

Welcome to
MINES Saint-Étienne!



Materials Science and Engineering

Master of Science

www.mines-stetienne.fr



INSPIRING
INNOVATION
SINCE 1816

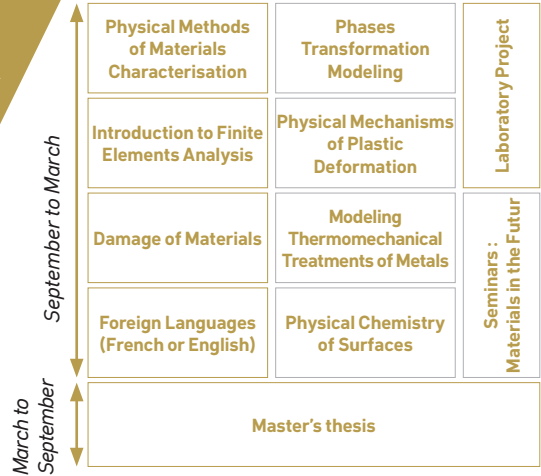
« Shape the future of materials with us ! »

A Master of Science (National Masters' Degree)
Accredited by the French Ministry of Higher Education and Research
at the *École Nationale Supérieure des Mines de Saint-Étienne, France*

 Taught in English

A new opportunity for international students

- Taught in English
- A one year Programme
- A diploma of Master of Science
- A key step for PhD studies

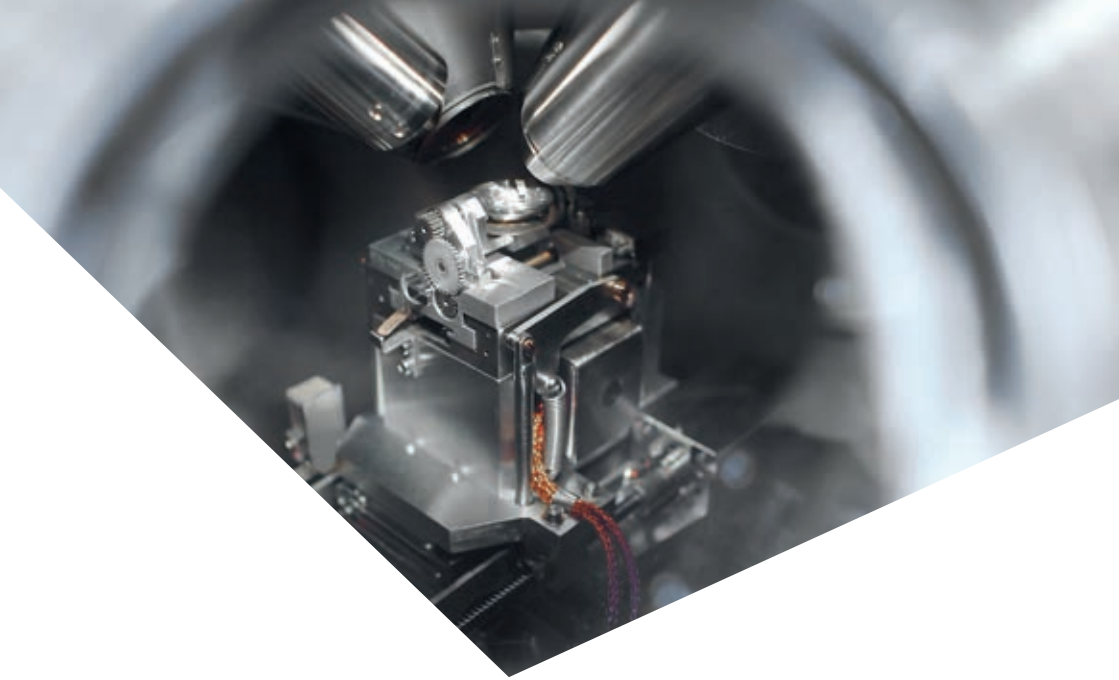


PhD Opportunities

Each year, the SMS Centre opens around ten PhD student positions. All the positions are financially supported. The research topics are often linked to industrial partnerships while keeping a high-level scientific ambition of the project.

Some recent examples of on-going PhD contracts-

- Refractory ceramic materials for incineration of industrial wastes ;
- Mechanisms of embrittlement of a martensitic stainless steel ;
- Identification of mechanical behavior of metallic surfaces hardened by contact process (inimpact, friction) ;
- Preparation and characterisation of bio-inspired composite materials containing flax fiber. Effect of interfaces on the impregnation process;
- Mechanisms of plastic deformation in high resistance HEA alloys of the CoCrFeMnNi family ;
- Effect of powder characteristics on final properties of an SLM-compacted Ti6Al4V alloy for biomedical applications.



Internship Opportunities

The Master's Thesis internship enables students to work on different real-life materials problems, in a university laboratory, or in an R&D Centre of leading French or international companies. Each year, a large number of diversified (and financially supported) placements is available.

Some recent examples of Master's theses -

- Effect of hydrogen on mechanical properties of Ti alloys (with SAFRAN Group)
- Multiscale modelling of inelastic behaviour of INCO718 superalloy (with ANERA and SNECMA)
- Development of recrystallization textures in new Al-Li alloys for aerospace applications
- Development of new HEA (high entropy alloys)

Job Opportunities

Professional roles in fields like materials for energy and transport, or recycling / sustainable development. Opportunities can also be found in R&D sectors, product development or innovative business companies.

Requirements for applicants

- Prior successful completion of a first year of a Master's Degree in theoretical and / or applied science, or equivalent diploma (at the home university or Ecole des Mines) / or 240 ECTS validated
- A good command of English is mandatory



**With the collaboration of the
Education and Research Centre
for Materials and Mechanical
Engineering (SMS) and the George
Friedel Laboratory
(UMR CNRS 5307)**

Staff 92

Topics

Optimising materials and structures for Energy production, transport and storage
Designing lighter structures for fuel-efficient transportation
Local Multiphysics Analysis for structural materials and functional surfaces
Human-centred design of materials and surfaces for the creative industries

Skills and Expertise

Experimental and numerical simulation of direct fabrication processes for synthetic and bio-sourced composites, powder metallurgy and multimaterials
Thermomechanical processing of alloys, microstructural evolutions, new alloys
Durability in extreme environments
Materials for Design and the Creative Industries

Industrial partners:

Cooperation with leading French or international companies such as Arcelor Mittal, EDF, AREVA, Constellium, Aubert&Duval, SAFRAN Group, and many others.

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