A unique approach to teaching and scientific research
AN ORIGINAL APPROACH IN THE WORLD OF ENGINEERING SCHOOLS

Since 1882, ESPCI Paris – PSL has been training multidisciplinary engineering students who are ready to meet the challenges of tomorrow.

Boasting 6 Nobel Prizes and more than 522 professors and researchers spread across 11 CNRS research units, ESPCI creates innovation by encouraging an interdisciplinary approach and a dialog between fundamental and applied sciences.
Located in the heart of Paris, PSL inspires dialog among and between all areas of knowledge, innovation, and creativity in Sciences, Humanities and Social Sciences, Engineering and the Arts.

Selective and committed to equal opportunity, it draws directly from current research to train researchers, entrepreneurs, artists and managers who are aware of their social responsibility, both individual and collective.

With 2,900 researchers, 17,000 students, 140 laboratories and 10 incubators, fab labs and co working spaces, PSL is a human scale university. It ranks among the world’s top 50 universities according to the THE (Times Higher Education) and QS (Quacquarelli Symonds) rankings.

Université PSL :
A UNIQUE APPROACH TO TEACHING AND SCIENTIFIC RESEARCH

- ESPCI Paris – PSL is an engineering school run by the City of Paris, which trains 85 innovation engineers per year.

- These engineers work as R&D managers in large industrial corporations or participate in the creation of startups.

- 1 in 3 of our engineers is based abroad.

- Our teaching philosophy is based on:
  - a strong interplay between teaching and research
  - interdisciplinarity in Physics, Chemistry, Biology
  - lab classes, team science projects

Scientific topics

Top French university (THE rankings 2019 and 2020) with PSL
5 CAMPUS
DEDICATED TO TEACHING
AND RESEARCH
IN THE HEART OF PARIS

ESPCI Paris-PSL campus

Pierre-Gilles De Gennes Institute microfluidics

Physics for medicine laboratory

Langevin Institute ‘waves & images’

Physics & mechanics of heterogeneous media laboratory
A RENOVATED AND UPGRADED CAMPUS FOR 2025

To maintain its ranking as a world class center for interdisciplinary research and training

An ambitious architectural project to build an urban campus adapted to the needs of professors, researchers and students

Connected to the city, to PSL University and to its neighborhood

An ever-evolving structure ideal for supporting excellence in research
EXCELLENCE, OPEN-MINDNESS AND SCIENTIFIC FREEDOM

6 NOBEL PRIZES
EXCELLENCE, OPEN-MINDEDNESS AND SCIENTIFIC FREEDOM

1882: School founded
1898: Pierre and Marie Curie discover radium
1907: Georges Urbain discovers Lutetium
1910: Marie Curie isolates radium
1914: Paul Langevin invents sonar
1920: Fernand Holweck describes continuity between ultraviolet rays and x-rays
1928: Paul Dubois invents the oscillograph, precursor to the "black box"
1934: Charles Dufrasne discovers rubrene
1939: Frédéric and Irène Joliot-Curie discover artificial radiation
1962: Phillipe Graylus invents the term "informatique" (information technology)
1980: Claude Boccara discovers unique measurement methods for use in optics and imaging

1990: Time reversal of acoustic waves by Matthias Fink
1991: Georges Charpak for the Multiwire Chamber
1992: Neurobiology laboratory created
1994: Science Center opens
1999: ParisTech network launched; ESPCI is a founding member
2009: ESPCI Paris Georges Charpak endowment fund created
2010: ESPCI Paris Georges Charpak Institute for MicroFluidics created
2015: Pierre-Gilles de Gennes Institute for MicroFluidics created
2016: ESPCI ParisTech becomes ESPCI Paris
2025: ESPCI Renovated

2018: Campus remodel begins
WHICH STUDENTS?

2020, 139th graduating class:
85 students

- 39 women students, 10 international students
- 2/3 comes from a very selective national competition in Mathematics, Physics and Chemistry
- 1/3 are handpicked from the others Universities
EDUCATION THROUGH RESEARCH

Before ESPCI
Classes préparatoires
University

1ST YEAR
PHYSICS, CHEMISTRY, BIOLOGY
LANGUAGES, SHS, SES
50% lab classes

2ND YEAR
PHYSICS, CHEMISTRY, BIOLOGY
LANGUAGES, SHS, SES
50% lab classes

3RD YEAR
4 COURSES: PHYSICS, CHEMISTRY,
PHYSICO-CHEMISTRY, BIOTECHNOLOGY

4TH YEAR optional
RESEARCH MASTER
SPECIALISED MASTER
DOUBLE DEGREE
APPLICATION SCHOOL

Bachelor

ESPCI Engineer degree
Master

ESPCI degree
Advanced Master

PhD degree

Industry Internship
80% abroad
(6 months)

Research project
30% abroad
(3 months)

70 %
goes for a PhD
Mostly with Industry

80 %
goes to industry R&D
## RESEARCH-BASED EDUCATION

### Balance Between Theory and Experimental Sessions (in hours)

<table>
<thead>
<tr>
<th>Year</th>
<th>Lecture</th>
<th>Lab Sessions</th>
<th>TA</th>
<th>Tutoring Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>331</td>
<td><strong>345</strong></td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td>2nd year</td>
<td>361</td>
<td><strong>420</strong></td>
<td>65</td>
<td>60</td>
</tr>
<tr>
<td>3rd year</td>
<td>223</td>
<td><strong>7 to 9 months (internships + project)</strong></td>
<td>65</td>
<td>60</td>
</tr>
</tbody>
</table>
OUR VISIONS

OUR COMMITMENTS

EXCELLENCE IN RESEARCH

• Hiring the best people in their fields
• Collaborating with the most prestigious research centers in the world
• Supporting the young professors to start their research at the best international level

BEYOND BOUNDARIES

• Research in Physics, Chemistry, Biology
• Interdisciplinary research
• A nimble organization to favor interactions, responsiveness and evolution

FROM FUNDAMENTAL RESEARCH TO INNOVATION

• The same people publish in the best journals, take patents and create start-ups
• Rules and practices to favor innovation
• Very reactive "Innovation pool" at ESPCI Paris Fund
In addition to its educational mission, the school welcomes research laboratories closely associated with CNRS, UPMC (Paris 6), the Université Paris Diderot (Paris 7) and Inserm.

60% of our research staff is employed by these partner institutions.
MULTIDISCIPLINARY

PHYSICS
- Hydrodynamics, solid mechanics, statistical physics
- Solid state physics, Nanoscience, Instrumentation
- Wave physics & imaging
- Ultrasound imaging & therapy
- Physics for Medicine

BIOLOGY
- Neurobiology, brain, memory
- Brain Plasticity
- Biological Mass Spectrometry & Proteomics

CHEMISTRY
- Soft matter theory, physical chemistry
- Soft matter, mechanical properties, interfaces
- Porous materials, nanomaterials
- Organic chemistry, Polymers chemistry, material science
- Colloids & micro-fluidics

PARIS POROUS MATERIAL INSTITUTE
- C. SERRE

OULLIVER
- SOFT MATTER SCIENCES & ENGINEERING
- E. BARTHÉL

MOLLEcular MACROmOLEcular CHEMISTRY & MATERIALS
- M. CLOITRE

LANGEVIN INSTITUTE « WAVES & IMAGES »
- J. TOURIN

PHYSICS & MECHANICS OF HETEROGENEOUS MEDIA
- D. VANDEMBOUQUÉ

PHYSICS AND MATERIALS
- D. RODITCHEV

CHEMISTRY BIOLOGY INNOVATION
- J. BIBETTE

Identification & characterization of proteins, peptides & peptidomimetic molecules

Biochemistry, Analytical chemistry
PUBLICATIONS AND CITATIONS

NUMBERS OF PUBLICATIONS PER YEAR
> 1 PUBLICATION PER DAY

NUMBERS OF CITATIONS PER YEAR
> 40 CITATIONS PER DAY
INDUSTRIAL
RESEARCH CONTRACTS

Bilateral contracts: a laboratory or team + one industrial partner
Dozens of contracts in all research areas

Research funding in 2019: **17,73 M€**
31 European projects
21 industrial partnerships
Since ESPCI Paris – PSL was created, the School has been a key player in innovation in France. It promotes innovation with industry, encourages entrepreneurship and collaborations with companies.

+70 innovative high-tech companies have been created at ESPCI since the early 1990's

19 registered patent families
PC’up
ESPCI INCUBATOR

• **OUR MISSION**
  Is to facilitate the creation of deeptech startup by offering unique ESPCI competences to entrepreneurs.

• **OUR AMBITION**
  Is to create a pathway for deeptech companies, in synergy with ESPCI Paris Research and Teaching.

• **OUR STARTUPS ARE IN VARIOUS FIELDS**
  Among others: biotech, sustainable agriculture, metasurfaces (antennas & radars), IA, medtech, diagnosis, etc.

**SOME OF OUR STARTUPS**

**DNA Script,**
Innovator under 35 2018 (MIT Tech Review), 81 M€ raised since the creation in 2014

**HiFiBio,**
102 M€ since the creation in 2013

**LightOn,**
IA Challenge of Paris 2018

**Cyprio,**
winner of the Women Startup Challenge Europe HealthTech 2019

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**Data from 2016 to 2019**

- **22** COMPANIES INCUBATED
- **204** JOBS CREATED
- **83,4** MILLIONS EUROS RAISED
- **106** PATENT APPLICATIONS & PATENT LICENSES
WHAT WE OFFER?
- A dynamic community of scientists and entrepreneurs
- An efficient and flexible team to help in this journey
- And 2 coaching program's

PRE-INCUBATION PROGRAMME
(6 months)
Dedicated to researcher who have a promising technology and don't know how to start a company.

OUR GOAL: detect and support emerging projects, in particular from the School's research laboratories

INCLUDED IN THE PROGRAMME:
- 1 week bootcamp about IP, management, accounting, business strategy, shareholders agreement, communication, etc.
- Access to workshops & unformal events of incubation programme
- Access to the IPGG platform and ESPCI labs equipements
- Strategic and individual coaching by PC'up team
- Possibility of having 2 or 3 desks
- Close ties with ESPCI labs and students

INCUBATION PROGRAMME
(2 years)
Dedicated to deeptech companies (less than 1 y.o.) who wish to develop their activities in our School environment

OUR GOAL: help them to develop the POC, refine the business plan & business model, structure the team, search for the first fund raising, secure the IP

INCLUDED IN THE PROGRAMME:
- Facilities for offices et lab activities
- Workshops & unformal events
- Access to the IPGG platform and ESPCI labs equipements
- Strategic and individual coaching by PC'up team
- Access to our expert network (scientists, mentors, funders, etc)
- Close ties with ESPCI labs and students