

# Inventing the transports of tomorrow

Automotive  
Aeronautics  
Guided Transports  
Space



**TRANSPORT  
AND MOBILITY  
ENGINEERING  
SCHOOL**

# 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) 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 a member of the “**Conférence des Grandes Ecoles**” (**CGE**), the French national institution that represents the **best Graduate Engineering Institutions accredited by the Commission des Titres d’Ingénieur (CTI)** to deliver the French Graduate Engineer Degree, equivalent to a Master’s Degree.

Located on two sites, in the Paris region in Saint-Quentin-en-Yvelines and in the Mayenne region in Laval, ESTACA should open a third campus in Bordeaux in a few years.

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

## ESTACA IN FIGURES

2

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

2 100

**students**

380

**graduates** per year

8 500

**alumni** since the school’s foundation

35

**student** associations

70 %

**of teachers** are **active engineers**

2

**research** teams

1

**year mandatory** internship in company

39 500 €

**average starting salary** for graduates

56

**partner** universities **abroad**

91 %

**of students** **hired prior to** **graduation**

50

**find jobs** following their final year internship

19 %

**of young** **graduates** are hired **abroad**

## ESTACA NETWORK

- **ISAE:** group of aeronautics and space schools (ISAE – Sup’Aéro- ENSMA, Ecole de l’Air, SUPMECA)
- **PEGASUS** (partnership of 28 leading European aerospace universities)
- **CGE**
- **Campus France:** n+i (recruitment of international students)
- **France Alumni**
- **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)
- **Eles Bougent** (to stimulate career interest in transport engineering in young women)
- **PEPITE PEIPS** (entrepreneurship cluster of Paris Saclay Region)

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

## /// ESTACA'S GRADUATE SKILLS

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.



## /// 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...

### 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...

### RESEARCH PROJECTS

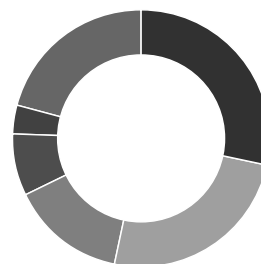
ESTACA also enables its students to conduct applied research projects with foreign universities. In reply to specifications proposed by industries, 4<sup>th</sup> year students for example, spend a semester with students from the space propulsion department of the University of Alabama in Huntsville (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.

## /// ESTACA GRADUATE SECTORS



- Aeronautics **37%**
- Automotive **24%**
- Guided Transports **6%**
- Space **4%**
- Other transports **18%**
- Other sectors **16%**

## /// ESTACA GRADUATE POSITION



- Research & development **28,5%**
- Production, operation, quality **25%**
- Audit, Inspection, Technical support **14,5%**
- Marketing, sales, purchase and commercial **7,8%**
- General management, innovation & finance **3,6%**
- Other positions **20,6%**

# WELCOMING INTERNATIONAL STUDENTS



## /// 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 taught 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 taught 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.

### MOTORSPORT ENGINEERING & PERFORMANCE

**A unique program in France to meet the needs of the competitive motorsports sector.**

Competitive motorsports need qualified engineers specially trained to work in this sector. The Motorsport Engineering Performance Post-master's degree answers this need with a course that builds high-level skills and expertise in the Motorsport sector.

Developed jointly with the French company and team ORECA, a specialist in the design and production of racing cars, this MS<sup>®</sup> provides training in design, optimization and organization of all the technical solutions in the Motorsport sector, but also mastery of special production and manufacturing methods. Part of the course is given at ESTACA Campus Ouest, 30 minutes from the Le Mans race Track. The second half of the program is given near the Paul Ricard track in Le Castellet (Signes).

**One-year program fully taught in English:**

- 480 hours of academic coursework
- 6 months internship
- Professional dissertation

**Industrial partners:** ORECA, FIA, Renault Sport Racing, Automobile, Club de l'Ouest and Peugeot Motorsport.





### /// SHORT TERMS PROGRAMS

#### **ONE SEMESTER PROGRAM - AUTOMOTIVE AND AERONAUTICS DESIGN PROGRAM (AADP)**

**An innovative program to operate numerical tools, aligned with industrial requirements.**

The objective of this program is to provide students with the means of achieving high quality design, as well as cost reduction and best time-to-market skills. The training in CAE combined with its immediate application to a design project carried out in an international team, coupled with an introduction to French culture and language help students acquire the latest and most technologically advanced computer skills and expertise to work in an international environment.

**One semester program fully taught in English in Paris / on the Paris-Saclay Campus:**

- 250 hours of academic coursework (January to May)
- Design project (150 hours)
- 32 ECTS credits

#### **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 behaviour.**

During this program, students will have lectures, practical work classes combined with company visits (Latmos, Safran) and cultural tours (Château de Versailles, Bateaux mouches).

**Four week-long program fully taught in English in Paris /on the Paris-Saclay Campus:**

- Around 90 hours of academic coursework (July)
- 10 ECTS credits

### **SPACE SUMMER PROGRAM**

**The Space Summer Program jointly-organised by ECOLE DE L'AIR, ESTACA, ISAE-ENSMA, ISAE-SUPAERO and SUPMECA is intended primarily for the ISAE Group partner universities.**

It will provide the students with an overall knowledge of aeronautics and space fundamentals, as viewed from an European point of view.

The contents include scientific and technical courses but also general conferences and visits to aerospace and cultural sites.

The program is designed for junior or senior undergraduates with a strong interest in space having a solid background knowledge in aeronautics and/or space sciences.

**Four week-long program fully taught in English (one week on each organising school's campus):**

- Around 130 hours of academic coursework (June)
- 3 to 6 ECTS credits



**For more information on those programs: <https://www.estaca.fr/en/programs/>**

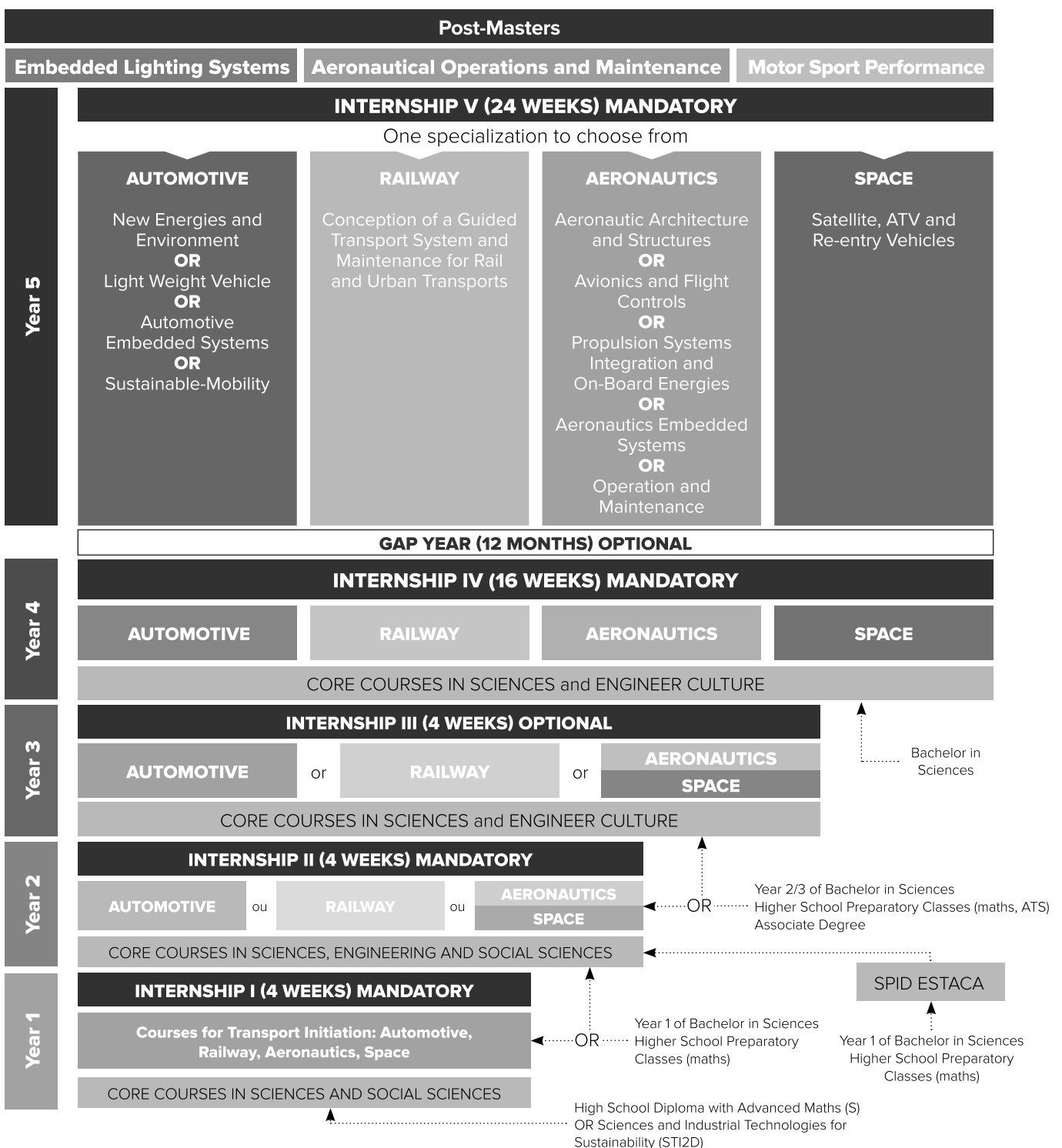
# FRENCH GRADUATE ENGINEER DEGREE



## /// PREPARING THE MOBILITY SPECIALISTS OF TOMORROW

Engineers that are operational and can adapt to the technological changes of tomorrow's industrial world. The French Master of Engineering 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 and work on personal development and open up to the world.

## /// CURRICULUM



# INTERNSHIPS, GAP YEAR AND JOBS



## /// INTERNSHIPS AND GAP YEAR

Each student spends at least 12 months in a company during their ESTACA curriculum. There are 4 mandatory internships and an optional gap year is possible at the end of the 4<sup>th</sup> year. Any internship or gap 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

	J	F	M	A	M	J	J	A	S	O	N	D
<b>1<sup>st</sup> year - mandatory</b> Entry-level internship Aim: Uncover the business environment							end of June - end of August 4 weeks minimum					
<b>2<sup>nd</sup> year - mandatory</b> Entry-level internship or Discovery of a compagny or personal initiative abroad Aim: Uncover the business environment and/or a new culture							end of June - end of August 4 weeks minimum					
<b>3<sup>rd</sup> year - optional</b> Work experience internship Aim: Personal discovery							mid-June - end of August 4 weeks minimum					
<b>4<sup>th</sup> year - mandatory</b> Work experience internship Aim: Work in a team to complete an engineering project								May - end of September 16 weeks minimum				
<b>4<sup>th</sup> year - Gap year (optional)</b> Professional Immersion Internship Aim: Work in a team to complete an engineering long-term study project								May - end of September the following year / 44 weeks minimum				
<b>5<sup>th</sup> year - mandatory</b> Final year internship Aim: Complete a project which directly provides preparation for employment												mid-February - end of October 24 weeks minimum

## /// 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 guides students throughout their curriculum to help them onto the job market. Once graduated, professionals help them manage their career plan.

## /// ONLINE OFFERS

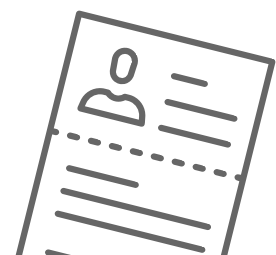
Offers of internships, gap year, volunteer projects, jobs are published online at [www.estaca.fr](http://www.estaca.fr)

## /// CAREER DAYS

Every year in November, the Career Days 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.



# 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 Enterprise", 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**





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

ESTACA research Centre (ESTACA'LAB) conducts activities on innovative technologies for transports and mobility, in order to respond to the environmental and social challenges.

The main specific characteristic of ESTACA'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 close ties between theoretical, digital and experimental knowledge.

It works to the emergence of new technologies for green, sustainable, smart and adapted transports for new mobilities: lightening of structures, air quality, depollution, electric/hybrid vehicles, autonomous vehicle, electric aircraft, drones, autonomous train, electric bicycle and soft mobility.

The two departments of ESTACA'LAB focus on four priorities:

## MECHANICAL RESEARCH DEPARTMENT



### AIR QUALITY

Dispersion and Infiltration of particles  
Improvement of air quality in transports  
Characterization of pollutants



### LIGHTENING OF STRUCTURES

Functional Structures Composites  
Link between damage and durability  
Biocomposites

## ENERGY AND EMBEDDED SYSTEMS FOR TRANSPORT RESEARCH DEPARTMENT



### ENERGY AND CONTROL

Storage systems and energy management  
Electrification and mechatronics optimization  
Faults Tolerant Control



### EMBEDDED SYSTEMS

Optimization of embedded SW architectures for real time applications  
Connected Mobility



## /// 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.



# 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 that matter, 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.

Each student can join any of the 30 students' associations according to their interests: technological, sports, humanitarian, cultural. The school encourages and supports these activities, considered in direct relation to teaching.

- **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 Odyssée) 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, 1<sup>st</sup> seaplane) or flight simulators, innovative aircraft (solar airship), etc. They also organize inaugural flights (plane, helicopter, aerobatics), plane trips, conferences, company visits, flying lessons.
- **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.

## /// 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.

## /// 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.



PEGASE



THE BUREAU DES ARTS



1ere place SP95 EducEco 2019

PV3e

# 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 all around 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> 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. Contact the International Office for application and required documents.
2. Receive your acceptance letter. It will directly be sent to your home university coordinator.
3. 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 AIR OPERATION AND MAINTENANCE & MOTORSPORT ENGINEERING AND PERFORMANCE

#### Eligibility:

- These programs are open to all foreign and French students holding a Master's Degree (preferably in scientific fields, business master may also apply) or equivalent. Applicants should have English language proficiency (TOEFL iBT: 91 or TOEIC: 850 or IELTS: 6.5).
- A limited number of applications, not fulfilling the degree criteria but with outstanding credentials will be considered.

#### Admission Process:

- Admission upon application, possibly with an interview.
- Application period: **for the Post-Master Air Operation and Maintenance**, 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> – **for the Post-Master Motorsport Engineering and Performance**, application is to be determined.

Application on the website:  
[www.admissions-estaca.fr/en](http://www.admissions-estaca.fr/en)

### POST-MASTER IN EMBEDDED LIGHTING SYSTEMS

#### 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 equivalent.
- 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 will be considered.

#### Admission Process:

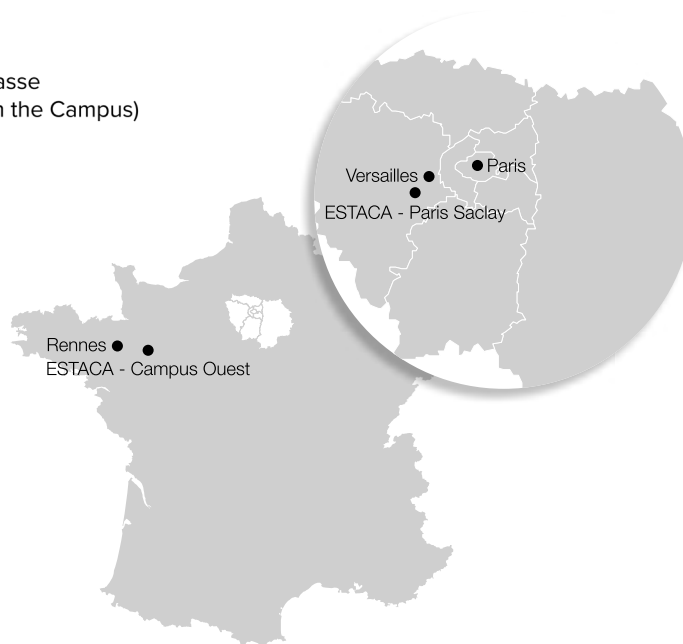
- Admission upon application followed by an interview.
- Application period: From February 15<sup>th</sup> to July 15<sup>th</sup>.
- Application form available on the website : <http://embedded-lighting.com/admissions/>

### 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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