Groupe des Ecoles Centrale
French « Grandes Ecoles »
The French «Ecoles Centrale»

Where are they?

And Centrale Beijing, Hyderabad, Casablanca, Mauritius
The Group Ecoles Centrale
*Elite Institutes of Science and Technology*

GEC’s vision of Engineering:

- **Multi-disciplinary curricula**
  - Wide knowledge of numerous scientific and technical disciplines
  - Broad overview of future challenging complex problems
- Access to economics, social sciences, foreign languages and humanities
- **Soft-skills training**
  - Leadership, management & innovation courses
  - Team-work and project-work
- **Corporate Networking** (internships, job fairs, conferences)
- Global vision & open-minded approach
- High management potential
- Industrial problem-solving education
5 « Grandes Ecoles »

Elite Institutes of Science and Technology

- Nearly 7,000 students in total
  20% recruited through international partnerships

- 600 full-time Academic staff

- > €80 million per year in budget
  50% public / 50% private

- Research
  more than 1,000 PhD students
  33 laboratories

- 134 International Partners

- Alumni
  100,000 engineers in activity

Strong corporate partnerships and recognition at national and international level
(SNECMA, EADS, SIEMENS, RENAULT, BOUYGUES, EDF, NAVAL GROUP,...)
In a music orchestra...

- Plays several instruments
- Understands complex pieces of music, such as symphony and opera
- Knows how to make all artists play together.

From the leader of a chamber music group...

... To the conductor of a small chamber orchestra

Up to the conductor of the largest orchestras in the world...
Recruitment by sector:
Key Figures:

- Nearly 10,000 engineering students
- 20% recruited through international partnerships
- Nearly 1,300 master students
- More than 1,000 PhD candidates
- 33 Research Laboratories
- Nearly 1,000 full-time academic staff
- 12 International Laboratories
- 35 Industrial Chairs
- 134 International Partners
- 70,000 engineers in activity on the GEC's Alumni Network

The Group Ecoles Centrale
Elite Institutes of Science and Technology

The 3-year French engineering course model

- Preparatory School Year 1
- Preparatory School Year 2
- Engineering Year 1
- Engineering Year 2
- Engineering Year 3: specialization
- Master Research

EU/US course model

- Year 1
- Year 2
- Year 3: specialization
- Master Research
- Year 4
- Year 5 (and maybe 6)

The EU model

The Anglo saxon model

The 3-year French engineering course model

The EU/US course model

The Group Ecoles Centrale
Elite Institutes of Science and Technology
The Group Ecoles Centrale
Elite Institutes of Science and Technology

2200 students admitted
National wide competitive exam for Centrale Supelec
25,000 students/yr in Classes Préparatoires Scientifiques programs
Math Sup./Math Spe.
600,000 High School Graduates each year in all fields
(including 150,000 in Science)

2 years of intensive preparation
Some well-known alumni ...

Marie Holive
Centrale Lyon
Executive Director of NBC Universal International Networks

Didier Lamouche
Centrale Lyon
CEO Oberthur Tech

Delphine Ernotte
CentraleSupélec
President France Télévisions

Benoit Potier
CentraleSupélec
CEO Air liquide

Michèle Bellon
CentraleSupélec
Former CEO of ERDF

Jacques Maigné
Centrale Lyon
CEO Hutchinson

Jean-Loïc Galle
CentraleSupélec
CEO Thales Alenia Space

André & Edouard Michelin

Carlos Tavares
CentraleSupélec
CEO PSA

Cédric Gautier
Centrale Nantes
CEO Stellia Aerospace

Hubert Sagnières
Centrale Lille
CEO Essilor

Marcel Schlumberger

Armand Peugeot
The Group Ecoles Centrale
Corporate Partnerships & networking
The Group Ecoles Centrales
Corporate Partnerships & networking

2 or 3 mandatory internships
at least 28 weeks in companies and/or research laboratories

Hundreds of conferences and projects in team

1 job networking session organized every year in Italy

2º JOB NETWORKING SESSION "JNS" DOUBLE DEGREE
28.05.2018
MILAN
COPERNICO MILANO CENTRALE
Via Copernico, 38
Doppia Laurea schemes

CENTRALE ENGINEERING DEGREE

Year 5
Year 4
Year 3
Year 2 (CPGE)
Year 1 (CPGE)

French student
High school

ITALIAN MASTER

Year 5 (M2)
Year 4 (M1)
Year 3 (L3)
Year 2 (L2)
Year 1 (L1)

Bachelor

Italian Student
Common core curriculum

High level training:

- Fundamental sciences:
  - Maths, physics

- Engineering:
  - Electronics, mechanics, computer science, material science, fluid mechanics...

- Humanities:
  - Economics, sociology, philosophy, languages and cultures

- Project management
**Specializations**

**Scientific fields**
- Applied Mathematics
- Aeronautics / Aerospace
- Computer Science
- Telecommunication
- Physics / Applied Physics
- Bio-engineering/ biomedical
- Nanotechnology
- Industrial Engineering
- Civil Engineering
- Mechanical Engineering
- Robotics
- Electronics
- Process Engineering
- Chemistry
- Urban planning
- Design...

**Instruction language**
- French (mostly)
- English

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Wave tank, Centrale Nantes

Clean room • Centrale Lille

Anechoic wind tunnel
LMFA, Centrale Lyon

Tree canopy in wind tunnel
IRPHE, Centrale Marseille

Industrial engineering
CentraleSupélec
Many student clubs and associations:

- Students’ Union
- Junior enterprise, Job Fair organisation
- Sport clubs: Sailing, Rugby, Football, Basketball, Martial Arts,
- Arts clubs: Jazz, Chess, Theatre, Cinema, Dance
- Science & Technology clubs: computers, Fablabs, robotics,...
- Social responsibility: tutoring students from disadvantaged backgrounds
- International students’ clubs
- and many more...
Top tier French « Grandes Ecoles »

- Ecole Centrale Paris (1829) & Supélec (Ecole Supérieure d’Electricité - 1894)
  - merged in Jan 1st 2015 to jointly create CentraleSupélec
  - covering all the fields of engineering
  - Sharing values of scientific excellence, innovation, entrepreneurship, internationalization and leadership
  - Founding members of Université Paris-Saclay
Centrale Lyon

A public school founded in 1857

- **1550** Engineering Students in Training (¼ Female)
- **200** PhD Students, **235** Master Students
- **400** Staff,
- **120** Academics,
- **50** Full Researchers
- **24%** Foreign Students from more than 50 Different Nationalities on the campus
- **12000** Alumni throughout the World

- Rhône-Alpes is France’s **Second** most Important Region, economically
- **Lyon** is just **2 hours from Paris** by the TGV High Speed Train,
- **90mn from the Mediterranean coast**, and
- **90mn from the Alp Mountains** (The Rhône-Alpes Region has no less than **216 ski resorts**)

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6 CNRS laboratories (National Scientific Research Center)

- Laboratory of Fluid Mechanics and Acoustics (LMFA)
- Laboratory of Tribology and Systems Dynamics (LTDS)
- Lyon Nanotechnology Institute (INL)
- Ampère Laboratory (Electrical Engineering)
- Camille Jordan Institute (ICJ : Mathematics)
- Lyon Research Center for Images and Intelligent Information Systems (LIRIS)

Main partners: AIRBUS, ALSTOM, CEA, CNES, DASSAULT AVIATION, DASSAULT SYSTEMS, DCN, EADS, EUROCOPTER, EDF, LAFARGE, MICHELIN, PSA, RENAULT, SAINT-GOBAIN, SNCF, SAFRAN, SNECMA, ST MICROELECTRONICS, ANDRITZ, IHI, THALES, THOMSON MULTIMEDIA, TOTAL, NAVAL Group.....
Centrale Nantes

Tradition dating back to 1919

Among the best “French Engineering Schools” / 350+

2 150 graduate students

37,000+ Centrale Groupe alumni

550 Researchers and teaching staff

270 PhD students

40-acre campus in Nantes

Industrial environment

Nantes & Saint-Nazaire Airbus factories

STX Ship building

6 Laboratories associated to CNRS (A or A+) for a cutting edge research

- **Fluid Mechanics Laboratory (LHEEA)**: Hydrodynamics & Ocean Eng., Energetics, Atmosphere Dynamics, Internal combustion engines
- **Laboratory of Digital Sciences of Nantes (LS2N)**: Cybernetics (Robotics, Signal & Automatics, Electronic Systems, Telecom & Radar) and Computer Science
- **Research Institute of Civil Engineering & Mechanics**: Metallic & composites assemblies, computational mechanics, polymers...
- **Laboratory for Mathematics “Jean Leray”**: non-linear PDE, scientific calculus, approximation, probability statistic
- **Urban Environment and Architecture (CERMA)**: modeling & simulation of natural phenomena, design and characterization of ambiance
- **High Performance Computing Institute (ICI)**: a mid-sized computing center of 6000 cores, one of the most powerful French regional centers.
Centrale Nantes specialisations and masters (in english)

- Control, embedded systems, image processing
- Robotics
- Virtual reality, computer science
- Atmosphere, water and urban environment
- Ocean engineering
- Civil and environmental engineering
- Aeronautics
- Materials and Composites
- Energetics and propulsion
- Industrial engineering
- Manufacturing
- Health
Marseille, the 2\textsuperscript{nd} biggest city in France
- 860 000 people
- 3000 researchers
- 2\textsuperscript{nd} pole of public research in France
- 100 000 students
- 8 research laboratories in co-supervision: Chemical Engineering, Chemistry, Economics, Informatics and Systems, Maths, Mechanics (2), Physics
Specializations :

- **DIGITAL-e** → Consulting, Computer Science & Data Science
- **GREEN** → Chemistry, process engineering and sustainable processes
- **MECA** → Mechanics
  - Industrial Acoustics,
  - Modelization of Structural and Material Mechanics,
  - Fluids: energy, transport, environment, health,
  - Marine Engineering
- **MMEFI** → Mathematics, Management, Economics & Finance
- **PICSEL** → Photonics, Image, Signal and Communication
- **Complex System Engineering (Master in English)**
  - Environmental Engineering
  - Biomedical Engineering
Centrale Lille

- **270** People
  - 31 Professors
  - 49 Associate Professors
  - 10 CNRS
  - 120 PhD Students
  - 27 Postdocs / Research engineers / ATER
  - 35 Invited Profs / PAST (7 FTE)
  - 17 Teaching Assistants

- **1500** Students
  - 1273 Engineering Diplôme d'Ingénieur
  - 69 Master Sciences M2R (Research)
  - 120 Doctoral Ph.D programs

- **25 M€** Total budget
- **88** International partnerships
- **200** Company partnerships
SUSTAINABLE CONSTRUCTIONS & ENERGY

• Constructions and sustainable materials
• Energy and smart grids

SMART SYSTEMS AND ENVIRONMENTS

• Smart systems and advanced networks
• Future networks and smart environments

INDUSTRY FOR THE FUTURE

• Smart industries
• Sustainable conception and productions

FROM STRATEGY TO DATA MANAGEMENT

• Data science and Artificial intelligence
• Modelisation and industrial architecture
In Conclusion

Depending on your mobility, you get:

- **Multi-disciplinary curriculum**: which helps to discuss with specialists and gives a broad overview of future challenging complex problems (sustainability, digitalization, climate evolution, energy management),

- **High-level scientific courses** in all fields of science, technology and engineering

- **Access to social sciences, foreign languages and humanities**

- **Soft-skill training**: leadership, management & innovation courses, team projects, possible involvement in student clubs

- **Corporate networking**: internships, job fairs, conferences, projects, round tables

- **Constant improvement in French proficiency**: 300 million French-speaking people in the world (many of them in Africa which is the fastest growing continent)

- **A passport for an amazing career**

Benvenuti in Francia!
Thank you for your attention!

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