GRADUATE SCHOOL IN SCIENCE, ENGINEERING & ECONOMICS IN PARIS
Theory and practice

MINES PARISTECH: OVERVIEW

1st University in France for its links with industry

15% International teachers

35% International students

Our identity:
- Founded in 1783 and evolving strongly over the centuries
- Reporting to the Ministry of Industry and Finance
- We are part of Paris Sciences et Lettres Research University
- We are founding members of ParisTech.

Rankings:
- l’Etudiant: Academic excellence
- L’Usine Nouvelle: National 2nd
- THE World University Rankings: 2020 Worldwide 45th
- QS World University Rankings: 2020 Worldwide 52nd

Figures: 2400 persons
- 1,027 permanent staff including 234 research academics
- 1,396 graduate students
- 385 PhD students
PSL RESEARCH UNIVERSITY

- 27 Nobel laureates
- 10 Fields medal winners & 3 Abel laureates
- 48 CNRS gold medal winners
- 50 César & 79 Molière award winners

- 9 member institutions, ten associates
- 17,000 students
- 4,500 researchers & 181 laboratories
- 50 startups created & ~ 70 patents/year
MINES PARISTECH EDUCATION OFFER

5 departments

- Energy and process engineering
- Earth sciences and environment
- Mathematics and complex systems
- Materials and mechanics
- Economy, management and society

Programs

- Master in Science and executive engineering (Diplôme d’ingénieur)
- International Masters
- PhD
- Advanced Masters programs

2 Nobel prizes

Maurice ALLAIS - Economics - 1988
Georges CHARPAK – Physics - 1992

1st University in France for the amount of contractual research

Diagram showing educational levels from baccalauréat to PhD and Advanced Master.
The philosophy:
- To train engineers with a strong scientific background, prepared to become managers, in any kind of companies, all over the world.

The program:
- Strong background in fundamental courses,
  - Mathematics, physics, mechanics …
- with a multidisciplinary approach:
  - Social sciences, Languages, Sports, Economics and Management, Innovation and Entrepreneurship
- and the possibility to customize your curriculum with 18 fields of specialization:
  - Applied Mathematics, Information Technology, Control Engineering and Computer Science, Computational Biology, Earth and Environmental Sciences, Materials Sciences and Engineering, Energy and Chemical Engineering, Economics and Social Sciences
Examples of engineering quarters:
- Intelligent and Digital Systems,
- Mechatronics,
- Virtual Worlds: Challenges, Technologies and Society.

Examples of research quarters:
- Applied Economics,
- Energy Transition,
- Control Theory.

Foreign Languages: English, German, Spanish, Italian, Portuguese (Brazilian), Russian, Chinese, Japanese, French as a Foreign Language, etc.
MINES PARISTECH “DIPLOME D’INGENIEUR”

- **Detailed organisation of the M2**

  **Semester 5 – 30 ECTS**
  - Common Courses (10 ECTS)
  - Specialised Courses (8 ECTS)
  - Option: courses, conferences and visits (12 ECTS)

  **Semester 6 – 30 ECTS**
  - Common Courses (8 ECTS)
  - Specialised Courses (4 ECTS)
  - Option: study (18 ECTS)

17 options & 3 departments:

- **Applied mathematics:**
  - Digital Engineering of Complex Systems,
  - MAREVA (Applied Mathematics, Robotics, Vision and Automation),
  - Geostatistics,
  - Information Systems Management.

- **Social and Economic Sciences:**
  - Public Affairs and Innovation,
  - Industrial Economics,
  - Scientific Management,
  - Conception Engineering,
  - Innovation and Entrepreneurship,
  - Production and Logistic Systems.

- **Material Sciences:**
  - Biotechnology,
  - Nuclear Engineering,
  - Geosciences,
  - Machines and Energy,
  - Process and Energy,
  - Sciences and Materials Engineering,
  - Soil and subsoil.
MINES PARISTECH EDUCATION OFFER

- Programs taught in English

- **Masters (PSL)**
  - Materials Science and Engineering
  - Master in Energy

- **Advanced Masters (and continuing education)**
  - Materials, Processing and Modeling (MAPMOD)
  - International Environmental Management (ENVIM) together with Tsinghua University
  - International Energy Management (ALEF) together with Tsinghua University
  - Master in Clean And Renewable Energy with HUST (CARE)
  - Master in Mineral Resources, Industry and Society (MIRIS)

- **PSL-ITI: Institut de Technologie et d’Innovation**
  - Preparation to PhD: ‘year 0’: courses, research, start-up business plan in multidisciplinary fields

- **Research internship** at Bsc 4 or MSc1 or MSc 2 level in one of above-mentioned research centers

- **PhD** in one of above-mentioned research centers
Innovation and entrepreneurship

- **Innovation at the heart of our history and strategy**
  - In our relations with industrial partners
  - Companies created by Mines ParisTech Alumni
  - Pre-incubator, Entrepreneurship Price: MINES ParisTech-Criteo

- **Innovation, a transdisciplinary discipline**
  - Department Management, Society, Economy
  - Specialisation « Innovation and entrepreneurship »
  - Chair « Theory and Methods of Innovative Conception »
  - Interdisciplinary Institute of Innovation (i3)
35% of international students

20% Of outgoing students for exchange

100% of our students in internship abroad

120 partner universities

33 Double degree agreements

20% Of research contracts with a foreign partner
RESEARCH AT MINES PARISTECH

5 departments
- Energy and process engineering
- Earth sciences and environment
- Mathematics and complex systems
- Materials and mechanics
- Economy, management and society

18 research labs
- Energies of the future
- Transport and mobility
- New materials
- Health and environment
- Innovation and competitiveness

- 1000/year Research contracts
- 30 M
- 200 industrial partners
- 27 industrial chairs
- 400 scientific publications rank A

2 Nobel prizes
Maurice ALLAIS - Economics - 1988
Georges CHARPAK – Physics - 1992

1st University in France for the amount of contractual research
Research at MINES ParisTech

Main research topics
- Image processing and mathematical morphology
- Mobile Robotics and Software Environments
- Point Cloud and 3D Modeling
- Virtual Reality and Augmented Reality
- Machine learning in production and logistics
- Control and optimization
- Information technology and programming languages
- Automatization and Systems
- Bio-informatics and data analyses: computational biology, statistics, precision medicine, bioimaging, computer vision, chemoinformatics, genetics, systems biology, big data
- Modeling methods to help decision-making

Research centers and groups

- Centre of robotics (CAOR)
- Centre for bio-informatics (CBIQ)
- Centre Automatic Control and Systems (CAS)
- Centre of Applied Mathematics (CMA)
- Centre of Mathematical Morphology (CMM)
- Centre of Computer Sciences (CRI)

143 faculty members
Energy and process engineering

Research at MINES ParisTech

Main research topics
- Energy efficiency of Systems
- Thermodynamic of Processes
- Observation, Impacts, Energy
- Processes, renewable energies and energy systems

Research centers and groups
- Centre for Energy Efficiency of Systems (CES)
- Centre Thermodynamics of Processes (CTP)
- Centre Observation, Impacts, Energy (O.I.E.)
- Centre for Processes, Renewable Energies and Energy Systems (PERSEE)

140 faculty members

Hydrogen production by plasma
Air conditioning
Artificial sun
Mechanics and Materials

Research at MINES ParisTech

Main research topics:

- Increase lifetime
  - Damage, ageing and fracture mechanisms
- Improve materials properties
  - Microstructure optimisation
  - Microstructure control during parts forming
- Reduce environmental impacts
  - Lighter structures design
  - Bio-sourced materials development
- Develop new materials and processes
- Materials simulations

Research centers and groups
Centre of Material Transformation (CEMEF)
Centre of Material Engineering (MAT)

276 faculty members
Mechanics and Materials

Research at MINES ParisTech

- Bioplastics
- Durability of materials and structures for energy
- Nuclear materials
- Metallic processes for aeronautics and nuclear

Industrial chairs

Training

- Master degree in Executive engineering:
  - Specialisation: Materials sciences
- Advanced Masters
  - MS MAPMOD: Material Processing and modeling
  - MS DMS: Design des Matériaux et des Structures
- Phd
  - Matériaux Sciences
  - Numerical mechanics
  - Mechanics
Earth Sciences and Environnement

Research at MINES ParisTech

Main research topics:

- Geosciences:
  - Geology
  - Geophysics
  - Geostatistics
  - Civil and mining Eng.

- Environment engineering and management

Research centers and groups
Centre for Geosciences (GEOSCIENCES)
Higher Institute for Environmental Engineering and Management (ISIGE)

117 faculty members
Economics, management and society

Research at MINES ParisTech

Main research topics

- Industrial Economics
- Scientific management
- Sociology of innovation
- Hazards and Risks sciences

Research centers and groups

- Centre for Industrial Economics (CERNA)
- Centre for Management Science (CGS)
- Research Center on Risks and Crisis (CRC)
- Centre for the Sociology of Innovation (CSI)

130 faculty members
More than 15 sports offered

About 40 student associations

A rich and intense cultural life

A student residence in the heart of Paris (for diplôme d’ingénieur students only)

Assistance for the administrative paperwork

Student life and services:

✓ Small classes with a vibrant associative, cultural and sport life!

✓ A school located in the very heart of Paris in the Latin Quarter.

https://youtu.be/8JVJl6XPsc
More than 40 student associations in different areas (entrepreneurship, sport, culture, etc.)

Students can take responsibilities within the student associations which allow them to develop useful professional skills.
Sports:

- Football, rugby, basket-ball, volley-ball, handball, badminton, tennis, squash, athleticism, golf, etc.,
- 20 sport professors & 1 Bureau des Sports (BDS),
- Close sport facilities (Stade Charléty and Centre Universitaire Sportif Jean Sarraillh),
- Students can participate to competitions between schools (Cartel des Mines, FFSU competitions),
- Organisation of extra-curricular sport activities by the Bureau des Sports (outdoor weekends, mountain bike in the Alps, etc.).
Studying in the heart of Paris

We reserve a room in one of our student residences (250-500 € / month). Maison des Mines (double room, 7 min from the school)
CONTACTS

For any question you may have, you may contact: international@mines-paristech.fr

Thank you for your attention and we look forward to seeing at Mines ParisTech next year!