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

Where are they?

And Centrale Beijing, Hyderabad, Casablanca, Mauritius
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 1000 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:
The Group Ecoles Centrales

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

The EU model
Year 1
Year 2
Year 3
Year 4
Year 5 (and maybe 6)
MSc

The Anglo-saxon model

Year 1
Year 2
Year 3
BSc
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 ...
The Group Ecoles Centrale
Corporate Partnerships & networking
The Group Ecoles Centrale
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

2° 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)

Ecole Centrale

ITALIAN MASTER

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

Bachelor

French student
High school
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...

Instruction language

- French (mostly)
- English
Many student clubs and associations

- Students’ Unions
- 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...
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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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
CentraleSupélec

MULTI-DISCIPLINARY

ENERGY

CIVIL ENGINEERING AND TRANSPORTATION

LARGE SCALE INTERACTING SYSTEMS

COMMUNICATING SYSTEMS AND INTERNET OF THINGS

COMPUTER SCIENCE

BIOTECHNOLOGY AND ENVIRONMENTAL ENGINEERING

MATHEMATICS AND DATA SCIENCE

PHYSICS AND NANOTECHNOLOGY

SKILLS

Think and act as an accountable ethical professional

Be a leader: lead a team carry out a project

Acquire and develop in-depth expertise in a scientific or sectorial field and a job sector

Act, initiate and innovate in the science and technology environment

Be able to create value for a company and its customers

Thrive and innovate in the digital world

Thrive in a multicultural and international environment

Convince others

Energy

Energy Resources [PS]

Energy Networks & Smart Grids [PS]

Energy transition [PS]

Large-Scale Interactive Systems

Control Engineering [PS/R]

Design and System Sciences [PS]

Supply Chain & Operations Management [PS]

Biotechnology & Environmental Engineering

Environment / Sustainable Production [PS]

Healthcare & Biomedical services [PS]

Internet of Things & Communication Systems

Smart Networks Systems [PS]

Connected Objects & Embedded Systems [R]

Mobile Communicating Systems [PS]

Computer science

Software Design [PS]

Artificial Intelligence [PS]

Architecture of Information Systems [PS]

Cybersecurity [R]

Mathematics & Data Science

Mathematical Modeling & Simulation [PS]

Data & Information Science [PS/M]

Physics & Nanotechnology

Physics & Photonics [M]

Quantum Engineering [PS]

Civil eng. & Transportation

Construction & Urban Engineering [PS]

Mechanical & Aerospace Engineering [PS]

PS = campus of Paris-Saclay
R = campus of Rennes
M = campus of Metz
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)
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

- 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
Centrale Lille

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

Involved in 6 Laboratories

- Fundamental informatics
- Computer Engineering
- Automatic Control
- Signals

- Micro-Nano-Technologies
- Functional Electronics
- Acoustics & Optoelec.
- Microfluidics

- Electrotechnics
- Power Electronics

- Catalytic
- Process Engineering
- Solid chemistry

- Civil Engineering
- Material Science
- Mechanics

- Fluid Mechanics

- Fundamental informatics
- Computer Engineering
- Automatic Control
- Signals

- Micro-Nano-Technologies
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- Material Science
- Mechanics

- Fluid Mechanics