



# TALENT BOOSTER FOR INDUSTRY OF THE FUTURE



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## THE FOUNDATIONS

Founded in 1780 by the Duke of Rochefoucauld Liancourt, the school's origins are inextricably influenced by the thoughts and ideas that shaped the Age of Enlightenment, the intellectual movement that inspired the School's founder, the Duke of Liancourt.

«Combining manual dexterity with the intelligence of knowledge»... such was the philosophy that embodied the school's ambitions.

- ▶ Empowering knowledge to address a specific need for society
- ▶ Empowering scientific knowledge to enhance the real world

Arts et Métiers, one of France's oldest engineering schools specializing in mechanical, industrial and energy engineering, is a leading science & technology Grande École in France with an international reputation in education, research and industry transfer. It is fast becoming one of the top technology institutes in Europe.



# THE ARTS ET MÉTIERS GROUP IN FIGURES

**11**



**SITES** across France specialising in education and research

**220**



**PHD STUDENTS** in our "Engineering Sciences" doctoral school

**1**



**BACHELOR'S DEGREE IN TECHNOLOGY**

**6000**



**STUDENTS** across all courses

**14**



**LABORATORIES** and research teams

**11**



**ENGINEERING PROGRAMMES**

1 Grande École engineering programme  
10 Apprenticeship engineering programme

**1100**



**PERSONNEL** lecturers, technicians & administrative staff

**7**



**MILLION** in revenue  
**LIFELONG SKILLS DEVELOPMENT**

**+20**



**National research master's programmes**

**15**



**million** in revenue generated through contracts with industry

**2000**



**AUDITORS** in lifelong skills development

**17**



**MASTÈRES SPECIALISÉS © programmes**





## A SOCIO-ECONOMIC CHAMPION PROMOTING LOCAL COMMUNITY DEVELOPMENT

For over two centuries, Arts et Métiers has been spearheading scientific progress and supporting each industrial revolution. The 4th industrial revolution, with the arrival of digital technologies has led to reviewing the whole production system, and even the way products are designed. Advanced technology adoption will be at the heart of future competitiveness. To address the challenges of the fourth industrial revolution, Arts et Métiers is directing its efforts towards innovation, and will be a driving force in transforming society tomorrow, for developing and sharing knowledge, for developing innovation and entrepreneurship and for improving the human condition.

Arts et Métiers is a key player in accompanying French and European industry, through its high level academic programs integrating more digital technologies and innovative pedagogical programs, and through its cutting edge research activities (14 research laboratories) at the forefront of major technological innovations : advanced manufacturing, additive manufacturing, production processes, corobotics, virtual and augmented reality, not forgetting of course the place of the human in the process.

The institute aims to educate Europe's future engineers to face global challenges, particularly those linked to the industry of the future, with programs at the Bachelor, Master & PhD levels. Through its traditional close links with industry, the Arts et Métiers community, students, professors, researchers strive to anticipate and accompany industry to face the major challenges of the industry of the future.



## A SINGLE INSTITUTION WITH EIGHT CAMPUSES AND THREE INSTITUTES IN FRANCE





## **COURSES ANTICIPATING SOCIETY'S TECHNOLOGY NEEDS**

**Arts et Métiers offers a comprehensive range of courses: initial training, lifelong skills development and doctoral programmes**

- ▶ Arts et Métiers ParisTech Grande École engineering programme (level 7)
- ▶ Apprenticeship engineering programme (level 7)
- ▶ Bachelor's degree in technology (level 6)
- ▶ National research master's programme (level 7)
- ▶ Doctoral programme (level 8)
- ▶ Tailor made industry short courses

### **Supporting tomorrow's entrepreneurs**

To help students breathe life into their innovative concepts, Arts et Métiers provides:

- ▶ Training: business creation & development expertise, technological innovation and entrepreneurship
- ▶ Arts et Métiers incubator







## RESEARCH AT ARTS ET MÉTIERS

Arts et Métiers is an undeniable partner for four major sectors of the industry of the future, by contributing to the development of technological innovations. Transport, energy, health, construction, and manufacturing: Arts et Métiers dedicates its scientific activities to anticipating, as well as addressing, the challenges of the industry of the future.

**Transport:** The transport industry is facing many challenges that are linked to both ecological efficiency and economic competitiveness. It is one of the sectors with which we collaborate the most in conjunction with the Alliance Industrie du Futur (Industry of the Future Alliance). Our laboratories are involved in research dealing with all problems surrounding the modernization of manufacturing processes and production lines, the use of new materials, and the energy efficiency of new means of transportation.

**Energy:** Arts et Métiers specializes in the management of energy networks. This expertise is particularly useful for energy sources with intermittent production, which is a characteristic of renewable energy, such as wind turbines. Our scientific knowledge and skills also extend to energy production machines, aimed in particular at improving their efficiency. Energy storage is also a major challenge for this industry and thus a scientific challenge for our teams.

**Health:** Health technology is a particularly dynamic sector with start-ups driving many of its innovations. Its research activities include the tailoring of treatments for musculoskeletal disorders to personal needs, which have a clear societal impact. These issues are being increasingly addressed by the industry of the future that places people and the quality of work at its very core. «Other key topics include tissue regeneration and restorative additive manufacturing and our teams are already working on these futuristic themes.

**Construction :** Wood is one of the emerging sectors in the building industry. It has many advantages in terms of structure, thermal properties and durability. Our research also focuses on additive materials manufacturing. Regarding concrete, our labs are working on the creation of alveolar microstructures that are capable of optimising thermal and mechanical properties, for example.



## PARTNERSHIPS AROUND THE WORLD

Our international partnerships are focused on training, research and technology transfer



## **“ACCELERATOR OF TALENT FOR THE INDUSTRY OF THE FUTURE” ARTS ET MÉTIERS’ INTERNATIONAL INITIATIVES SEEKS TO :**

- Offer students enriching international opportunities that prepare them to have a positive impact on global socio-economic and environmental issues.
- Enhance collaborative research partnerships in Europe and in target countries
- Develop strategic partnerships in education and research for both students and faculty
- Accompany industry in their international development to allow them to become more competitive on the international scene
- Be an ambassador for the French “Industry of the Future” plan on the international scene





## INSTITUTIONAL COLLABORATIONS

In 2017 the **French-German Institute for the Industry of the Future** was created in collaboration with the **Karlsruhe Institute of Technology (KIT)**. The Institute offers training, research, and innovation in four key themes of the industry of the future: virtual and augmented reality, advanced production processes, production chain management, and robotics and cobotics.

Alliance with **Texas A&M University (TAMU)**: a TEXAS A&M site is currently being developed at the Aix en Provence campus for materials and processes research activities.

Alliance with the **Universidad del Pais Vasco Bilbao (UPV Bilbao)**: creation of “Aenigme”, an international laboratory, which is managed scientifically by Arts et Métiers’ I2M laboratory and has an impact on all Arts et Métiers laboratories working on sustainable materials and processes.

Agreement with the **China Scholarship Council (CSC)**: 24 PhD theses have been started since 2012 (six of which have been publicly defended) by Chinese PhD students at Arts et Métiers under this agreement.



## CORPORATE PARTNERSHIPS

Alliance with **CEATech** on the theme of additive manufacturing.

Alliance with the **PSA Group**, the second car and motorcycle manufacturer in Europe: through the Materials and Processes OPEN LAB, which studies innovative materials and efficient processes in order to develop vehicles of the future.

Founding member of the TEAM Henri Fabre Association alongside **Airbus Helicopters and EDF**. This association develops multithreaded enabling technologies in the field of materials and processes.

Participation in the **Renault** eco2 process centre for improving the energy efficiency of combustion engines.

Creation of a “smart industries” living lab with **KUKA** and **CITC** (Contactless Technologies Innovation Centre).

Research Chairs:

- BIOMECAM Chair: **Proteor, Covea, and Société Générale**
- Urban Mining Chair: **Ecosystem**
- Time To Concept Chair: **Mannhummel**
- Reconfigurable, high-performance, safe production systems Chair: **Thyssenkrupp**





## A STATE-OWNED INSTITUTION



Break down social and geographical barriers with scholarship programmes



Promote science and technology among the female population with awareness-raising initiatives



Promote social inclusion and workplace integration for people with disabilities as part of a mentorship scheme



On-the-ground citizenship actions with participation in community life



Sustainable development with specific training programmes and daily initiatives





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