National Engineering School of Saint-Etienne
Saint Etienne is situated in the south eastern France in a remarkable natural setting, at the heart of an area populated by 450000 people.
Member of the Lyon University
(130000 estudiantes)
Member of the ENI Group (25000 Engineers)
A French « Grande Ecole »
- Highly selective admission procedures
  (Selection ratio 1/20 to 1/40)
- Small size
  (Staff/Students ratio 1/10)
- Flexible educational programs
- Strong links with industry
- Active international exchanges
- Excellent career prospects
TYPICAL NUMBERS

800 students
3 majors:
   Mechanical, Civil, Sensorial Engng
7 minors + 3 masters of science,
340 companies involved each year
48 cooperation agreements in 18 countries
4066 engineers (25 000 dans le groupe ENI)

15 000 m²
Technology platform (research and teaching)
150 staff members
13 M€ of consolidated budget
1 junior company, 1 BdE, 14 clubs

AND THEN …

Between 0 et 4 months to find a job
Mean annual salary : 34000€ (out of taxes)
A PROGRESSIVE EDUCATION FOLLOWING THE STUDENT PROJECT

« alternate » education

« classical » education

bac
bac+ 2
bachelor
Master
PhD

Engineer

1st year
2nd year
3rd year
4th year
5th year
Civil Engineering

Mechanical Engineering

Sensorial Engineering
« MECHANICAL ENGINEERING »

- Analysis,
- Design,
- Production,

of

Products and Systems for
Energy, Transports, Health, …
« CIVIL ENGINEERING »

- Analysis,
- Design,
- Construction,

of Structures and Buildings
« SENSORIAL ENGINEERING »

- Analysis,
- Design,
- Production,

of smart systems and sensors for today and tomorrow
LAST YEAR IS « A LA CARTE »

* MAJORS and MINORS

Mechanical Engineering :
- Design and simulation
- Industrial engineering
- Process modelling

Civil Engineering :
- Analysis, costs and construction
- Buildings
- Structures

Sensorial Engineering :
- Sensorial Engineering

* MASTERS OF SCIENCE

Mechanical engineering
- Industrial Engineering
- Geolocalisation systems

* INDUSTRIAL CONTRACTS
ENISE offers 4 engineering degrees accredited by the Engineering Title Committee (CTI):

- Engineer in Mechanical Engineering in the initial education system (level required for enrollment: baccalaureate and bac+2)
- Engineer in Civil Engineering in the initial education system (baccalaureate and bac+2)
- Engineer in Mechanical Engineering in the apprentice education system (bac+2)
- Engineer in Civil Engineering in the apprentice education system (bac+2)
Degrees: Engineer, Master Sc., Specialized Masters, PhD

- Engineer (high-school diploma + 5 years of higher education)
- Masters Sc. (idem):
  - Mechanics & Engineering
  - Territory, Patrimony & Environment
- Specialized Masters (high-school diploma + 6 years of higher education):
  - Dual Design
  - SME Entrepreneurial Activity
  - Dual Development
- PhD (high-school diploma + 8 years of higher education)
International MSc in Materials & Processes Engineering “Surfaces and Interfaces Science & Engineering (SISE)”

SISE educational program thoroughly integrate the theory and practice of both manufacturing processes and surface engineering. The program is taught in English. Core subjects offered cover topics which are explored in depth in elective classes and through laboratory work. Course offerings include:

- Surface Engineering / Coatings
- Laser Machining
- Tribology
- Mechanics of Materials
- Corrosion and Cracking
- Surface Physics and Chemistry
- Cutting and Abrasion Mechanisms
- Simulation of Processes
INTERNATIONAL RELATIONS
ENISE target in collaboration abroad:

- To develop strong link at the educational level with foreign universities focusing on industrial issues

To introduce its graduate students to the economic and political realities of the world economy, the ENISE offers them, typically in 4th or 5th year of studies, the opportunity to go abroad for one or several semesters in a partner university, in some cases leading to a double degree.

To receive International students to make link around research project

- To develop International project in the skills of ENISE
Onesemester internships are mandatory for all ENISE graduate engineering students in 3rd, 4th and 5th year curriculum. It can be performed either in companies or in a research laboratory with strong industrial applications.

ENISE students are always eager for internships abroad.

- **Active international exchanges: 16 countries**
  - Industrial placements
  - Final year projects
  - Academic exchanges
  - Networks for Research and Education
  - ERASMUS program
  - Active participation in European Community R&D programs
About 50% ENISE engineering graduates completed their internships abroad over a several-month period during their curriculum:

- Industrial and research internships abroad (United Kingdom, Spain, Germany, Russia, Canada, New Zealand, Brazil, etc.),
- Double Degrees and Master: Portsmouth (United Kingdom), Siegen (Germany), Mendoza (Argentine),
- Periods of University Study: Grenade and Madrid (Spain), Chemnitz and Dresden (Germany), Sherbrook (Canada).
INCOMING MOBILITY

About 50 foreign students are hosted annually at ENISE:

- Citizenships: Argentineans, Brazilians, Colombians, Russians, Tunisians, Spanish, Germans, etc.
- An active and appealing International Club for their welcoming and integrating.
INDUSTRIAL LINKS
A STRONG LINK WITH INDUSTRY

Initial Education

- Each year 1 semester in 3rd, 4th et 5th year
  - In France or abroad
  - In company or laboratory
- 18 months of professional experience
- 5th course: professionalization contract (one year project alternating-smic 80%)

Apprenticeship Education

- 1st course: 4 weeks in business alternatively-5 weeks in the ENISE
- 2nd course: 5 weeks in business alternatively - 4 weeks in the ENISE
- 3rd course:
  - 1st semester: alternatively 4 weeks in business - 2 weeks in the ENISE
  - 2nd semester : in company

help students developing himself

Progressively validate the skills of the engineer
ENISE is strongly involved in the activities of VIAMECA Competitiveness Centre, the largest French innovation cluster in mechanics.

ViaMéca:
22 branches in 6 regions of the Central France

- 141 partners including 73 industrial companies
- 20% French workforce in mechanical industry
- 2500 researchers in public et private sectors
Technological Platform
High Performance Facilities
Fine Machining
High Speed Machining
Industrial Laser Processes
CAD/CAM and Simulation
Materials
R&D ACTIVITIES
The LTDS leads and supports research, pilots experiments, models, simulates:

- Tribology: science of friction, wear, lubrication, adhesion;
- Dynamic systems: science of vibrations, stability systems and mechanical components;
- Additive Manufacturing and Innovative Coatings
4 Research groups

Advanced Manufacturing Processes

Perception Engineering

Numerical mechanic and Processes

Ambient Medium and Geomaterial
Perception Engineering

Example of Sensorial Engineering: tactile Eng. (soft, hard, silky, ...) y biomimetism

Hand touch (hermès)

Example of Virtual reality and Augmented Reality,
Numerical mechanics and Processes

Research topics:

• Physics of thermomechanical processes and induced consequences
  • machining
  • abrasion
  • Welding modeling
• Methods of preparation of composite materials
• Modelling of contact and friction processes
Ambient Medium and Geomaterial

Research topics:
• Mechanical behavior of geomaterials (experimental and modeling)
• Approach micromechanics of granular materials (computer simulation)
• Transportation and transfers in porous media (experimental and modeling)

Research Examples
Advanced Manufacturing Processes

Example of “Additive Manufacturing”

Example of “Advanced Coatings”

1 shot of WC-Co-Cr (86-10-4 wt%) than 2 shots of Al₂O₃

1 shot of Cu than 1 shot of Al₂O₃
Conclusion
ENISE Engineer is a Global Engineer having a very strong technological culture with:

- Strong scientific skills,
- Technological knowledge,
- Practice experience.
One year program:

- Courses + Lab Mini-Project + Seminars: 5 months, at least 30 ECTS
- Research Training Period: 5 months, 30 ECTS

- Academic Background for Exchange Students: Applicant must have completed at least 4 years of university study (bachelor's degree or higher)
- The program is taught in English, but basic skills in French are required.
- Program supported by the Labex MANUTECH-SISE

http://manutech-sise.universite-lyon.fr/
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- Simulation of Processes
The topics of the students’ in-lab projects are aligned with the host team’s interests and positioned in current industrial challenges.

- **Laboratory mini-project**
  State-of-the-art research synthesis: September-January

- **Research training period**
  Academic and/or industrial R&D: February – June
Studying in Saint Etienne
École Nationale d’Ingénieurs Saint Etienne