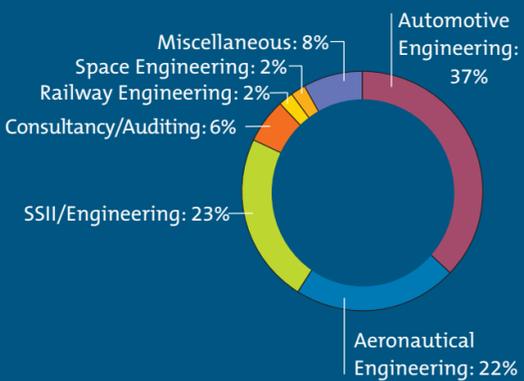
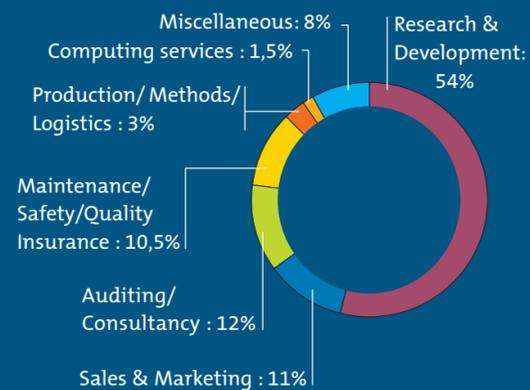


ESTACA, Engineers activities

Sectors of Activities of ESTACA Graduates



Career path taken by ESTACA Graduates



For more information, please contact us:

international@estaca.fr

<http://www.estaca.fr>



ESTACA

<http://www.estaca.fr>



ESTACA Paris

34, rue Victor Hugo
92300 Levallois - France
Tel: 33 (0)1 41 27 37 00
Fax: 33 (0)1 47 37 50 83

How to find us:

- Metro: Louise Michel on line 3
- RER: (Suburban Express Metro): Pereire on line C
- Rail: Clichy-Levallois from Paris St Lazare Station
- Bus: Porte d'Asnières, on PC Alsace Station, on line 53 or 94
- Road: from Paris, Porte d'Asnières, then to Levallois Perret

ESTACA - Campus Ouest

Parc Universitaire Laval-Changé
38, rue des Docteurs Calmette et Guérin
53000 Laval - France
Tel: 33 (0)2 43 59 47 00
Fax: 33 (0)2 43 59 47 09

How to find us:

- Rail: TGV (High Speed Train), 1h30 from Paris Montparnasse Station
- Car: A 81 motor way (300km from Paris)
- Bus: From Laval Center, line 7 or 12



Estaca

A leading Engineering School
for the transportation industry

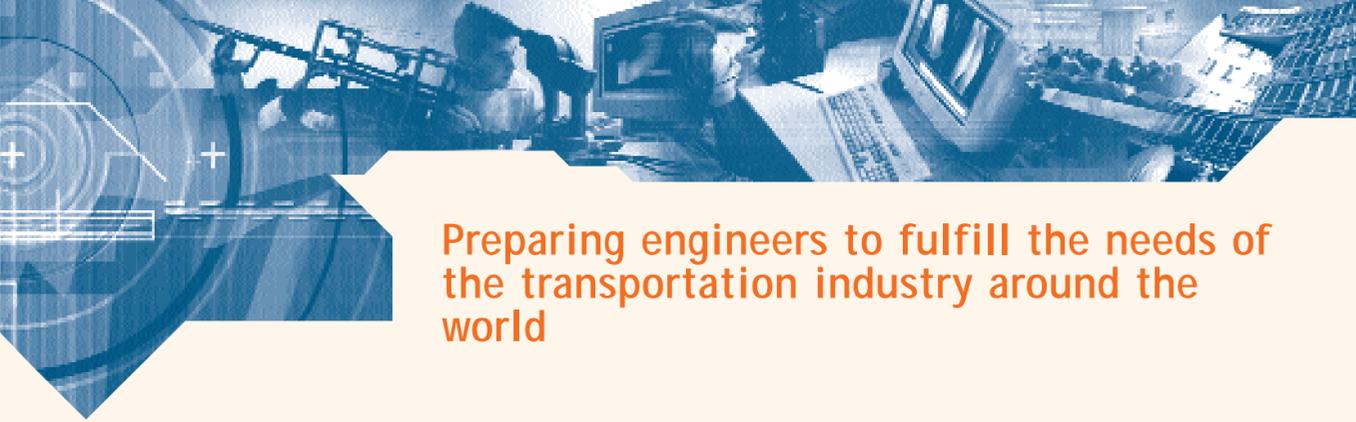


Automotive, Aeronautics, Spacecraft, Railway



Design : Paréo - Crédits photos : IM, Fainsliber, SNCF CAV (Fabro et Levêque), Dassault Aviation, CNES, Citroën





Preparing engineers to fulfill the needs of the transportation industry around the world

Founded in 1925, ESTACA is a member of the "Conference des Grandes Ecoles", a group consisting of the most prestigious engineering schools in France. ESTACA is highly specialized in the fields of automotive, aeronautics, space and railway engineering. ESTACA's graduates undertake the design, development and production of transport systems and components. The school's expertise is well recognized by the industry, which has ranked it among the best engineering schools for the quality of its graduates.

► A wide choice of courses

ESTACA offers different courses in transportation engineering areas :

- A Master Degree (Diplôme d'Ingénieur): 5-year engineering course taught in French,
- A Master of Science in Safety of Transportation Systems: 16-month program taught in English,
- A Master Euromind proposed in partnership with the University of Southampton in the UK and Linköping University in Sweden: 2-year program taught in English in at least two different European countries,
- A 5-month program taught in English specialized in Computer Aided Engineering and Design applied to the aeronautical and automotive sectors.

► Seven Research Labs

Research laboratories are a fundamental part of ESTACA's courses and they collaborate with industries in the form of partnership of research. They cover six fields of research: Fluids and Energetics, Control Systems, Noise and Vibrations, Structure and Materials, Mechatronics, Embedded Systems and Vehicle Dynamics. These laboratories are equipped with industrial-scale computers capable of operating CAD program (CATIA V 5, FLUENT, ADAMS, NASTRAN, MATLAB, etc.) and with experimental tools (wind tunnel with balance dard 6 components, LDV bench, fast 4 axes prototyping device, droop tower test, acoustic room, etc.).

► An International Dimension

ESTACA has developed an active international policy in order to train future engineers who will have the required skills to adapt to the globalisation of the transportation industry. It is compulsory for all ESTACA's students to carry out at last one internship or a university semester abroad. Agreements with more than 30 partner universities provide students with a wide variety of programmes and at least one research projects. They can also pursue one of their compulsory internships in a foreign country with one of the many international partner companies. Many foreign students attend courses at ESTACA, enrolling in the French Master Degree or one of the Masters taught in English.

► Close links with industry

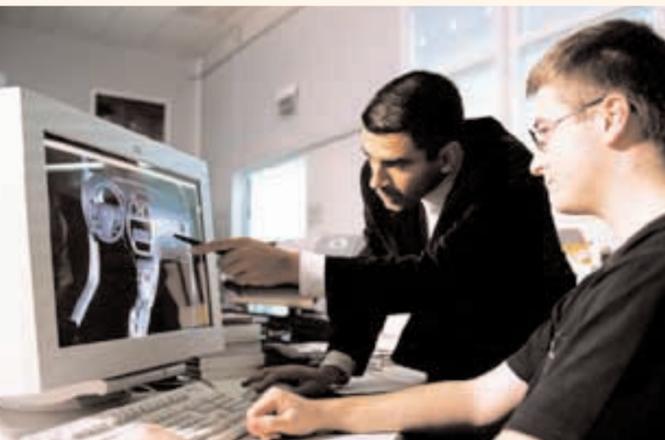
ESTACA recognises the need for professional engineers to adapt to the marketplace and keep up with the pace of development. The institution has developed strong links with the main companies and professional organisations within the transportation industry. Industry representatives participate actively in the updating of the training program. 70% of the teaching staff are practising engineers. Courses involve compulsory training periods in France and abroad (at least 12 months during the 5-year program). ESTACA also proposes continuing education courses dedicated to assisting engineers, managers and technicians acquire knowledge of the new technologies of transportation engineering.

► A wide-range of Student clubs

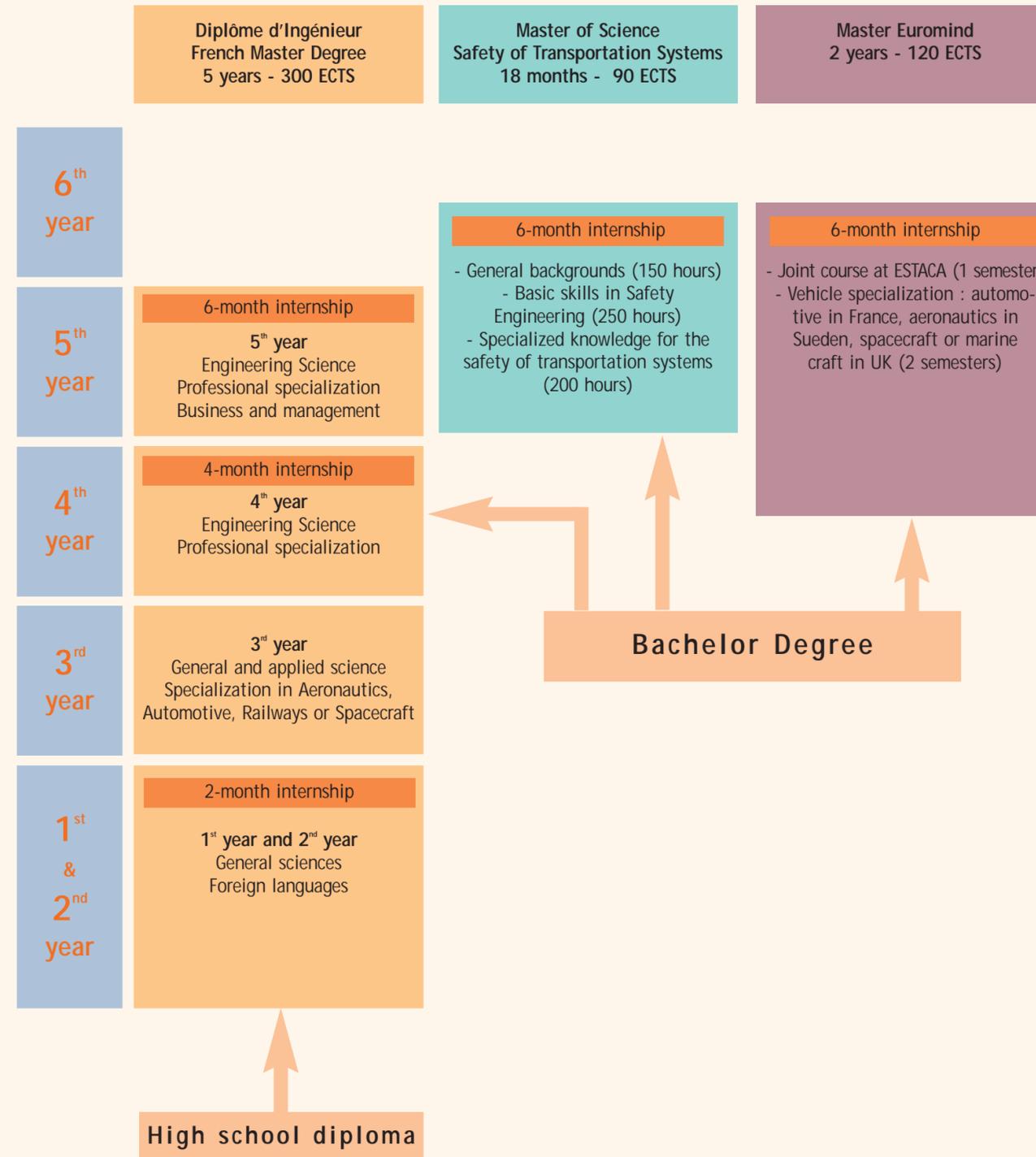
ESTACA actively encourage students to participate in club activities at the school because they give them an opportunity to freely express their passion for a technical, athletic, cultural or humanitarian activity. Through these activities, students learn to manage a club and gain first-hand experience of company administration: managing people and resources, setting and attaining objectives, drawing up budgets, communication and selling ideas, managing a project.

► A dynamic Alumni Society

ESTACA has over 5 000 alumni. More than 180 newcomers join their ranks every year. Graduates from ESTACA can be found all around the world, taking active roles in all fields of the transportation industry. The ESTACA Alumni Society is very active. It provides a number of services including an employment service available to young graduates and seniors.



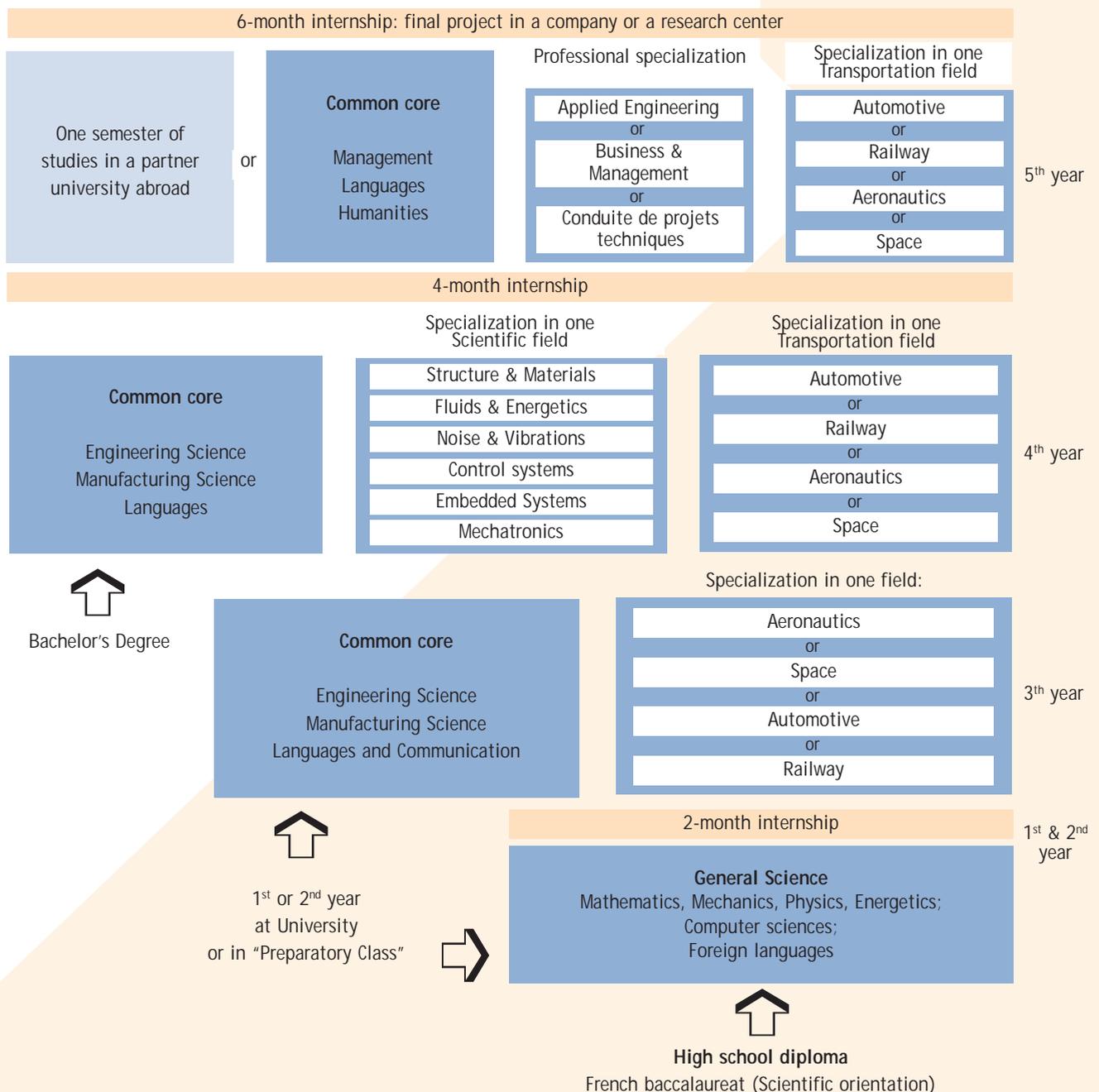
ESTACA Programmes

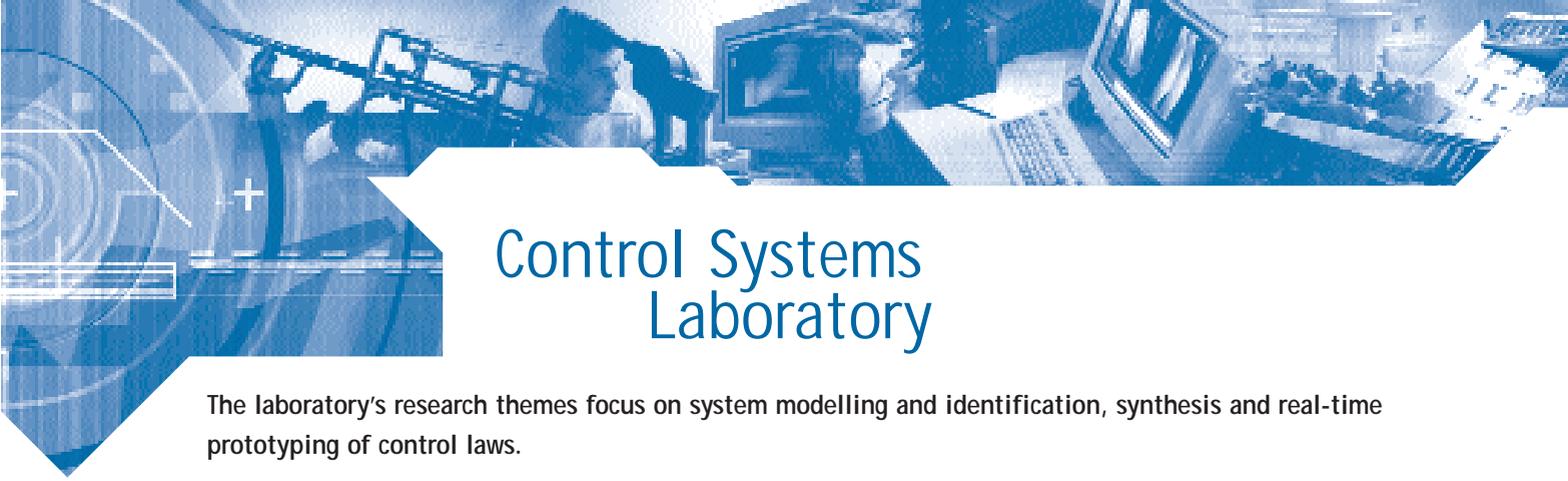


Master Degree in Engineering: Diplôme d'Ingénieurs

ESTACA's 5 year program is instructed in French. It aims to provide students with all the skills required for their future career as designers, creators, managers of complex technical and human systems in all the different areas of transportation. Students acquire :

- the mastery of the scientific disciplines vital to the work of an engineer : Mechanics, Electrical Engineering, Thermal Power, Mathematics, Computer sciences;
- general background in manufacturing sciences: Project management, Quality, Methods, Communication, Logistics, Manufacturing methods, Maintenance;
- detailed knowledge of one technological field of transport engineering: Aeronautical, Automotive, Space or Railway Engineering;
- in-depth study of the latest technological aspects of a scientific specialisation chosen by the student
- the practice of two foreign languages: English and a choice between German, Spanish and Chinese.
- a practical experience of the industry through the 12-month internship completed within a company.





Control Systems Laboratory

The laboratory's research themes focus on system modelling and identification, synthesis and real-time prototyping of control laws.

Fields of expertise

System modelling and simulation

- OD Modelling of systems (control model, co-simulation model)
- Dynamic behaviour of vehicle
- Heat engines, flight mechanics, etc.

Control systems

- Specifications of control strategies (hierarchical control, local control loops)
- Virtual and real-time prototyping of control laws

Signal analysis

- Disturbance Analysis
- System Identification

Numerical tools

- MATLAB / SIMULINK / STATEFLOW
- LABVIEW
- ADAMS
- AMESim
- FEMLAB
- PSIM



Experimental tools

- dSpace development devices (real-time control prototyping)
- Arbitrary functions generator
- Signal analysers
- Measurement acquisition line - Digital Oscilloscopes - Test benches

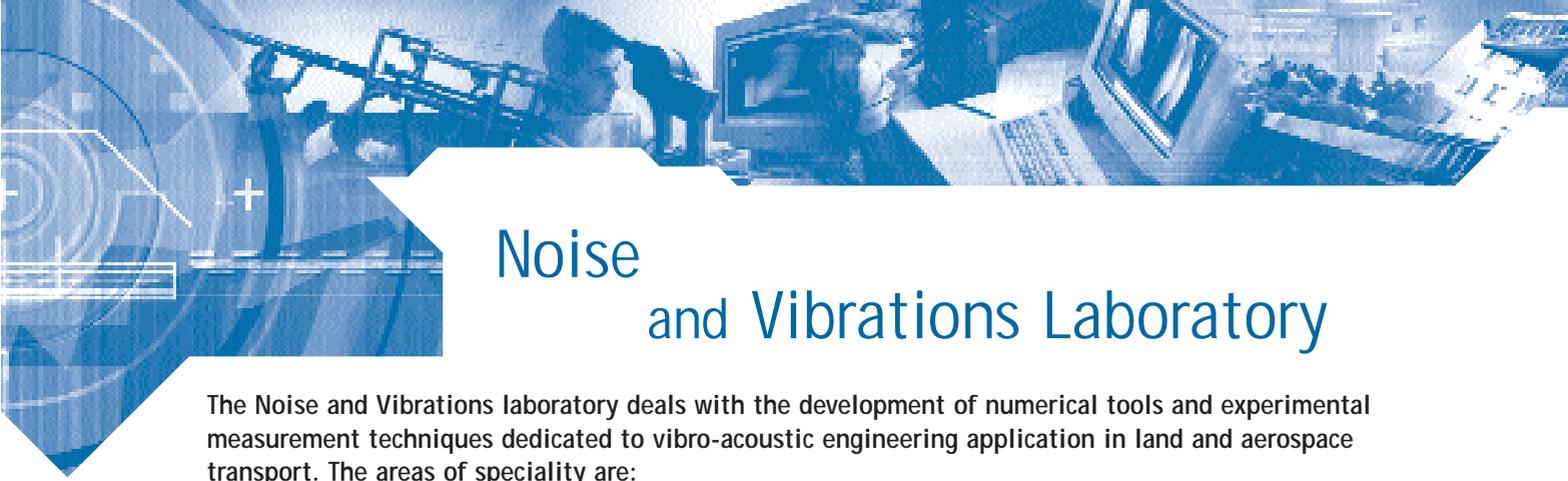
Example of recent achievements

- Development of a dynamic behavioural model of an automotive system (Dyn Auto Software)
- Multi-criteria optimisation of power electronics
- Modelling and control of an Active Magnetic Bearing rotating machine

Some partnerships

- INTERTECHNIQUE
- RATP
- AVL
- S2M





Noise and Vibrations Laboratory

The Noise and Vibrations laboratory deals with the development of numerical tools and experimental measurement techniques dedicated to vibro-acoustic engineering application in land and aerospace transport. The areas of speciality are:

- Linear acoustics, low and medium frequency
- Modal Analysis

Fields of expertise

The laboratory has identified a certain number of directions for development motivated by industrial requests in R&D:

- Dynamic acoustics and vibration absorbers
- Engine acoustics in admission and exhaust
- Development of noise and vibration measurement methods
- Analysis high-Frequency viscoelastic behavior

The application fields are :

- Enhancement of noise and vibration personal comfort
- Protection of equipment from vibrations
- Engine acoustics



Numerical tools



For its research and educational activities, the laboratory uses industrial software:

- for high-level modelling: MATLAB / SIMULINK, AUTOSEA, ADAMS
- for 3D modelling: NASTRAN, IDEAS, RAYON
- experimental: IDEAS TEST, PAK by MULLER BBM

Experimental facilities

The laboratory's experiment building houses two types of research equipment:

- acoustic chambers comprising a semi-anechoic chamber connected to an emission chamber for dealing with all issues of sound power measurement, transparency, acoustic imaging and acoustic-structure coupling.
- a vibration bench with a 22.2 kN electro-dynamics shaker in closed-loop, connected to a vibration table or seismic block enabling the behaviour of vehicle devices to be studied in almost-real operation.
- multi-channel acquisition systems (64 channels in PXI and 24 channels in VXI) enable us to acquire and analyse signals from various sensors (pressure, force and accelerometers) equipping the experimental devices of the equipment tested.

Examples of recent achievements

- Connection theory applied to acoustics: The aim of this research is to identify acoustic devices enabling passenger noise comfort to be enhanced by applying connection theory originally implemented in the field of vibration to acoustics.
- Modelling of the dynamic behaviour of the powertrain on its mounts: The study consists of using the high-level Matlab-Simulink model to model the dynamic behaviour of the powertrain fixed to its mounts taking account of the piston and connecting rod assembly connected to it. Different mount models are used: linear and non-linear.
- Engine acoustics in admission, modelling and measurement.



Some of our partners

- PSA
- MGI Coutier
- Paulstra





Structure and Materials Laboratory

The main purpose of this laboratory is to carry out new technological methodologies around structural and mechanical systems:

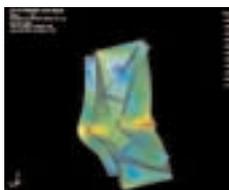
- Structural computing, linear and non linear, dynamic, thermal
- Computer aided design and manufacturing (CAD CAM)
- Dynamic, crash and shock computing on multimaterial composites
- Damage and failure mechanics for multi-layered composite with anisotropic material predictive tools development for damage initiation
- Fatigue behaviour of mechanical components under composed loading
- Kinematics features of mechanical systems like suspension, tearing

Fields of expertise

Computer aided design and manufacturing (CAD CAM)

- Solid and surface conception
- Assemblage assembly
- Numerical modeling

Structural computation



- Cadcam – numerical computation
- Static and dynamic simulation
- Thermal simulation
- Fatigue, failure and damage
- Dynamic with major deformation
- Crash study



Numerical tools

- CATIA V5
- IDEAS
- EXCITE, GLIDE, TYCON
- LS-DYNA
- MATLAB
- ADAMS
- ABAQUS
- PATRAN / NASTRAN
- PAM-MEDYSA

Experimental tools

- 4-axis rapid prototyping machine
- Stress test benches
- Vibration uncoupled flagstone 5x4 m2 (ESTACA-West Campus in Laval, Mayenne)
- Drop tower (ESTACA-West Campus in Laval, Mayenne)

Examples of recent achievements

- Numerical study of a piston and connecting rod assembly in a heat engine
- Dynamic behaviour of a child-seat mechanism during crash
- Numerical validation with Pam-Medysa of a multi-bodies systems like car suspension

Some of our partners

- PSA
- UTAC
- RENAULT
- UTAC
- AVL
- ESI



Fluids and Energetics Laboratory

The laboratory's research themes focus on the study of modeling and digital simulation of fluid flows, phenomena of thermal transfer and transport of matter: calculation CFD, experimental validation, approach system. The fields of application of this work include aerosol dynamics, solid/gas and liquid/gas separation, particle deposition by impaction, diffusion and thermophoresis.

Fields of expertise

Fluid mechanics

- CAD / mesh generation / CFD (external or internal aerodynamics)

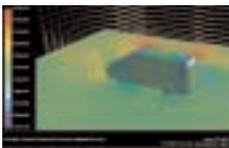
Heat and mass transfer

- Heat exchanger optimization
- Dispersed phase flow (solid or droplet suspensions)

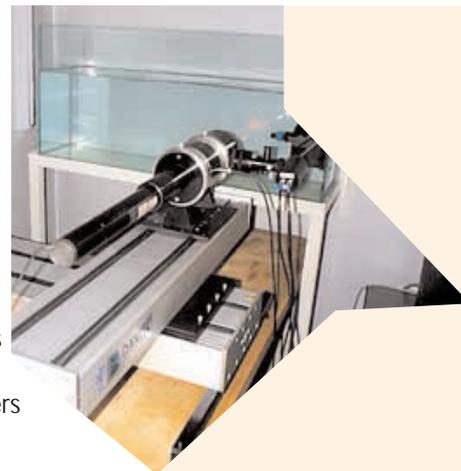
Hydraulic (OD/1D simulation)

- Analysis and optimization of hydraulic systems
- OD/3D coupling: interest of CFD for OD systems modeling OD (discharge coefficient calculation, et forces ...)

Measurements



- PIV, LDA flow field measurements
- Dispersed phase flow characterization (particle numbers and particle mass measurement)



Numerical tools

- FLUENT, GAMBIT, TGRID
- ICEM-CFD
- EnSight
- AMESim
- CATIA V5 and V4

Experimental facilities

- Wind tunnels with PIV measurement system
- 2D Laser Doppler Anemometry bench (LDA)
- Hot wire measurement system
- Thermophoresis measurement bench
- Electrical low-pressure impactor ELPI (0.3 up to 3 microns particle size measurement)

Examples of recent achievements

- Comparative study of the thermal and hydraulic performances of heat exchangers
- Study of filtration of air charged with oil droplets by centrifuging
- Experimental Study of thermophoretic separation in gas/particle dispersion media (solid or liquid)

Some of our partners

- HISPANO SUIZA
- INTERTECHNIQUE
- BOSCH
- CEP (Propulsion Test Center)
- AIR LIQUIDE
- IMAGINE
- DELPHI





Welcome to international students

Arrival in France

ESTACA provides full details on your arrival in France prior to your departure. You may also refer to ESTACA website for more practical information (www.estaca.fr).

Settling into ESTACA life

In order to help international students adapt to their new environment, ESTACA organises orientation programs. These meetings are the ideal opportunity to get acquainted with studying in France but also about living in France (accommodation, allowance, banks, ...). Numerous students' clubs at ESTACA will also be there to help and inform you on extra-curricular activities.

Residence Permit

Members of the European Union or EFTA

For stays in France longer than 3 months, you must obtain, within a period of 2 months after your arrival, a residence permit ("carte de séjour ") showing student status.

Non members of European Union

You should contact the French Consulate in your country of origin before your departure, in order to obtain a visa for 6 months. Once you arrive in France you should apply for a temporary residence permit, showing your student status.

Accommodation

ESTACA does not provide accommodation facilities but the school helps international students find accommodation in Paris. The rent may vary a lot according to the area, the quality and the size of the apartment. Prices range from about 150€ for a room in a student residence, 380 to 680€ for a bedsit, 150 to 300€ for a room with a family, 300 to 450€ if you share an apartment. You will be entitled to an allowance of 75 to 150€ per month from the French government to help you cover your rent. You will be asked to pay a deposit (which will be refunded when you leave) to cover any cost due to damage caused. The deposit is equivalent to 2 months of rent.

Living cost

As well as your tuition fees, you need to make sure that you have a sufficient budget on which to live. We recommend you to allow about 700€ per month

Health Care

Members of the European Union

You can benefit from the same Social Security scheme as nationals provided you ask for a European Health Insurance Card (replacing the current E111 and E128 forms) prior to your departure. This card will enable you to receive health care more easily and quickly in another Member State.

Non members of European Union

You can subscribe for the student Social Security if you are under 28 years old, if you are a citizen of a country which has an agreement with France, and if you are fully registered at ESTACA (not applicable for exchange students). If you do not satisfy these requirements, you can subscribe for a private insurance in France, which includes the reimbursement of all your medical care fees (including hospitalisation), repatriation, civil liability, and personal insurance. You can also subscribe for a private insurance in your country of origin. You will have to make sure that you are covered in France for medical care as well as hospitalisation, and civil liability. If your social security does not cover 100% of medical and hospitalisation fees, it is strongly recommended that you take out a voluntary health cover which will enable you to request reimbursement of medical fees not covered by the Social Security.

Financial Aid

Grants are offered by the European Community in the frame of ERASMUS SOCRATES agreements. You should apply before departure with your home university.

Non European students may benefit from scholarships offered by the Ministry of Foreign Affairs. You should apply to the French Embassy in your home country. Other types of grants or scholarships may be available in your home country.

Training

ESTACA's strong links with the transportation industry provide opportunities for training in France or abroad. International students benefit from ESTACA's network provided they are fully registered in a ESTACA program.

French Language

Optional weekly French Language courses are available to all international students.



Internship

Course	Level	Type	Length	Date
Master Degree in Engineering	2 yrs higher education	Discovery Internship	min. 8 weeks (may be divided into two 4-week periods)	July-August
Master Degree in Engineering	4 yrs higher education	Engineering placement	min. 16 weeks	May to mid-September
Master Degree in Engineering	4 yrs higher education	In-company sandwich-year	1 year	May to August next year
Master Degree in Engineering	5 yrs higher education	Final year placement	min. 24 weeks	January to August
Master of Science	5 yrs higher education	Master placement	min. 24 weeks	June to December
Master Euromind	5 yrs higher education	Master placement	min. 24 weeks	June to December

Internship

The internships are carried out in France and abroad. They are subject to a formal agreement between the company and ESTACA for insurance reasons. During the ESTACA 5-year engineering course, the length of compulsory training periods totals 12 months. The type of internship and its content are in direct relation to the student's academic progress. Placements are open to foreign students studying at ESTACA in the frame of an exchange agreement or as part of the international programs taught in English.

A few examples:

Master Degree in Engineering, 1st or 2nd year:

- › Brooklands Museum (United Kingdom): "Aircraft Restoration"
- › Edison (United States): "Test of sub-assemblies for customers in order to read drawings to assemble sub-assemblies"

Master Degree in Engineering, 4th or 5th year:

- › Ferrari (Italy): "Study of the future F1 chassis particularity"
- › Airbus (United Kingdom) "Aerodynamic design on wings and fuselage"
- › Bosch Braking Systems (Japan): "Define the reliability in development phase of the new actuation "Product of a braking system"
- › Paulstra (United States) : " Acoustic bushing conception "
- › Valeo Security Systems (Mexico): "Development of new production lines"

Master of science:

- › Faurecia (France): Development of seats for an automobile in order to improve safety of passengers in the case of an accident
- › Eurocontrol (Belgium): Surveying and monitoring for ATM (Asynchronous Transfer Mode)

In-company Sandwich year

The sandwich year takes place at the end of the 4th year of the Master Degree in Engineering. It is a period of training where the student joins an operational team for a total of 12 months from September to August of the following year. This period enables the student to obtain hands-on experience of all the different aspects of the work carried out by an engineer.

It also enables the company:

- › to benefit from the student's presence during a sufficiently long period to treat complex issues
- › to put the student in a real-life situation.

A few examples:

- › Dassault Systems Nagoya Branch (Japan): Support of Aerospace customer in Asia with a strong focus on Japanese companies and support
- › Arvin Meritor Spain Air (Spain): Developing and processing of the industrialization of an exhaust system

If you would like to post an internship offer:

Please give the following details:

- › corporate name and address of the company
- › name and address of the person to contact about the internship
- › subject and goals of the internship
- › preferred academic level and length of the internship
- › location of the internship
- › compensation details
- › any other comments



Computer Aided Engineering and Design program applied to the Aeronautical and Automotive Sectors

Focus on state of the art numerical tools, a must for the industry in the new millennium

The modern aeronautical and automotive industries need engineers who know more than the traditional skills. They need to acquire the latest and most technologically advanced computer skills and to be able to work in an international environment. ESTACA offers a one semester program in CAE and Design applied to the Aeronautical and Automotive sectors. The objective of this program is to provide students with the means of achieving high quality design, cost reduction and best time-to-market skills. Combining the training in CAE and its immediate application to a design project carried out in an international team, optimises the training period for maximum results, after which the students are immediately operational.

Goals

- ▶ to learn and operate CAE tools in order to design and fit aeronautical and/or automotive systems and subsystems
- ▶ to acquire practical skills and knowledge through intercultural projects

Content

Module 0	Module 1	Module 2	Module 3	Module 4	Module 5
Language Program : Introductory compact course in French language and culture	Applied Mathematics Statistics, Signal Processing, Numerical Analysis, Functional simulation (MATLAB)	Structural Design Mechanics, Elasticity, Finite Element Method, Mechanical Behavior Simulation (ADAMS), CAD (CATIA), Mechanical Dimensioning (NAS-TRAN),	CFD –Heat Transfer CFD Fluid Mechanics (FLUENT)	Systems Engineering Systems Engineering RAMS Functional Analysis	Team Research Project in Automotive or Aeronautical field performances, design, etc.

Organization

- ▶ Academic training period: 5 months from January to May
- ▶ Language of instruction: English
- ▶ The program is worth 32 ECTS (European Credit Transfer System)



Admission requirements

Applicants must hold a Bachelor Degree or have completed three years of studies in an Engineering degree. If English is not the first language of the applicant, he or she must also be able to prove proficiency in English.

Application should include:

- ▶ Application form
- ▶ Official university transcripts
- ▶ Test results proving proficiency in English (TOEFL, TOEIC, CAMBRIDGE, or equivalent...)
- ▶ Passport copy or other identification documents
- ▶ Curriculum Vitae/ Resume
- ▶ Statement of Intention
- ▶ Recommendation form



Tuition fees

3 500 Euros. (waived for exchange students if signed agreements between ESTACA and applicant's university exist).

The application form is available on the website : <http://www.estaca.fr>

Deadline for the semester starting in January : November, 30th

