarbonated energies, eco-processes, recycling, material durability, energy management, natural signal analysis).

Based in Grenoble in the heart of the French Rhône Alpes region, Phelma boasts a rich academic and industrial infrastructure. As the only teaching institute on the Minatec innovation campus, Phelma benefits from an exceptional Training / Research / Industry synergy.



1,400 students  
380 + Engineering graduates a year  
+ More than 25% of engineering go on to complete a thesis

110 permanent teacher-researchers from  
11 laboratories associated with the school  
Approximately 370 stakeholders from industry and research

## CONTACT

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