



**STUDY AT  
CENTRALE LILLE**



## CONTENTS

- 03** Welcome to Ecole Centrale de Lille
- 04 | 07** Building a personalized program
- 08 | 11** Developing relationships with the professional world
- 12 | 13** A fulfilling dynamic student life
- 14** Admissions process
- 15** Ecole Centrale de Lille, key statistics

## centralelille IN FIGURES

2014 activity report

**1550**  
engineering students



**3**  
engineering education  
programs

**100** PhD students

**300**  
engineering graduates each year

**10 000** engineering  
graduates within a global network



**35 %** of engineering graduates follow  
a double degree program abroad

**3** teaching  
Chairs



**5** research  
laboratories

**1** PhD program

**10** groups  
of patents

**8** Master's degrees including 3 international programs



**100** favored  
business partners

**88** international higher  
education partners



# WELCOME TO ECOLE CENTRALE DE LILLE

## EXCELLENCE - N° 1 PRIORITY OF CENTRALE LILLE'S TRAINING PROGRAMME

Since 1854, École Centrale de Lille has been training high-level scientific and technical generalist engineers in a three-year training program accessible via a highly competitive exam after the high school preparatory classes (called Classes Préparatoires aux Grandes Écoles, CPGE within the French educational system).

The main purposes of Ecole Centrale de Lille is to develop skills and encourage individual abilities, in order to train the dedicated engineers needed to take up the challenges ahead.

**Guided by suitable innovative teaching methods and a career-centered education, students can shape their own professional pathways choosing from many possibilities offered throughout the educational program.**

Engineering students of École Centrale de Lille benefit directly from a large number of varied opportunities provided by numerous partnerships with renowned foreign Universities and Business schools, and also as a member of the Ecoles Centrales Group.

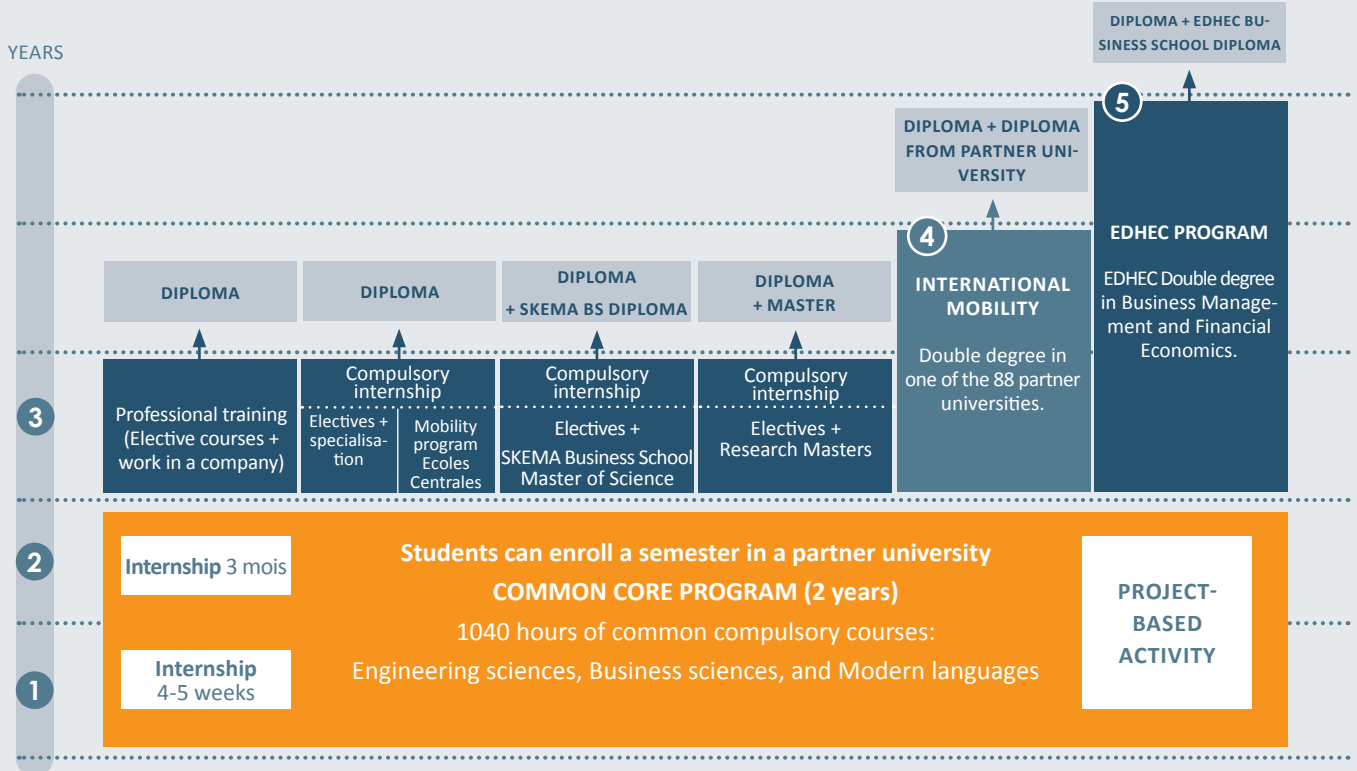
Ecole Centrale de Lille also benefits from a dynamic and innovative research environment supported by our research laboratories and strengthened by a wide network of institutional and private partners.



Each year,  
around **250**  
students enter  
the Ecole Centrale  
de Lille.



# BUILDING A PERSONALIZED PROGRAM



## BACHELOR OF MATHEMATICS

The students can enroll concurrently in the Lille 1, Science and Technology University, located on the same campus, to follow the bachelor of Mathematics program.

Special course arrangements enable the student to follow the bachelor program during two semesters (corresponding to Semester 6 and Semester 7) over the first and the second years. About ten students choose this training option each year.

## EXPERIENCE ABROAD: MINIMUM OF 3 MONTHS

Students must complete their training program with a minimum period of three months abroad.

This international experience can be undertaken through academic or professional activities.

The priority is that students are totally immersed in another culture.



## TWO-YEAR CORE PROGRAM

The first two years of the training program revolve around a common core program enabling students to acquire fundamental knowledge.

### COURSE PROGRAMS: THREE CATEGORIES

#### Engineering Sciences

- **Mathematics, Computer Sciences**  
*Probability, Integration, Fourier Transforms – Digital Analysis and Optimization – Advanced Algorithms and Programming – Information Services Modeling and Micro-Computing.*
- **Electronics, Electrical Engineering, Automatic Control Systems**  
*Signal Processing - Electrical Networks and Electric Power Conversion – Electromechanical Energy Conversion and Speed Variation – Electronic Systems – Automatic Control Systems*
- **Materials Engineering**  
*Introduction to Solid-State Physics –Transport Phenomena – Thermodynamics and Materials – Aero-Hydrodynamics – Materials Science*
- **Mechanisms, Structures and Constructions**  
*Structural Mechanics – Mechanics of Mechanism – Systems Design Systems Dimensioning – Implementation and Processes*

#### Business Sciences

- **Business and Society**  
*Culture – Communication – Sociology of Organizations – Business Accounting and Financial Approaches – Economic Science – Management – Law – Mentoring*

#### Modern Languages

Students must study two languages including English.

### ELECTIVE COURSES PROGRAM

Elective courses enable students to gradually personalize their own training path :


- **Elective courses on core subjects: 1 to 7 choices among about 70 courses:** Mathematics and Cryptography, Solar Photovoltaic (PV system), Acoustics and Vibration, Digital and algorithmic tools for Automatic Control Systems ...
- **Elective courses on subsidiary subjects: 1 to 3 options to choose among 11 courses:** Architectural Design and green building, from combustion Engineering to hybrid systems, eco-design, biological Engineering, energy strategy and alternative sources for electricity production.



### RESEARCH-ORIENTED PROGRAM

Students interested in research and who wish to enter a PhD program late can follow an in-depth training course and enroll at the same time in one of the Master's degree of Centrale Lille:

- **Automatic control systems and electric systems**
  - Electrical Engineering for Sustainable Development
  - Systems, Autonomous machines and Fieldbus
- **Chemistry**
  - Catalysis and Processes
- **Mechanical engineering**
  - Mechanical Sciences and Engineering
- **Civil engineering**
  - Geomaterials and Structures
- **Networks and télécommunications**
  - Telecommunication systems
  - Télécommunications

 Centrale Lille delivers the title of Doctor in two graduate schools : ED SPI 072 et ED SPI 287.

# BUILDING YOUR CAREER PATH IN THE 3RD YEAR

Third-year students of Ecole Centrale de Lille can refine their educational choices further to prepare their future professional career

## 11 IN-DEPTH ELECTIVE COURSES

- 01 Advanced Mechanical Engineering**  
Training in designing, dimensioning and production methods, knowledge of advanced methodologies and techniques, and learning more about innovation and research & development.
- 02 Civil Engineering**  
Training in calculation methods for underground construction projects; aim to make students rapidly operational within R&D departments, O&M departments and in a building site environment.
- 03 Sustainable Processes and Alternative Resources**  
Providing a comprehensive overview of physical, chemical and biological transformations in diverse sectors of activity to meet the challenges of the 21<sup>st</sup> century, especially in resource depletion and the increasing amount of waste products.
- 04 Waves, Nanoelectronics and Telecommunications**  
Providing training in the fields of solid-state physics, waves (electromagnetism, acoustics), micro and nanotechnologies with a focus on specific applications to all high-tech sectors.
- 05 Business Decision and Data Analysis**  
The “Business decision and Big-data analysis” course, which received the prestigious IBM award in 2014, aim to widen skills in mathematics and information, and specifically in data analysis. This training enables students to be operational in diverse fields: Biomedicine, Transportation, Finances, Social networks...
- 06 Production Systems**  
Training engineers for careers linked to production and close to the operational field. Methodological tools taught in this course focus on product design, management and improvement of production lines and human factors..
- 07 Transportation systems and Logistics**  
Training engineers acquire further knowledge of tools and techniques for logistics. The innovative course content is focused on institutional and regulation aspects of the transport market and explains how the different means of transportation for passengers are organized and exploited. Logistics is approached as an engineering science relying on methodological basics (operations research, data analytics, enterprise modeling...)

- 08 Strategies and managing in organizations**  
Providing practical, intellectual and scientific education about modern changes in business decision-making and business action (industries and services) essentially within socio-economic organizations.

Among elective courses proposed, three teaching Chairs are directly connected with the professional world

- 09 Electrical Energy and Sustainable Development**  
The electric power industry is currently changing rapidly and needs engineers able to develop new technological and economic solutions for the industry. The program includes: frequency regulation, voltage regulation and electrical networks protection, integration of renewable energy sources into the electrical networks and on their evolutions.  
*Partner companies: EDF, RTE, Maia Eolis, OPAL-RT Technologies*
- 10 Enterprise Architecture (EA)**  
EA enables an organization’s structure to be clearly defined in order for the information systems, business processes, and infrastructures to be aligned, coherent and evolve simultaneously.  
It brings a clear vision of information ecosystems and thus enables more efficient management. Students following this program can also pass the TOGAF certification, a measure of best practices in the field.  
*Partner companies: Arismore, Crédit Agricole CF, Sopra Steria, Total.*
- 11 E-business et mobility**  
Training E-business project managers able to grasp complex domains of knowledge as software, management, logistics engineering, as well as their interactions.  
*Partner companies: Arvato, CGI, Groupe 3SI, Sopra Steria*

## 6 TRAINING PATHS

### 01 Entrepreneurship

This pathway is designed for project leaders who aim to create their own project after their studies or undertake intrapreneurship (project leader within existing companies).

### 02 Management, Audit and Consultancy

Completing the training of general engineers by acquiring management skills, project creation, business management and strategic management, intercultural management, international economics, issues about intellectual property, governance, lean engineering, consulting engineering, financial management and audit, financial risks, in order to train internal or external auditors and consultants.

### 03 Planning, Construction and Environment

Training engineers to deal with construction processes at various levels and take part in a design and/or production project at different levels of decision..

### 04 Product Design and Innovative Systems

Preparing students to become professionals of product design by providing them with tools and methodology for designing and organizing, implementing those tools in the design process of products and multidisciplinary systems.

### 05 Supply Chain Management

Understanding the overall frame of the supply chain; learn about the basics and practices within the profession.  
This pathway also helps to develop management and organization skills in the supply chain and anticipate future challenges.

### 06 Research

Enabling every student to express his own professional questioning about research career opportunities and professions. Broaden his training in research through a master program (compulsory enrollment for this training pathway). This complementary approach gives a real power of decision on career, possibly leading to a doctorate program.

## INTERNATIONAL DOUBLE DEGREE

Centrale Lille has a wide range of agreements with foreign universities to enable students to follow a double degree program.

Students attending 2 years at Ecole Centrale de Lille and 2 years in a partner institution graduate from both schools. Number of places are limited and fixed each year by the Centrale Lille board of directors.



20 % of students choose to follow a double degree abroad

A network of 88 partners worldwide.

## DOUBLE DEGREE WITH EDHEC BUSINESS SCHOOL

Since 2011, Ecole Centrale de Lille is associated with EDHEC Business School to offer students the opportunity to obtain a double degree in partnership with a prestigious management school.

Students spend 2 years at the École Centrale de Lille and 2 other years at EDHEC Business School with a compulsory work placement year. The two possible training pathways include Management or Financial Economics.

"The double degree program was a remarkable experience in my educational program, as much for community activities as personal and professional experiences. Through this program, I met people with many different ambitions and it allowed me to acquire complementary skills that employers are definitely searching for. The complementary nature of these two programs has been a real advantage to access the work market and enabled me to find a job I really like as soon as I finished school."

*Mathieu Lamboley, double degree graduate at Ecole Centrale de Lille/EDHEC Business School in 2014, now analyst at PwC*



# DEVELOPING RELATIONSHIPS WITH THE PROFESSIONAL WORLD

## PROJECT-CENTERED ACTIVITIES

Project-centered activities form an integral component of educational project. Initially proposed in 1992, they have contributed to the strength of the Ecole Centrale de Lille. **From design to full implementation, a student will carry out projects that match company orders and expectations.**

The involvement of companies in such activities will allow students to understand what their constraints and operating procedures are. Through these activities, important capacities for working in teams, managing a project, technical assessments and a responsible attitude will be needed and developed.

1<sup>st</sup> ET 2<sup>nd</sup>  
YEAR

3<sup>rd</sup>  
YEAR

Project-centered activities place students in situations when they must cope with realistic professional issues, in order to understand difficulties raised by working in a team, respecting deadlines and dealing with risks.

The engineering student is free to choose his subject. He must establish links with a real customer and partners, and must finish his project to complete the common core program.

### IMPACT PROJECT: « initiative, mission, project and action »

IMPACT project takes place from November to March. Each student selects a subject and should treat it independently and individually. One of the IMPACT Project's objectives is that the student contributes to business life undertaking a concrete project matching the company's actual needs.

As this project intends to help the student in clarifying his professional choices and personalizing his educational program, individual work has therefore to be consistent with the in-depth elective course or the training pathway he has selected in 3rd year.



### AMONG FIRST AND SECOND YEAR CLASSES, 3 PROJECTS HAVE BEEN REWARDED IN 2015

- **GeoSys project** : design and production of a system able to realise a 3D mapping of basement at maximum depth of about 10 feet (practical application to archaeology).
- **Glucodata2 project** : monitor gestational diabetes by developing a web platform and data collection devices on mobiles and tablets..
- **RobotDocteur project** : design and creation of an artificial hand close to a human hand - Creation intended to be integrated with a broader project aiming to design a "robot surgeon".





## AN 7-10 MONTHS INTERNSHIP DURING THE TRAINING PROGRAM

Internships are key moments of the Ecole Centrale de Lille education and training program. They are opportunities to implement what students have learnt during courses, to learn more about the business environment and to discover the real role and responsibilities of an engineer.

1<sup>st</sup>  
YEAR

### 4 WEEKS

Introduction to production aspects,  
(Training in the workplace :  
factory or building site)  
or construction services organization.

2<sup>nd</sup>  
YEAR

### 3 MONTHS

Technical or organizational missions mentored by an engineer,  
intended to provide a better understanding of the realities of his profession: technical aspects and responsibilities in terms of human resources

3<sup>rd</sup>  
YEAR

### 3 TO 6 MONTHS

Internship involves a mission with genuine responsibilities at an engineer level, enabling students to train as a qualified engineer.

## CONTACT WITH COMPANIES

During the education program, relationships between companies and students are key moments in achieving a successful transition from school to work. Over the course of the first year, the student established contact with companies at different levels. Besides internships and project-centered activities, you will be constantly in contact with the socio-economic world.

Opportunities are numerous: Class sponsorships, on-the-site job training days with mentoring, company visits, conferences, “innovation challenges” for students, job fairs.

## PROFESSIONAL TRAINING

In the 3<sup>rd</sup> year, students can choose a specific program, combining working in a company and studying at the School.

From 12 to 14 months, the professional contract can be either permanent or temporary.

Training program routine: Students take an in-depth course from Monday to Wednesday and spend the rest of the week in the company. From April onwards, students work full-time in the company.

## JOB FAIRS

Every year, a job fair is organized at Ecole Centrale de Lille. The largest one in the northern French territories, with 80 companies and 2 000 students a day.

Introducing professions, business organizations or career possibilities, this Forum allows each student to get a first contact with companies, share and exchange views with them and consider future opportunities to work together.

## COMPANY VISITS AND CONFERENCES

You will have the chance to get in contact with the professional world, through the intervention of external contributors who provide courses or deliver talks at Ecole Centrale de Lille and also by visiting companies that open their doors to the students of Centrale.

A function is assigned to each student who spends the whole day with the person in charge of this position in order to observe and discover the company.

## PRESTIGIOUS SPONSORSHIPS

A sponsor is assigned to each class and becomes involved with it in many different ways all over the course of the education program.

*The three last classes have been sponsored by :*

**2013-2016**

**Hubert Sagnières**

CEO of Essilor International

**2014-2017**

**Ulrike Steinhorst**

Chief Technical Officer of Airbus groupe

**2015-2018**

**Didier Leroy**

Executive Vice-President of Toyota




## 100 KEY PARTNER COMPANIES

École Centrale de Lille benefits from the expertise of the whole institution, from its influence within the socio-economical world and from its global network gathering more than 100-privileged partner companies.



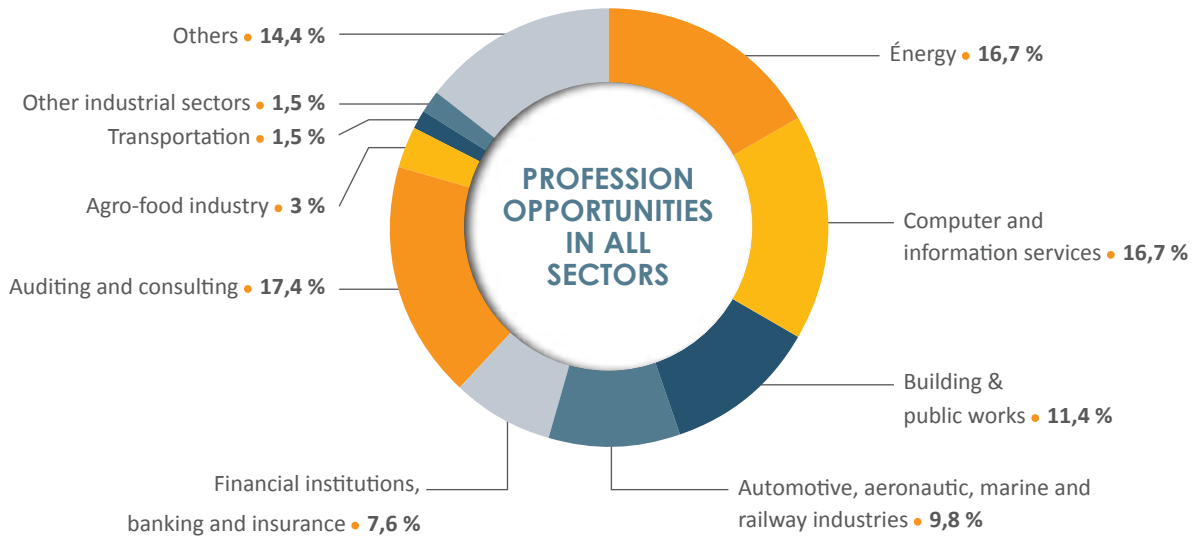
## FROM STUDY TO WORK

Each year, statistical data on the professional situation of our newly graduated engineers provides an indicator of Ecole Centrale de Lille's high level of training.



**87,7 %**  
of graduates have signed their first work contract less than 4 months after the end their studies.

**40,2 K€** Average annual gross wage at the first contract



Indicators on engineers graduated in 2014.



# A RICH AND DYNAMIC STUDENT LIFE

---

## THE ASSOCIATIONS

At Ecole Centrale de Lille, involvement in community activities is highly encouraged. More than 70 associations enliven the student life with extracurricular activities allowing students to express and fulfill themselves whatever their passions or talents.

There is a wide range of activities to choose from: special events, sporting activities, cultural activities, and professional involvement.

- **BDE (Student Society)**: the Bureau des Étudiants enlivens and stimulate school's life. It organizes all the major events during the year, welcomes the incoming students, offers professional conferences and also organizes trips around Europe.
- **Impulsion** : association whose aim is to fight for equal access to higher education for students in under-privileged circumstances. Via Impulsion association, Centrale Lille is involved in the program: "Une grande École, pourquoi pas moi ?" that consists in tutoring young high school pupils over a 3-year period to encourage them to pursue higher education.
- **Les Mots Dits** : The theatre company of École Centrale de Lille has put on 4 plays in 2014 including a musical play. It also participates to many festivals all over France.
- **Centrale Lille Projets** : Designated as France's best Junior entreprise\* in 2013, Centrale Lille Projets enables students to find themselves in real professional situations and sends them into company management situations, project management or business management. Centrale Lille Projets manages about 25 business projects every year in 20 different domains. This success is explained by the high-level skills of the members and the support offered by research-professors who assist the students in all their projects.
- **Le Club Voile** : is aiming to promote and introduce sailing to the greatest number. Le Club Voile organises and takes part in regattas and sailing cruises. La Régate Inter écoles du nord is an event during which students can try windsurfing, sailing a catamaran and paddling.
- **Centr'All Games** : Jungle Speed, Bang !, Loup-garou and Cash'n'Guns, Centr'all games gathers all fans of board games. The association also organises the event "Lille aux Echecs", attracting about a hundred confirmed chess players, including chess grandmasters, for a whole weekend.
- **Les Montgolfiades** : organises a general public event aiming to introduce aerostation science and particularly hot-air ballooning. Today it is a key moment in the region hosting 8,000 spectators during a weekend.
- **Campus Vert** : works towards promoting sustainable development within the Ecole Centrale de Lille. Among actions led by Campus vert: installation of solar panels on Léonard de Vinci Building roof, green lighting of the outside of the building, organization of a energy-awareness campaign to promote waste reduction, development of waste separation, workshops on recycling.

\*"Junior-entreprises" are organizations registered as non-profit associations whose purpose is economical and pedagogical in accordance with the French law passed in 1901. Established within the Grandes Écoles and French universities, they allow students to put into practice what they have learnt during their academic studies.

## STUDYING IN LILLE

**Lille is definitely a student city : 25% of the population is under the age of 25 and 150,000 students are enrolled in its various universities and Grandes Ecoles.**

As a welcoming and festive city, Lille offers a highly varied cultural life to its people. Hospitality and celebration are integral values of the people living in the region as demonstrated by the well-known Braderie de Lille that attracts more than 2 million people worldwide every first weekend of September.

**Lille is located at the heart of Europe.** At 20 minutes from the Belgium boarder, 1 hour from Paris, 3 hours from The Netherlands and Germany and 1.5 hours from London, the Nord-Pas-de-Calais region is ranked 2<sup>nd</sup> in France in terms of company headquarters. It is now the third most important industrial region in France with a large number of companies, workers and investments.



### CAMPUS SERVICES AND RESIDENCY

**Ecole Centrale de Lille is located on the scientific campus of Villeneuve d'Ascq serviced by two metro stations and close to the ring road, with Lille 15 minutes away.**

Students can enjoy all services and commodities on the campus: 1 library, 4 university cafeterias, sports equipment, and a health centre. A swimming pool, a commercial centre and cinemas are located two steps away.

**The Leonard de Vinci Residence is reserved solely for the students of the Ecole Centrale de Lille.** Located at 10 minutes walking from the School, it is entirely run by the Association de Gestion de la Résidence (AGR) who assists students with academic accommodation procedures (lease agreement, inventory, and procedures for housing financial assistance).

**Two categories of housing are available at the residency:** individual apartments from 18 to 20 m<sup>2</sup> including a bedroom, a kitchenette and a bathroom with a shower and a toilet or 40m<sup>2</sup> double apartments with two individual bedrooms, a kitchenette and an independent bathroom with a shower and a toilet.



# ADMISSIONS

Admission is mainly based on the Centrale-Supélec common competitive examinations after two-year preparatory courses to Grandes Écoles.

---

## CENTRALE-SUPÉLEC EXAM

Students must registered using the Internet from early December to early January. Written examinations occur in May. Oral examinations for eligible candidates take place from late June to late July. Admission results are available on Internet and students' final ranking for schools admission will be posted on Internet the last week of July.

*Information, registration procedures, schedules, online registrations are on the website of service des concours d'écoles d'ingénieurs: [www.scei-concours.fr](http://www.scei-concours.fr)*

---

## BANQUE FILIERE PT EXAM

This common entrance examination is opened to students of preparatory classes in Physics and Technology (PT). Registration must be done using the Internet from early December to early January. Written examinations take place in May.

---

## CASTIng EXAM

All graduates with a general bachelor's degree can register for the CASTIng examination. Admission procedures take place in 2 steps: pre-selection on academic record and written/oral examinations.

---

## ATS EXAM

This examination is open to DUT (2-years degree of technology) and BTS (2-years technician certificate) graduates who have taken a one-year specialization program in ATS (Adaptation Technicien Supérieur). Compulsory registration on Internet from January to March.



90  
places in MP

50  
places in PC

60  
places in PSI

5  
places in TSI



12  
places in PT



# KEY FIGURES

## ÉCOLE CENTRALE DE LILLE

**1**  
campus



**960**  
engineering students



**240** graduates each year

**35 %** graduates on an international program

**88** international partners





---

Cité scientifique - CS 20048  
59651 Villeneuve d'Ascq Cedex  
France

**T.** +33 (0)3 20 33 53 53

**F.** +33 (0)3 20 33 54 99

[ecole.centralelille.fr](http://ecole.centralelille.fr)