MASTER'S DEGREE IN MATERIALS SCIENCE AND ENGINEERING

UNIVERSITÉ PSL

The Master in Materials Science and Engineering from Université PSL provides the experimental and theoretical knowledge required to conceive and design the materials of tomorrow, improve the performance of existing materials and predict their lifespan. Co-sponsored by the Ecole nationale supérieure de Chimie de Paris – PSL, Mines Paris – PSL and ESPCI Paris – PSL, this program aims to establish a link between the processes, synthesis and layout, (micro) structures and structural and/or functional properties of various materials such as polymers, metal alloys, ceramics and biomaterials. This master's degree, totally taught in English, is part of PSL's graduate program in Engineering (ISAI).

MAIN ASSETS

— **Core knowledge** in the materials field.
— **Specialization via 2 tracks :** "Materials for the future : Design and Engineering (MADI)" or "Microfluidics".
— **Multidisciplinary teaching** combining chemistry, physical chemistry, physics, mechanics, and related fields.
— **Multi-scale approach** from molecules and crystal structures to objects, with multi-material perspectives (metal alloys, polymers, oxides, ceramics, biomaterials, etc.).
— **International outlook** with Master's program fully taught in English.
— **Training through research and innovation,** including a compulsory internship of at least 6 months over the two years of the program, carried out within academic, research, or industrial laboratories.
— **Strong industry partners,** with partner companies leading lectures and seminar series, organizing site visits, and hosting internships.

RESEARCH

This Master's program provides training for and through research. It builds upon existing research themes at Université PSL in the field of materials science.
The courses offered are directly linked to the research topics developed in the laboratories of our partner institutions. The program benefits from the strong academic and industrial network of the Île-de-France region.

OPPORTUNITIES

This course is open to students pursuing an academic or industrial career. It also prepares them for a PhD program. Due to the diversity of the courses offered, the subject areas and technical fields are various: energy, transport, sustainable development, biomedical, cosmetics, micro/nanotechnology, etc.

PSL
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CURRICULUM

S1+S2 : 60 ECTS	S3 : 30 ECTS	S4 : 30 ECTS
Core curriculum **Choice of specialization courses** *(2nd semester)* **PSL exchange week** **Minimum 2-month internship**	**A choice of 2 tracks** • Materials of the future : Design and engineering (MADI) – *Program in English* • Microfluidics – *Program in English* These 2 tracks can be taken under a professional training contract ("contrat de professionnalisation").	**Internship** A 4- to 6-month internship in an academic or industrial environment, in France or abroad, within the field of research and development.

TRACKS (MASTER 2)

— **Materials of the future : design et engineering**

This track focuses on the selection, design, optimization, and use of innovative materials. It promotes early-stage reflection oriented toward a specific application, as well asthe development and enhancement of material functionalities. It provides students with strategies for effective material design from a technical standpoint, while also addressing precise scientific, economic, and environmental requirements through innovation-driven design and design thinking approaches. Within this multidisciplinary framework, teamwork on well-defined projects (industrial or design projects) plays a central role, bringing together students with diverse backgrounds and perspectives. Across its 3 specializations: Materials for Energy, Materials for a Sustainable Lifestyle, and Materials for Transport and Structures — the MADI track emphasizes either an engineering or a design approach, focusing on one or several families of materials and/or on their environmental impact. This track can also be pursued under a professional training contract.

— **Microfluidics**

Microfluidics involves shared courses with Sobronne Université, Université de Paris Cité and Université Paris Saclay. The track provides training in the area of microfluidics (the science of flow at the micro scale) and in all areas involving fluids and micro/nanotechnologies. The curriculum covers a wide range of topics, including fluid dynamics, physical chemistry, biology, and biotechnology. Students also complete several practical sessions in micro- and nanomanufacturing. This track can also be pursued under a professional training contract ("contrat de professionnalisation").

TEACHING LOCATIONS AND PARTNER SCHOOLS

This Master's program is co-sponsored by Mines Paris – PSL, Chimie ParisTech – PSL and ESPCI Paris – PSL. The Master's program in Materials Science and Engineering is based on the scientific expertise of researchers and faculty members from the laboratories of these schools, as well as from other partner institutions outside PSL. The majority of classes are taught in the very center of Paris, on the campuses of our various schools involved in the program, but also in other schools besides PSL.

ADMISSIONS

Recruitment process (M1 and M2): online application

Prerequisites

— Master's Year 1

Students holding a Bachelor of Science degree in Chemistry, Physical Chemistry, or Mechanics

— Master's Year 2

Students holding an M1 degree or engineering students enrolled in a dual curriculum

DIPLOMA DELIVERED

National Master's degree conferred by Université PSL and hosted by Chimie ParisTech – PSL.

More information
psl.eu/en/education/master-s-degree-materials-science-and-engineering

Contact
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DIPLÔME NATIONAL DE MASTER CONTRÔLÉ PAR L'ÉTAT

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