

AUTOMOTIVE & AERONAUTICS DESIGN PROGRAM



Learn through intercultural projects.
Get the skills and qualifications to operate numerical tools.
Study in English, live in Paris, discover Europe.

Move your passion to knowledge

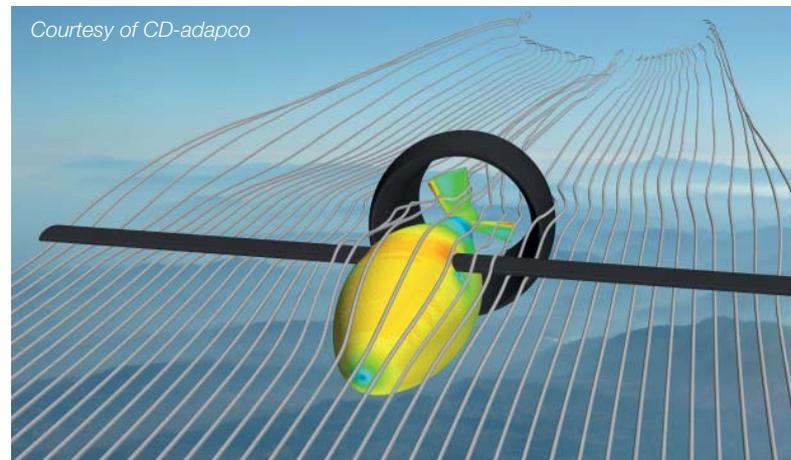
AN INNOVATIVE PROGRAM TO OPERATE NUMERICAL TOOLS, ALIGNED WITH INDUSTRIAL REQUIREMENTS

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, optimizes the training period for maximum results, after which the students are immediately operational.

Benoit SAGOT, Program Director



At first I chose France as an ideal country for a study-abroad experience because this country is...

...quite advanced in the field of aviation. Another thing that attracted me to ESTACA was its AAD program. I had always wanted to train my skills with computers as it plays a more and more important role in modern industry. So AAD (Automotive & Aeronautics Design) was just what I want! I definitely have spent a great time during these four months. The AAD program has expanded my knowledge and practical skills on CFD, FEM and so on. It has also provided me a chance to know about some different characteristics of engineering education system in France, which pays some more attention on standardization, replaceable personnel, etc. compared to China. After my stay in France, I gained a wider view of my professional field and I now I know in which specific field I should work harder to gain expertise. The best 'souvenir' would be those beautiful pictures, valuable documents and above all, a beautiful memory of what ESTACA has done for me. Thank you so much!



Guanting SU, Student from "Beihang University" (China) à l'ESTACA en 2014

AAD Program in brief

Aim

Learn and operate CAE tools to design and fit aeronautical and automotive systems and subsystems.

Program benefits

- ✓ Teaching faculty heavily involved in the industrial sector ;
- ✓ Work with industrially relevant computation software and methods ;
- ✓ Study in a multicultural environment.

Skills acquired

- ✓ CAD design and FEM/CFD simulation ;
- ✓ Development of capacity to work in project mode ;
- ✓ Understanding of the role of numerical tools in a design process.

Course break down

- ✓ Lectures ;
- ✓ Labwork ;
- ✓ Project team work.

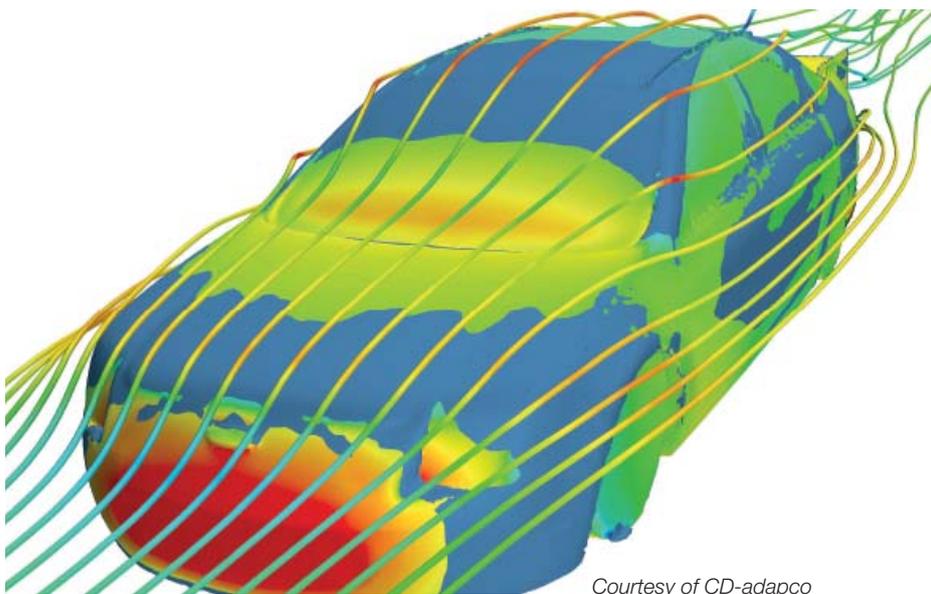
Academic period

- ✓ 4 months from February to June ;
- ✓ 2 weeks of vacation in April to discover Europe or France.

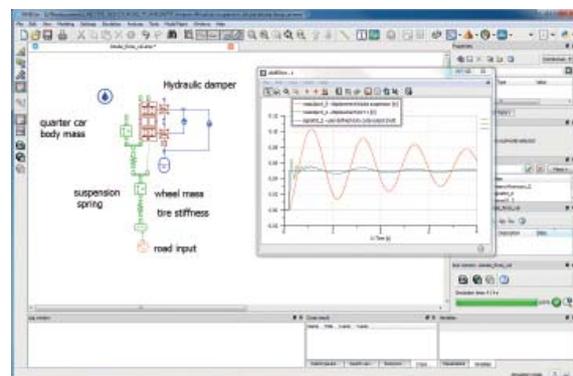
Language: English

Number of credits: 30 ECTS

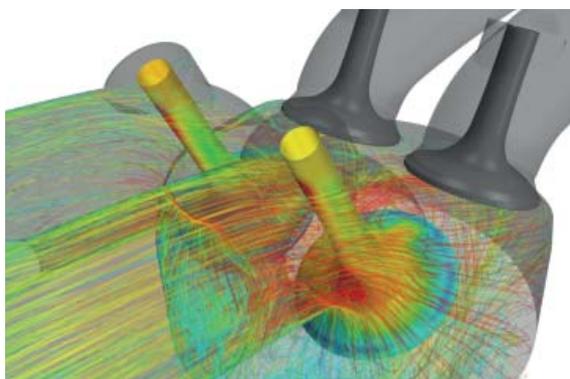
Modules & Partners	Objectives	Courses	ECTS
Computer Aided Engineering	Upon completion of this course, the student will be able to autonomously use the major features of the CATIA V5 solutions: part design and assembly design. An introduction to surface design is provided, for further use in interdisciplinary applications (CFD or FEM)	Catia design and simulation (Labwork)	2
Signal Processing	This course introduces signal processing basics: signal representation, classification of signals, standard functions such as Laplace transform, convolution, correlation. Fourier transform is introduced. Matlab labworks provide an opportunity to apply the concepts of sampling process, the Shannon theorem. Experimental sessions in the Acoustic department are planned to illustrate the fundamental principles and practical techniques such as FFT (Fast Fourier Transform)	Signal Processing (Lecture) Matlab Labs (labwork) Exp Signal Processing (labwork)	4
Computational Fluid Dynamics	This course introduces the main key stages of producing an accurate CFD (computational fluid dynamics) simulation. The lecture is oriented to a simplified presentation of the finite volume method, together with an illustration of the different meshing strategies, to obtain a reliable simulation. Students will use the industrial software STAR-CCM+, with different case set-up for both automotive and aeronautics applications (winglet, car drag evaluation ...). A lecture on heat transfer is provided, to develop the ability to conduct thermal analysis, for classical engineering applications.	Computational Fluid Dynamics (Lecture) Matlab CFD (Labwork) CFD with STAR-CCM+ (Labwork) Heat Transfer (Lecture)	5
Hydraulic systems	This module provides a deep understanding into dynamic physical systems which are analyzed and designed by engineers. The labworks emphasize the key features for modelling multiphysics systems such as coupled thermo-hydro-mechanical application (car suspension, hydraulic piston pump ...).	Hydraulic systems simulation (Labwork)	2



Courtesy of CD-adapco



Modules & Partners	Objectives	Courses	ECTS
Structural Design	<p>This course presents the basic fundamentals and techniques of stress analysis, using real structural problems to illustrate the fundamental principles and practical techniques.</p> <p>Labworks introduce this FEM methodology with CATIA V5.</p> <p>Crash simulation is also introduced during Labwork.</p>	<p>Finite Element Method (Lecture)</p> <p>FEM Simulation with CATIA (Labwork)</p> <p>Crash simulation (Labwork)</p> <p>Dynamic Structure Analysis (exp. Labwork)</p>	5
Technical project	<p>To experience team working and to develop analysis and synthesis skills necessary to project management applied to aeronautic or automotive domains :</p> <ul style="list-style-type: none"> - to improve technical and organizational skills ; - to develop communication skills ; - to develop ability to project ; - to acquire an expertise in methodologies and software used in industries. <p>At the end of the project, groups are required to report and present findings.</p>	Project	8
French language and Culture	<p>Objectives : to improve students' oral and written proficiency in French language, and to give them a better knowledge and comprehension of French culture :</p> <ul style="list-style-type: none"> - basic Written Skills (Grammar, Spelling, Writing) ; - written Comprehension (Newspaper analysis, ...) ; - listening Comprehension (Reports or films) ; - oral Expression (Role plays, Speech,...). 	French Language and Culture (Lecture)	4



I chose this program because ESTACA has a lot of mentions of its level of expertise...

...in the field of transportation. It also allowed me to practice my English while learning French and gave me an opportunity to live in Paris. In addition, the AAD (Automotive & Aeronautics Design) program sounded promising, offering a large toolkit of softwares which are currently used in the industrial world. It was a splendid experience, of which I enjoyed every single moment. Collaborating with teachers and students of other nationalities and cultures has opened my 'panorama'. The professional project I developed at ESTACA gave me a clear idea on how to solve problems with research skills. And all the tools will help me to learn more easily any computational tool that my future job will require me to master. Undoubtedly, the educational experience was the best! Teaching methods are very different from those used in my country. I am now open to new ways of learning and doing ! I will certainly recommend this program.

Hilda Lorena Rodriguez Pulido, Student from "Tecnologico de Monterrey" University (Mexico) , at ESTACA in 2014

ESTACA GRADUATE SCHOOL OF ENGINEERING

Founded in 1925, ESTACA is a member of ISAE group, 1st world cluster in aerospace training and research. ESTACA is highly specialized in the fields of aeronautics, automotive, space and railway industries. The training courses constantly evolve to meet the requirements of companies and adapt to the emergence of new technologies or disciplines. ESTACA's graduates undertake the design, development and production of transport systems and components. The industry has ranked ESTACA among the best engineering schools for its expertise in the transportation fields.

ESTACA in figures

- ✓ **2 campuses:** ESTACA-Paris Saclay and ESTACA Campus-Ouest in Laval, Mayenne
- ✓ **280 graduates per year**
- ✓ **1500 students**
- ✓ **6000 alumni**
- ✓ **2 research laboratories**

ISAE in figures

- ✓ **Group of the 5 most prestigious French engineering programs in Aerospace:** ENSICA, SUP'AERO, ENSMA, EOAA, ESTACA
- ✓ **4 300 students** at a high scientific level in aerospace
- ✓ **350 doctoral students**
- ✓ **34 000 alumni**
- ✓ **€37 M** in Research revenue

ESTACA PARIS-SACLAY Campus in St-Quentin-en-Yvelines



Located west of Paris, 10 minutes from the Château de Versailles and 30 min. from the Eiffel Tower, the ESTACA-Paris Saclay engineering school offers a wonderful environment for students on international programs. This new campus, opened in 2015, is in Saint-Quentin en Yvelines, 5 min. from the station, in a town with ideal facilities for students in terms of accommodation, university restaurant, sports, culture, etc. Saint-Quentin-en-Yvelines, located in the Paris-Saclay cluster, is the second economic hub west of Paris, and houses a great deal of industries in the transport sector and academic and scientific partners in phase with issues in the transport and mobility sectors. Many French grandes écoles and universities have set up here and together make up the Université Paris-Saclay, of international reputation, forming the training and research pole of the Paris-Saclay technological cluster, a sort of Silicon Valley à la française.

PRACTICAL INFORMATION

Schedule

This total length of this program is 18 weeks, with two weeks of vacation during the period.
It starts at the beginning of the last week of January, and finishes at the end of May.

Eligibility

This program is open to all foreign students holding a bachelor Degree or having completed two years of studies in an Engineering degree.

Applicants should have English language proficiency (TOEFL: 510 or TOEIC: 750).

Certificate of Completion

A certificate of completion (30 ECTS) will be given to students who complete the entire program.

The academic performance is assessed according to exams, project evaluation, reports, attendance and class participation.

Tuition Fees

3 500 Euros

Admission process

Application available on the website: <http://www.estaca.fr>

Deadline for application: 15th of october



Crédits photo : Fotolia, P. Delance, Alstom, Airbus S.A.S.

Pour toute information :

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