



27/01/2021 ■■

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- **GRADUATE SCHOOL  
IN SCIENCE, ENGINEERING  
& ECONOMICS  
IN PARIS**

## Theory and practice



1<sup>st</sup>

University in France for its links with industry

15%

International teachers

35%

International students



## • Our identity :



ParisTech

- ✓ 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'Étudiant**

2020  
2<sup>th</sup>  
Academic  
excellence

**L'USINE  
NOUVELLE**

2019  
National  
2<sup>nd</sup>

**THE  
WORLD  
UNIVERSITY  
RANKINGS**

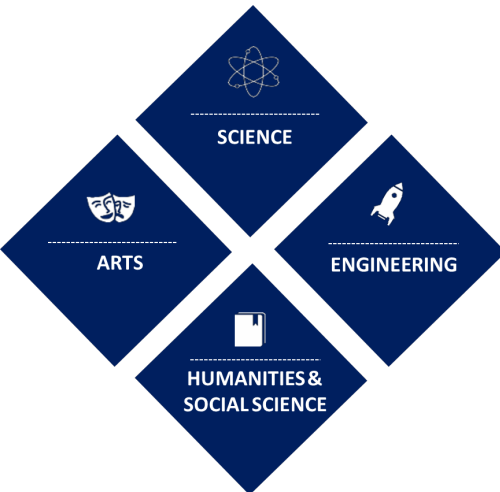
2020  
Worldwide  
45<sup>th</sup>











**QS  
WORLD  
UNIVERSITY  
RANKINGS**

2020  
Worldwide  
52<sup>th</sup>

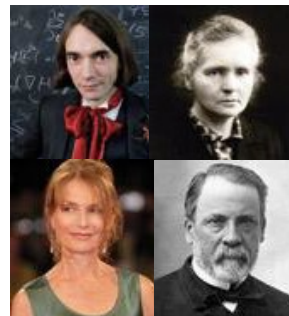
## • Figures : 2400 persons

- ✓ **1,027** permanent staff including **234** research academics
- ✓ **1,396** graduate students
- ✓ **385** PhD students

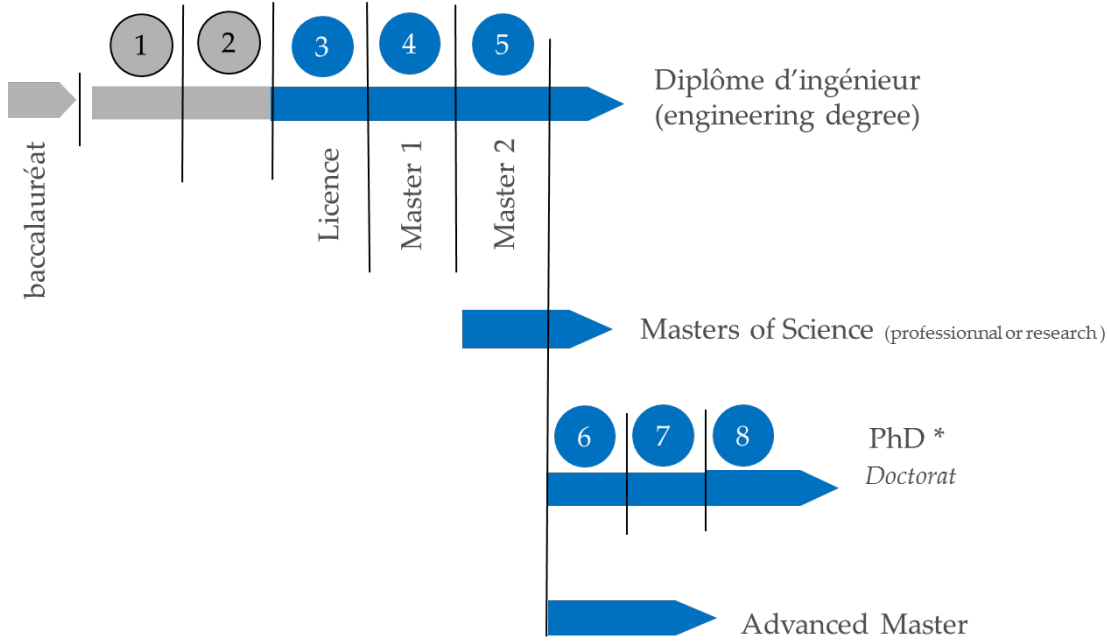


-  Physics and Chemistry
-  Biology and Medicine
-  Astrophysics
-  Engineering
-  Mathematics and Computer Science
-  Humanities and social sciences
-  Archeology and Antiquity
-  Arts
-  Economics and Management
-  Law

- **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



## 5 departments

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

## Programs

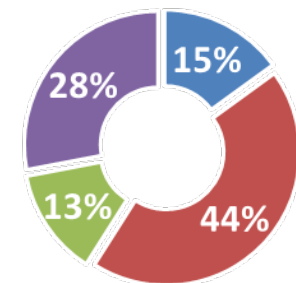
- Master in Science and executive engineering (Diplôme d'ingénieur)
- International Masters
- PhD
- Advanced Masters programs

### 2 Nobel prizes

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

### 1<sup>st</sup>

University in France for the amount of contractual research



## ○ Diplôme d’ingénieur – MSc in Sciences and Executive Engineering



### 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



9 to 21  
months in  
internship



800  
lecturers  
from  
corporate  
world

**Top 1%**

of scientific  
students in  
France  
admitted

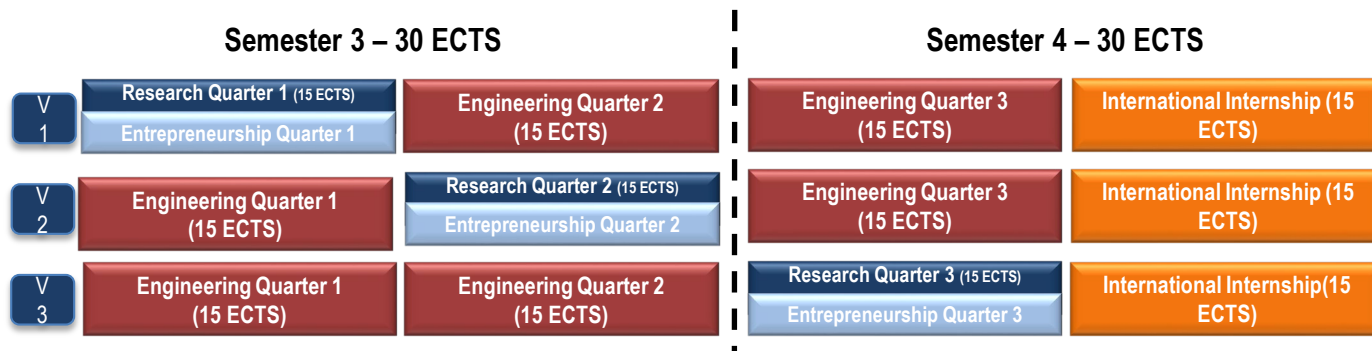
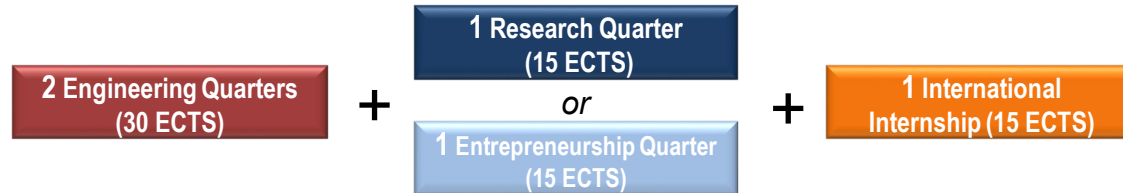
**60%**

of the students  
employed  
even before  
being available

**49 k**

Average  
salary (first  
position)

o Detailed organisation of the M1



Examples of **engineering quarters**:

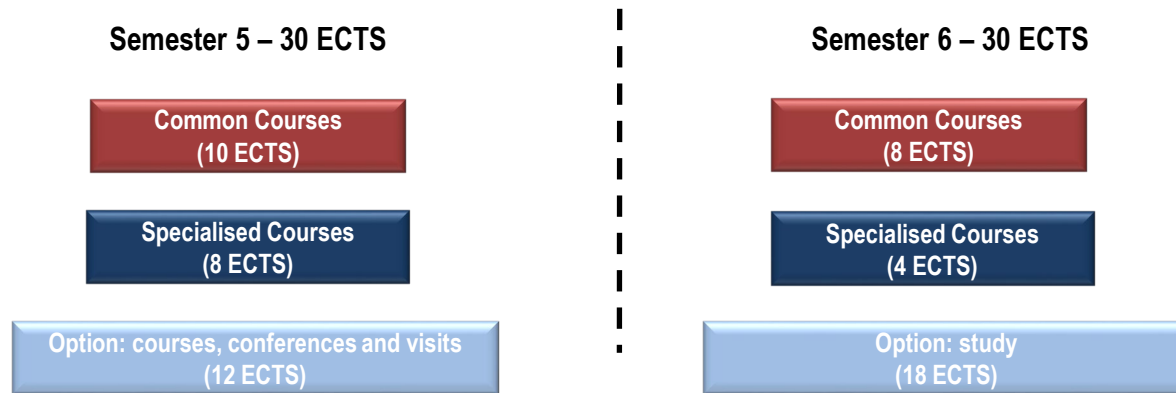
- ✓ Intelligent and Digital Systems,
- ✓ Mechatronics,
- ✓ Virtual Worlds: Challenges, Technologies and Society.

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.

## o Detailed organisation of the M2



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.

## ○ 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 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)





**120**  
partner  
universities

**33**  
Double degree  
agreements

**20%**  
Of research  
contracts  
with a  
foreign  
partner

**35%**  
of  
international  
students

**20%**  
Of outgoing  
students for  
exchange

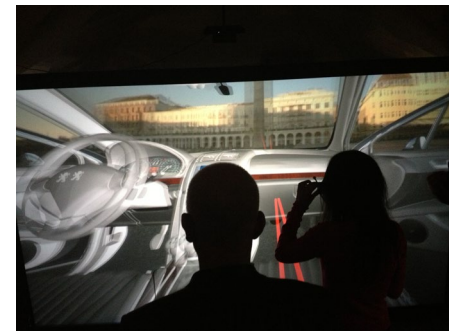
**100%**  
of our students  
in internship  
abroad

## 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

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amount of contractual  
research

## ○ Research at MINES ParisTech

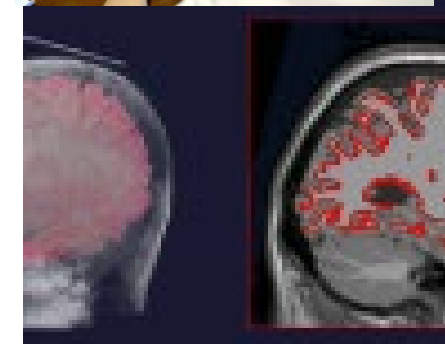
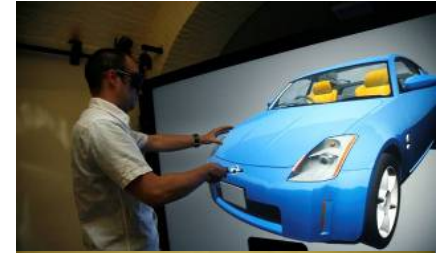
143  
faculty  
members

### Research centers and groups

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

### 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

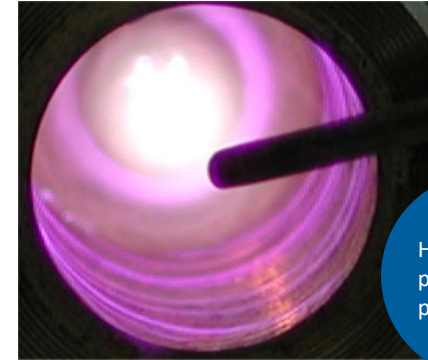


## ○ Research at MINES ParisTech

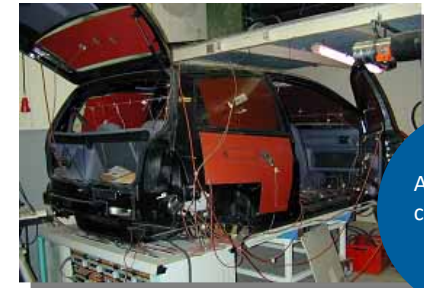
140  
faculty  
members

### 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](#))



Hydrogen  
production by  
plasma



Air  
conditioning



Artificial sun

### Main research topics

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



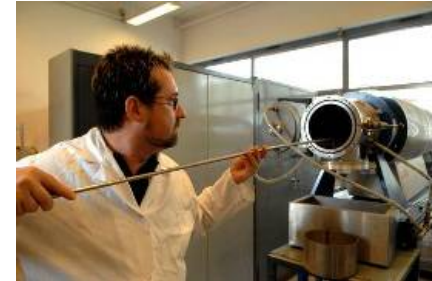
## ○ Research at MINES ParisTech

276  
faculty  
members

### Research centers and groups

Centre of Material Transformation  
([CEMEF](#))

Centre of Material Engineering  
([MAT](#))



## Main research topics:

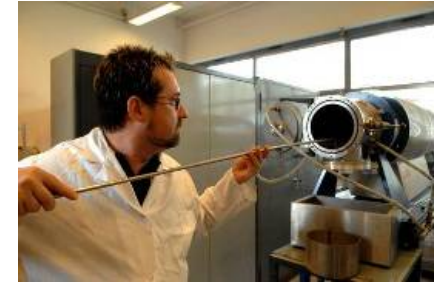
- Increase lifetime
  - Damage, ageing and fracture mechanisms
- Improve materials properties
  - Microstructure optimisation
  - Microstructure control during parts forming
- Reduce environmental impacts
  - Lighter structures design
  - Bio-sourced materials development
- Develop new materials and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

## ○ Research at MINES ParisTech

### Industrial chairs



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



### 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

## ○ Research at MINES ParisTech

117  
faculty  
members

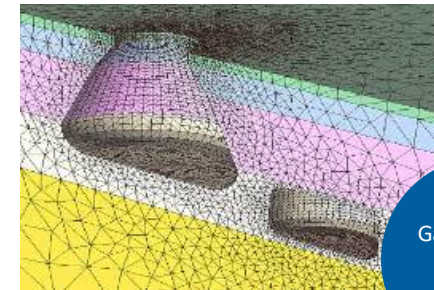
### Research centers and groups

Centre for Geosciences ([GEOSCIENCES](#))  
Higher Institute for Environmental  
Engineering  
and Management ([ISIGE](#))



### Main research topics:

- Geosciences:
  - Geology
  - Geophysics
  - Geostatistics
  - Civil and mining Eng.
- Environment engineering and management



Gas storage



## ○ Research at MINES ParisTech

130  
faculty  
members

### 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](#))



## Main research topics

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

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



<https://youtu.be/8JVJI6XPPsc>

## 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.



- ✓ 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.

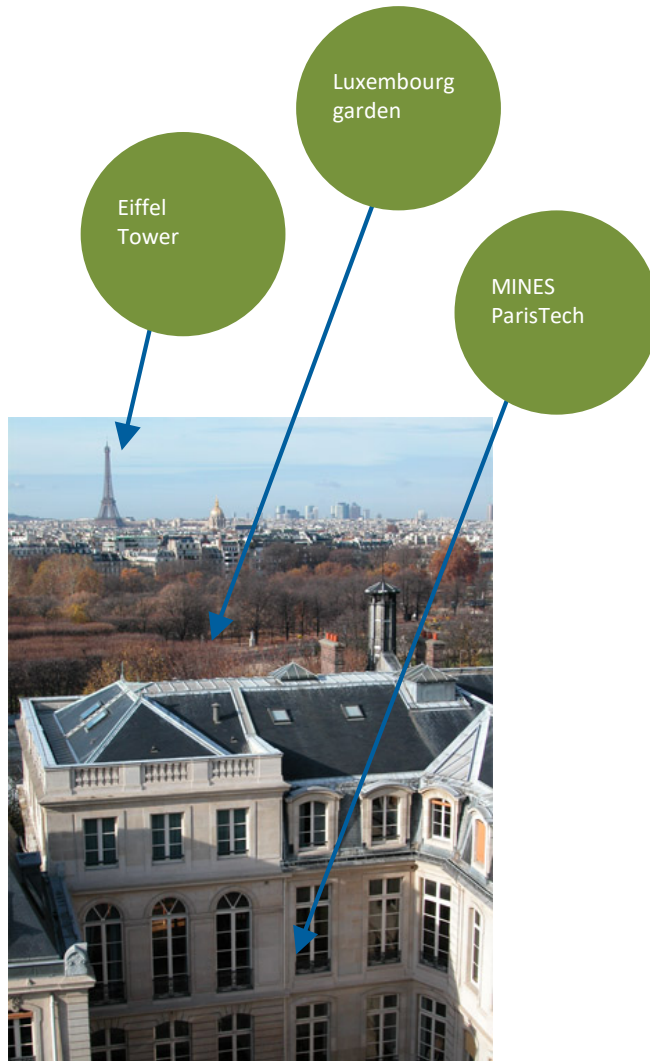
## Sports:

- ✓ 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 Sarrailh),
- ✓ 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)**

For any question you may have, you may contact: [international@mines-paristech.fr](mailto:international@mines-paristech.fr)



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