

# INVENTING THE TRANSPORTS OF TOMORROW



## TRANSPORT AND MOBILITY ENGINEERING SCHOOL



EXPANDING HORIZONS OF MOBILITY

Groupe Isae 

# ESTACA, A TRANSPORT ENGINEERING SCHOOL IN FRANCE

## ESTACA IN BRIEF, A TRANSPORT AND MOBILITY ENGINEERING SCHOOL

As a specialized post-baccalaureate engineering school, ESTACA is a major European player in the field of transport and mobility. It trains students in **aeronautics, automotive, space, and railway & guided transports**. With innovative teaching that goes to the heart of current transport issues (eco-design, on-board systems, propulsion systems and on-board energy, etc.) and a fully developed research centre.

ESTACA trains passionate students on technologies and with an expertise that is recognised in the industry. Created in 1925, **ESTACA is accredited** by the "Commission des Titres d'Ingénieurs" (**CTI**) and a member of the "Conférence des Grandes Ecoles" (**CGE**). It's located on two sites: in the Paris region in Saint-Quentin-en-Yvelines and in the Mayenne region in Laval.

The school is actively involved in **academic, industrial and scientific collaborations regionally** (competition clusters, Institutes of Excellence, etc.), **nationally** (ISAE group, CGE, etc.) and **internationally** (Campus France).

## ESTACA IN FIGURES

2

sites: **Paris-Saclay Campus** in Saint-Quentin-en-Yvelines and **West Campus** in Laval

2 050

students

340

graduates per year

8 000

alumni

30

student associations

2

research teams

70%

of teachers are active engineers

12

months mandatory internship in company

50

partner universities abroad

39 000 €

average starting salary for 2016 graduates

92%

of students hired before graduation

## ESTACA NETWORK

- **ISAE**: group of aeronautics and space schools (ISAE –Sup'Aéro-ENSMA, Ecole de l'Air)
- **PEGASUS** (Partnership of a European Group of Aeronautics and Space Universities)
- **CGE**
- **Campus France**
- **France Alumni**
- **n+i** (recruitment of international students)
- **Competitive clusters**: Astech, Mov'eo, IDforCar, EMC2, System@tic
- **Institute of Excellence VeDeCoM** (Low-carbon smart vehicle)
- **COMUE ULB** (Université Bretagne Loire)
- **COMUE UPS** (Université Paris Saclay)
- **Elles bougent** (to stimulate career interest in transport engineering in young women)
- **PEPITE PON** (entrepreneurship cluster)

# THE ESTACA ENGINEER, AN EXPERT ADAPTED TO THE NEEDS OF INDUSTRIALS

**ESTACA trains engineering experts in transports. The graduates are especially appreciated for their specific skills:**

## TECHNOLOGICAL

through 4 years of specialization, ESTACA engineers are “product-focused” and have true expertise.

## OPERATIONAL

because of a project-based teaching, they are used to working in teams, reply to issues which combine cross-disciplinary skills, meet deadlines, adapt to a changing environment and innovate.

## HUMAN

enthusiastic about their speciality, ESTACA engineers are deeply involved in their missions, highly motivated and thus effective within the company.

## 5 KEY VALUES

### PASSION

89% of students say they are passionate

### INNOVATION

thanks to the close synergy between research and training

### SOLIDARITY

Graduates continue to invest in their school: intergenerational ties

### PRAGMATISM

thanks to training in direct contact with the reality of the company

### COMMITMENT

80% of students engaged in extracurricular activities (humanitarian, SD, societal, etc.)

## ESTACA GRADUATE POSITION



## GRADUATES IN FIGURES

**92 %**

**of students** hired before graduation

**50 %**

**find jobs** following their final year internship

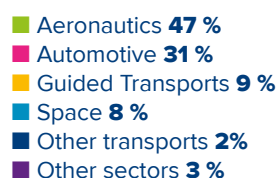
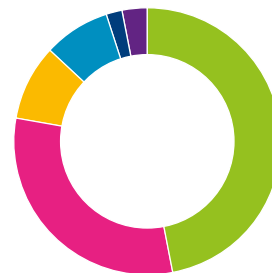
**65 %**

**of 1<sup>st</sup> jobs find through the school** (internships, alumni, careers service, etc.)

**21 %**

**of young graduates** are hired abroad

## ESTACA GRADUATE SECTORS



(Results of the 2016 CGE survey)

# THE MASTER LEVEL CURRICULUM

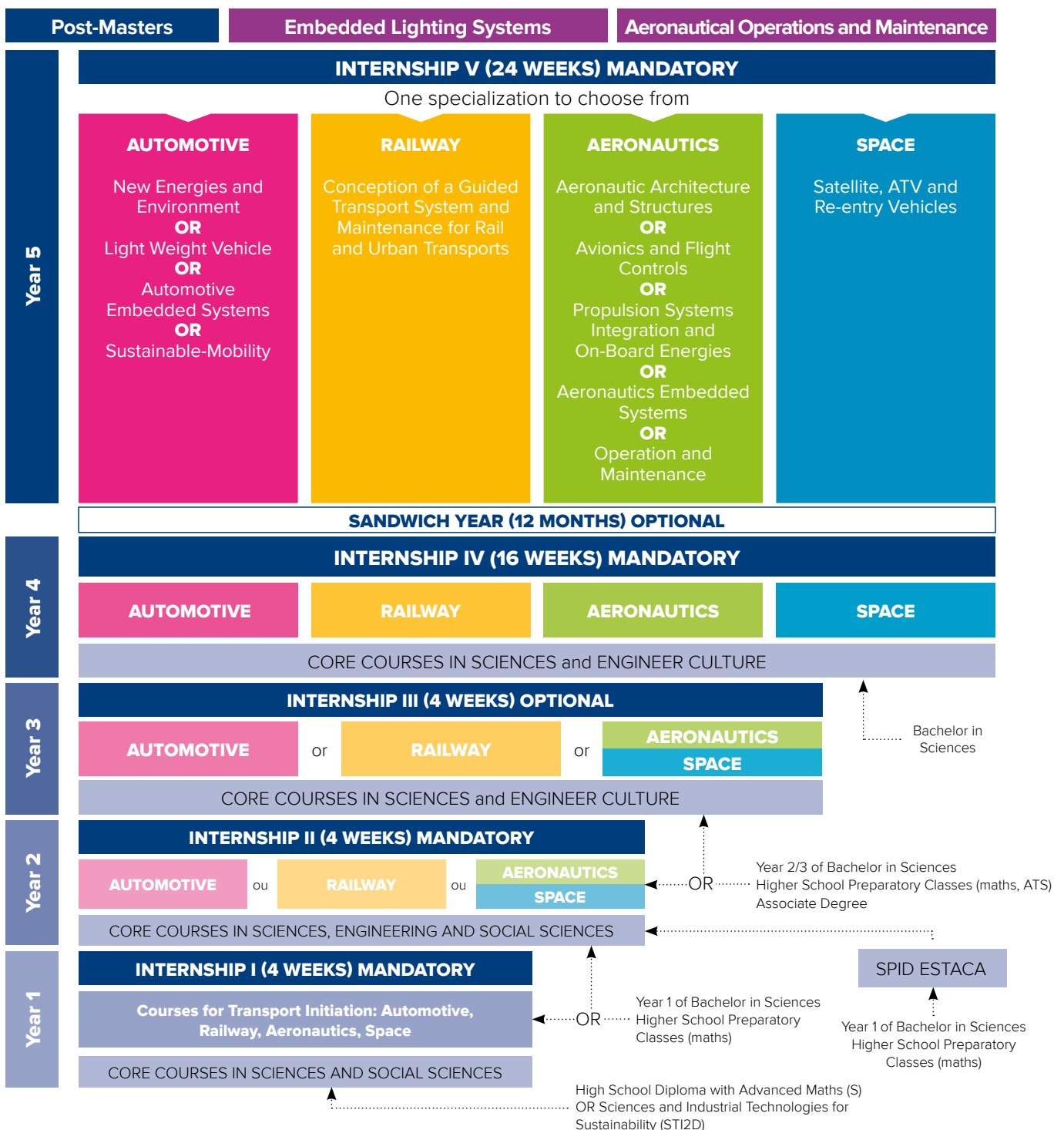
## PREPARING THE MOBILITY SPECIALISTS OF TOMORROW

Engineers that are operational and can adapt to the technological changes of tomorrow's industrial world.

Our curriculum will enable students to:

- choose their path by specializing from their 2<sup>nd</sup> year
- acquire multidisciplinary skills in the engineering sciences and in transport engineering
- be able to apply and transfer the knowledge acquired
- deal with industrial practices both in terms of reasoning and methods of organisation
- learn about innovation by means of Research-Training synergies
- develop personality and open up to the world

## CURRICULUM



# POST-MASTERS' DEGREES



## AERONAUTICAL OPERATIONS AND MAINTENANCE

**An innovative program closely aligned with industrial requirements**

This post-master program applies to airline, MRO operators, airport operators, aeronautical logistic and air manufacturing companies. The aim is to offer students the means to understand the organization and the economy of the air transport industry. They will be in close contact with our partners (Aircraft manufacturers, Airlines, MRO operators, Airport operators, so they will be able to apply their theoretical knowledge directly to real cases. The Air Rules are the cornerstone of this course and are studied with different approaches.

**One-year program fully in English on the Paris-Saclay Campus:**

- 400 hours of academic coursework (October to February)
- 6 months internship (February to July)
- Doctoral dissertation

**Industrial partners:** Air France, Airbus Group, ADP (Aéroports de Paris), Zodiac Aerospace

## EMBEDDED LIGHTING SYSTEMS

**A high-level international training curriculum for those wishing to specialize in the field of vehicle lighting systems**

The vehicle lighting sector is currently undergoing major change with the development of new technologies like LED lights, as well as new and complex lighting systems functionalities. This changing landscape provides an opportunity to explore new avenues for innovation based on lasers, smart lighting solutions and new lighting functionalities.

Three major schools in Transportation Engineering (ESTACA), Optical Sciences (Institut d'Optique Graduate School) and Design (STRATE – Ecole de design) are joining their experience to develop a high-level international post-master program designed for training cross-skilled engineers for the field of vehicle embedded lighting systems.

**One-year program fully in English in Paris /on the Paris-Saclay Campus**

- 400 hours of academic coursework (September to February)
- 6 months internship (February to July)
- Professional dissertation

**Industrial partners:** Renault, PSA Peugeot Citroën, Valeo and Automotive Lighting Rear Lamps



## SHORT TERMS PROGRAMS

### SUMMER PROGRAM - COMPUTATIONAL FLUID DYNAMICS APPLIED TO AERONAUTICAL ENGINEERING

The aim of this program is to learn and operate CFD (Computational Fluid Dynamics) tools to understand and predict aeronautical systems performances and behavior. During this program, students will have lectures, practical work classes, and company (like Latmos, Safran, etc.) and cultural (like Château de Versailles, Bâteaux-mouches) visits. The program is 4 weeks during the month of July.

**For more information:**

<https://www.estaca.fr/en/programs/summer-program-computational-fluid-dynamics-aeronautical.html>

### GLOBAL PRACTICE IN FRANCE WITH PURDUE UNIVERSITY (COLLEGE OF ENGINEERING)

The goal of this program is to expose students to Engineering Professional Practice in France. Students will gain an understanding of how French engineers are trained and differences in approaches to problem solving.

The program will include short engineering projects with French students, visits to research labs, visits to cultural sites, and industry visits to French companies like Airbus.

**For more information:**

[international@estaca.fr](mailto:international@estaca.fr)



# INDUSTRIALS, A KEY ROLE AT THE HEART OF SCHOOL LIFE



**Close ties between ESTACA and companies guarantee training and research that goes to the heart of industrial issues.**

Associated in all the important decisions of school life through their involvement in the management, companies participate actively in student development, by teaching, managing projects, speaking at conferences, welcoming interns, etc. Applied research is also conducted closely with industries, especially for collaborative projects managed within the competition clusters. There are numerous opportunities for company collaboration at all levels of school life:

## ENGINEERING COURSES

Teaching, Study projects, Site visits

## GOVERNANCE OBSERVATORY

Career development, participation in ESTACA corporate governance

## VOCATIONAL TRAINING

1 to 11 days sessions, diploma courses

## INTERNSHIPS AND JOBS

Worker internships, engineer internships, jobs

## FUNDING

French training tax, sponsoring of associations, Association "Junior Entreprise", Fundraising ESTACA for mobility

## RESEARCH

Research partnership, Thesis, Chair

## COMMUNICATION

Reputation, Access to the ESTACA network

## PROFESSIONAL INTEGRATION

Career fair, occupation conferences, HR workshops

## SOME OF OUR PARTNERS

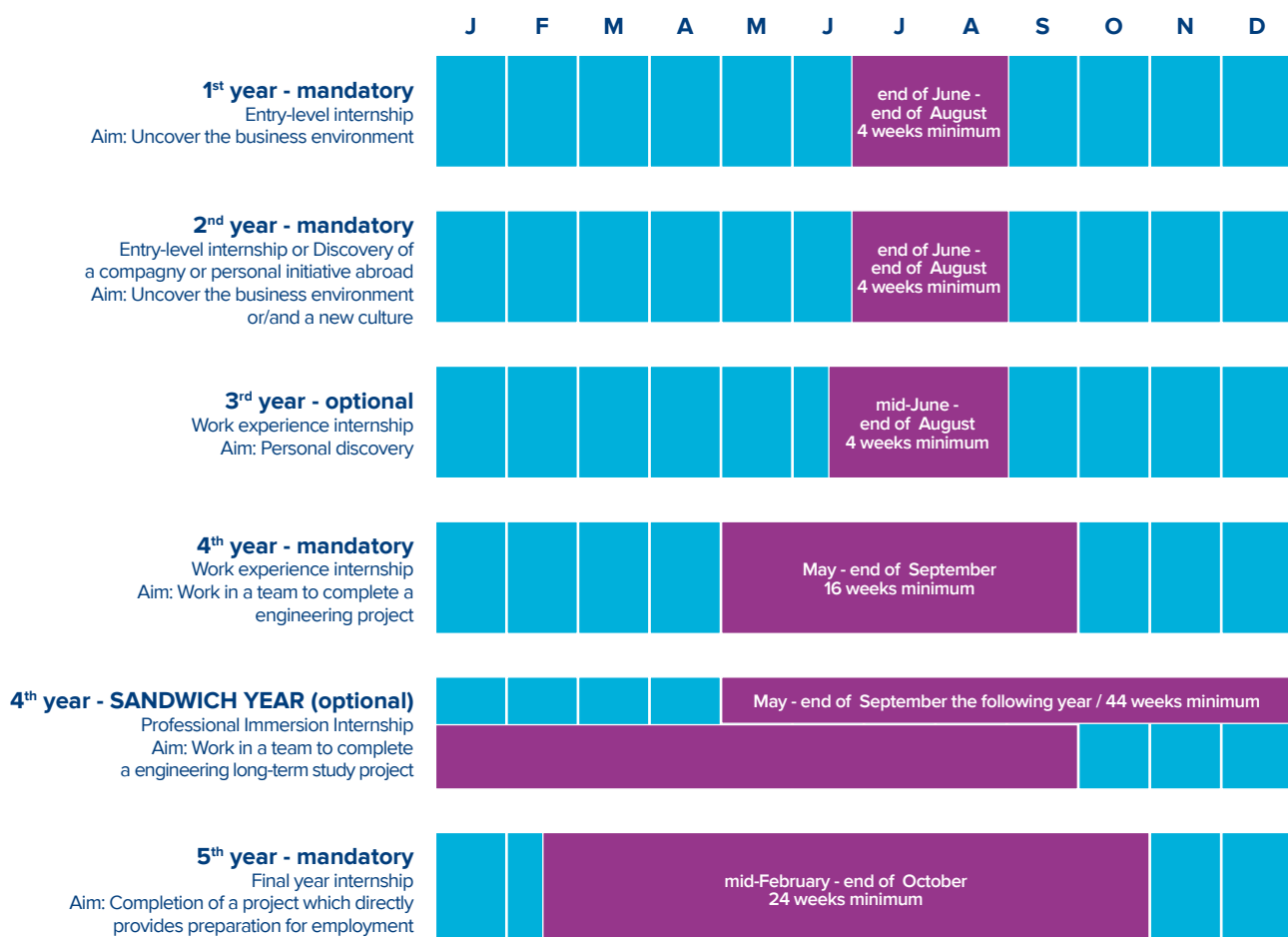


# INTERNSHIPS, SANDWICH YEAR AND JOBS

## INTERNSHIPS AND SANDWICH YEAR

Each student spends at least 12 months in a company during their ESTACA curriculum. There are 4 mandatory internships and an optional sandwich year is possible at the end of the 4<sup>th</sup> year. Any internship or sandwich year is subject to a work placement agreement or temporary employment contract. For 5<sup>th</sup> year students, permanent contracts or volunteer projects are also possible.

## ESTACA INTERNSHIP CALENDAR



## JOBS

ESTACA graduates are operational, have strong technological expertise and perfect knowledge of the company. As such, they quickly and easily find a job. The office of Corporate Relations and Professional Integration (CRPI) guides students throughout their curriculum to support them in building their professional project. Once graduated, the CRPI office provides career advice and support at any stage of the Alumni's career path.

## ONLINE OFFERS

Offers of internships, sandwich year, volunteer projects, jobs can be published online at: <http://www.estaca.fr/deposez-une-offre.html>

## CAREER FAIR

Every year in November, the Career Day enables companies to meet students and young graduates via conferences and individual meetings.

## HR WORKSHOPS

Companies participate in preparing 5<sup>th</sup>-year students in recruitment procedures.

# ESTACA'LAB: RESEARCH FOR TOMORROW'S TRANSPORT INNOVATIONS

**ESTACA research center conducts activities on innovative technologies for transports and mobility, in order to respond to the environmental and social challenges.**

**It works to the emergence of new technologies for green, sustainable, smart and adapted transports for new mobilities focusing on four priorities:**

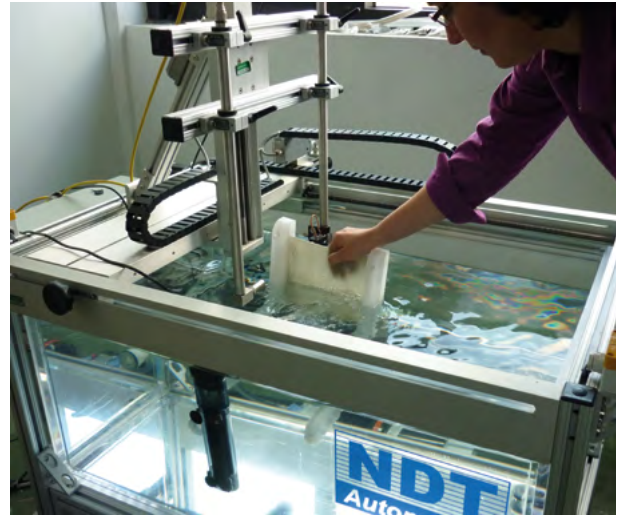
- Analyse and reduce polluting emissions (greenhouse gases, particles, oil, etc.) particularly by the development of capture techniques;
- Accelerate the advent of materials of the future: intelligent, bio and eco composite materials for sustainable weight reduction;
- Contribute to the development of means of transport that are more efficient, safer, more intelligent and communicate more, with delegation of driving;
- Work towards new forms of mobility: use of innovative transport, acceptability, inter-modality and new services provided to users.

The main specific characteristic of ESATACA'Lab is to carry out applied work or work that is applicable to the air and land transport industrial sector. Its know-how is based on strong linkage between theoretical, digital and experimental knowledge.

## DYNAMIC RESEARCH INTEGRATED IN FIVE COMPETITION CLUSTERS

ESTACA's researchers collaborate with associated industrial sectors and contribute to developing their competitiveness and expertise. In a strongly collaborative mode, they provide their know-how and skills to respond, with academic and industrial partners, to technological breakthroughs in transport sectors that are currently undergoing profound transformation. Their actions are based on strong territorial roots, whether these are in the Paris region or in the Pays de la Loire (North West of France).

This organisation aims for a differentiating position within scientific communities, institutes and centres of excellence such as ITE VEDECOM (energy transition institute on the communicating non-carbon vehicle and its mobility) and IRT SystemX (technological research institute dedicated to the digital engineering of future systems) in the Paris region, as well as with regional partners in the Pays de la Loire. The involvement within competition clusters follows the same logic, with Mov'eo, Astech and Systematic in the Paris region and EMC2 and iD4Car in the Pays de la Loire.



**All research work is based on the skills of two divisions:**

- The Environment and Mechanics of Composite Materials division (2MCE)
- The On-board Systems and Energy for Transport division (S2ET)

## INDUSTRIAL PARTNERS





# STUDENTS' ASSOCIATIONS: COMMITMENT AND COMPANY SPIRIT

Learning to be an engineer at ESTACA is not just about acquiring knowledge, it also means pursuing passions, opening up to the world and believing in and defending one's convictions.

Associations give students the opportunity to realize enriching missions to help others. It is also an opportunity, via concrete projects, to learn about managing people and resources, achieving goals within deadlines, managing communication, etc. These are all essential experiences in their future life as an engineer.

- **PV3e and its energy vehicles:** 2 700 km on one liter of petrol! An association that designs and builds low-energy vehicles (petrol and fuel cell) to participate in the Shell marathons. The goal is to cover as many kilometres as possible with the minimum energy.
- **Rocket club:** ESO (Estaca Space Odysée) designs, builds and launches experimental rockets, mini-rockets and stratospheric balloons with the methodological and logistical support of Planète Sciences. Launches take place during C'Space campaigns organized by the CNES (Centre National d'Etudes Spatiales).
- **Cercle Aéronautique and Flying West build historic aircraft** (the Paul Cornu, 1<sup>st</sup> ever helicopter, the Flyer 1 of the Wright brothers or the Favre, 1st seaplane) or flight simulators, innovative aircraft (solar airship), etc. They also organize inaugural flights (plane, helicopter, aerobatics), plane trips, conferences, company visits, flying lessons, etc.
- **Pégase initiates primary school children to technology and sciences.** The students conduct missions in schools in the Paris region, in Laval and Senegal.
- **Estacaide develops international solidarity projects** and is working for a fairer and more inclusive society. The association develops humanitarian projects such as enhancing hygiene conditions in Vietnam.
- **ESTACA MOTOTECH designs and builds two-wheeled prototypes.**
- **The Bureau des Arts includes theatre, music, drawing, photo** and circus activities and also publishes the school's newsletter.



THE BUREAU DES ARTS

## AND ALSO

The Student Office, Sports Office, Estatrain, Estacatrelle, Estacom, Estaca Modelisme and Model Ouest, ESTACA Sailing, the ski club, ICAE, Emos Karting, RACE, Air Addict, etc.

## JUNIOR ESTACA

Since 1983, the association has been offering companies technical studies conducted by ESTACA students. Baptised "Junior Enterprise", a guarantee of the seriousness and stability of the association, it is specialized in technology and R&D consulting applied to **the four transport sectors: automotive, aeronautics, guided transports and space**. It develops studies in IT & Automation, Electricity & Waves, Mechanical engineering, etc.



PEGASE



PV3e

# A SCHOOL OPEN TO THE WORLD

## INTERNATIONAL ENGINEERS OPEN TO THE WORLD

Understanding different technologies and cultures on a global scale is essential for future engineers. International experience is therefore mandatory for our engineers. It can take three forms:

### INTERNSHIPS

All internships can be taken abroad. They enable students to discover different professional practices and develop a strong network of contacts abroad. Target destinations are countries where the transport industry is strong or emerging: The United States, Russia, Canada, Brazil, China, India, Germany, United Kingdom, etc.

### SEMESTERS AND DOUBLE DEGREES ABROAD

The school has signed agreements with universities throughout the world. Students can spend a semester of study or follow courses to graduate abroad (double degree). These partnerships are part of the European and international networks of which ESTACA is a member, including: Erasmus +mobility program, BCI (Cooperation Bureau for Universities in Quebec), Campus France, etc.

### RESEARCH PROJECTS

ESTACA also enables its students to conduct applied research projects with foreign universities. In reply to specifications proposed by industries, 4<sup>th</sup> year students for example, spend a semester with students from the space propulsion department of the University of Alabama in Huntsville (UAH). As well as the multicultural dimension, those partnerships allow students to learn about remote work, managing internationally, working with major international institutions and associated methods.

## WELCOMING INTERNATIONAL STUDENTS

As part of agreements with its partner universities, ESTACA welcomes international students to its engineering courses. Some students follow the last two years of the programme and graduate with the ESTACA diploma.

The school also offers a program of 30 ECTS in English entitled "Automotive and Aeronautics Design" (AAD), open to international students during the spring semester (January to May).

ESTACA also open its courses in French for one semester or one year for international students.

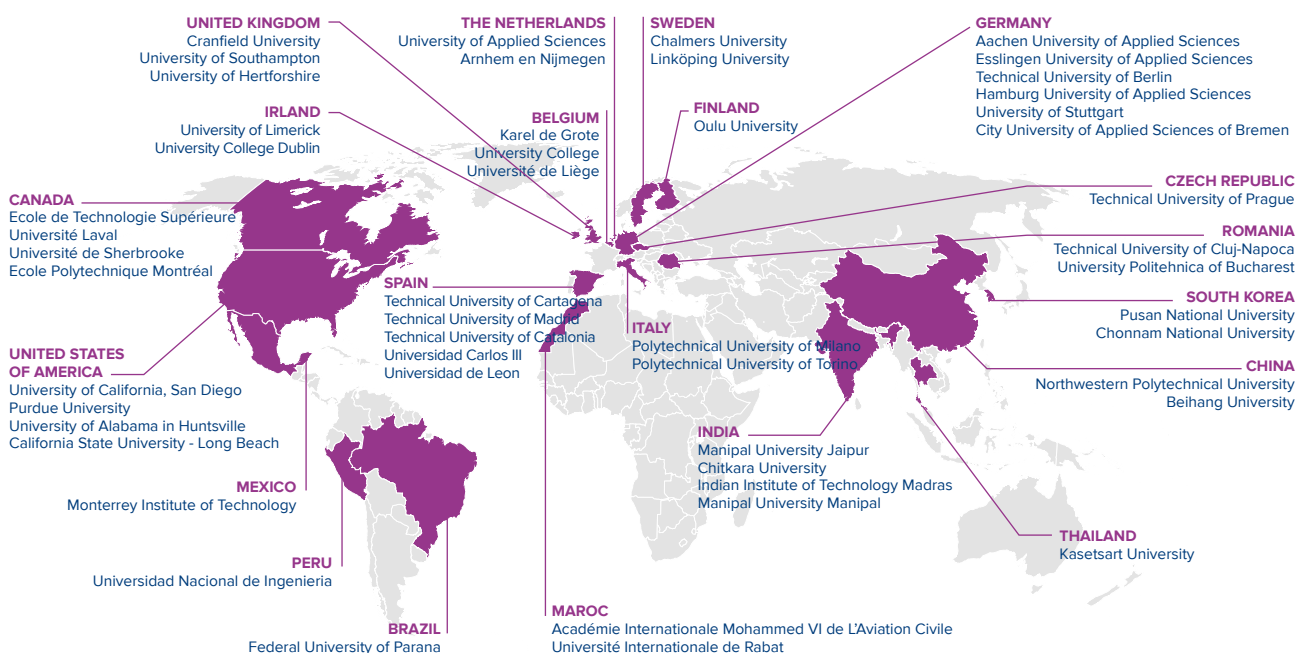
## INTERNATIONAL IN FIGURES

**50**  
university partnerships  
in 18 different countries

**21%**  
hired internationally

**10%**  
of students graduated  
with a **double diploma**

**337**  
students did their  
internship abroad in  
2016-17



# HOW TO APPLY?



## ADMISSION FOR EXCHANGE AND VISITING STUDENTS (EXCEPT POST-MASTERS)

### EXCHANGE STUDENTS

Students from our partner universities are welcome to apply for our French and English programs. ESTACA has signed partnerships with universities in the world, and receives foreign students from them.

### NON-EXCHANGE STUDENTS (VISITING STUDENTS)

If you are a student from a non-partner university, you can also apply for our French and English program. We can insure you of the highest quality of our courses. If you come from a non-partner university, you will have to pay school fees for your studies at ESTACA. The fee amount may vary depending on the program.

### Courses opportunities (courses taught in French and in English) only for a semester or a year:

Only students who have a B2 level in French (or equivalent) may apply for our standard engineering courses.

To get information about the curriculum of 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup>, Post Masters and AAD Program please download the courses' catalogue on our website: [www.estaca.fr/en](http://www.estaca.fr/en).

### Here are the steps required to apply:

1. Download and fill in the application form for visiting students (from non-partner universities) or exchange students : <http://www.estaca.fr/en/admission>
2. Send your application and the required documents to [international@estaca.fr](mailto:international@estaca.fr)
3. Receive your acceptance letter.
4. Apply for your French visa (if you are a non-European citizen).

### The application deadlines are:

- For the Autumn Semester: May 1<sup>st</sup>
- For the Spring Semester: October 15<sup>th</sup>

## ESTACA - ADMISSIONS PROCEDURES FOR THE POST-MASTERS IN ENGLISH

### POST-MASTER IN AIR OPERATIONS AND MAINTENANCE

#### Eligibility:

This program is open to all foreign and French students holding a Master's Degree (preferably in scientific fields, business master may also apply) or having completed five years of studies in an Engineering degree. Applicants should have English language proficiency (TOEFL iBT: 91 or TOEIC: 850 or IELTS: 6.5)

#### Admission Process:

- Application period: application is to be sent before the meeting dates of the selection committee: March 30<sup>th</sup>, May 30<sup>th</sup> and June 30<sup>th</sup>.
- Admission upon application, possibly with an interview.
- Application Form available on the website: <http://www.admissions-estaca.fr>

### POST-MASTER IN EMBEDDED LIGHTING SYSTEMS

#### Eligibility:

- This program is open to all foreign and French students holding a Master of Science (preferably in scientific fields). Applicants must prove an engineering degree recognized by the Commission des Titres d'Ingénieurs (Commission for Engineering Degrees), or a master degree or equivalent, or a foreign degree equivalent to one of those.
- Applicants should have English language proficiency at the B2 level (minimum paper based TOEFL: 575 or TOEIC: 785).
- A limited number of applications, not fulfilling the degree criteria but with outstanding credentials.

#### Admission Process:

- Admission upon application followed by an interview.
- Application period: From February 15<sup>th</sup> to July 15<sup>th</sup>
- Application form available on the website : <http://embedded-lighting.com/admissions/>

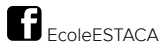
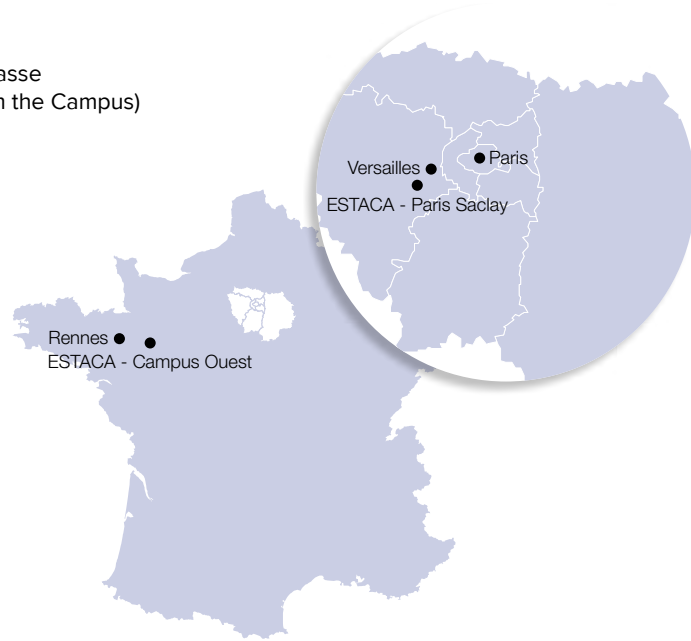


### ESTACA - Paris Saclay - Access

- SNCF (RER C, line N or U): Gare Saint-Quentin-en-Yvelines

### ESTACA - Campus Ouest - Access

- SNCF: TGV, 1½ hrs from Paris Montparnasse  
(from Laval train station 15 min walk from the Campus)
- Car: motorway A81 (300 km from Paris)
- Bus: lines 13 and Lano



#ingénieurESTACA

#changerlemonde



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