INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES HAUTS-DE-FRANCE

INSA Hauts-de-France

- **INSA Group**

INSA Group

7 INSAs in France – National Institutes

- Centre Val de Loire
- Hauts-de-France
- Lyon
- Rennes
- Rouen Normandie
- Strasbourg
- Toulouse

10 %
of French engineers

6 associated schools

- ENSCMu Mulhouse
- ENSIL-ENSCI Limoges
- ENSISA Mulhouse
- ESITech Rouen
- ISIS Castres
- Sup'EnR UPVD Perpignan

INSA Group : 7 national Institutes

- Publicly-funded **education, research and innovation institutions**
- Under the authority of the French Ministry for Higher Education, Research and Innovation
- Accredited by the Cti to deliver the national title of “Engineer”, and by the Ministry of Culture to deliver the title of “Architect”

Lyon 1957 | **Toulouse 1963** | **Rennes 1966** | **Rouen 1985** | **Strasbourg 2003** | **Centre Val de Loire 2014** | **Hauts de France 2020**







CORE MISSIONS

- Train 21st century engineers, landscapers, architects and PhD students
- Do excellent research in science and technology and its valorization
- Provide high-quality lifelong learning
- Disseminate scientific and technological culture

02

- INSA Hauts-de-France

INSA Hauts-de-France is a member of French INSA group

and

one of the 5 Institutes and Schools of Université Polytechnique Hauts-de-France (UPHF)

INSA Hauts-de-France

- A public higher education institution delivering engineer, bachelor, master and doctorate degrees
- with strong links with international and French industrial sectors,
- in the heart of the first cluster of industrial railway and automotive industries,
- having high level technological facilities and platforms,
- member of ECIU (European Consortium of Innovative Universities) with INSA Group
- member of EUNICE alliance (European UNIversity for Customised Education) with UPHF

Driving simulator

Wind tunnel

Internal combustion and hybrid engines

Smart Lab

Crash and Impact tests

Our commitments

In strong relationship with the INSA Model:

INSA MODEL
Humanism and diversity, the real basis of its identity

- Train top level Humanistic Engineers

- Diversify the social profile of our candidates: gender equality, low income students, students from rural areas, students with disabilities, minorities, international students, high-level athletes, high-level artists....

Maryam Mirzakhani (Iranian mathematician – Fields Medal en 2014) project supported by the French Ministry of Education to encourage more young women to choose mathematics and computer science courses and to continue them in high education

- Develop innovative teaching methods

- Integrate sustainable development and environmental dimensions in every training: *ClimatSup project which is part of the Think Tank « The SHIFT Project »*

Education System

Three Education levels:

- ✓ **Bachelor degrees: 3 years**
- ✓ **Master degrees: 2 years**
- ✓ **Engineer degrees: 5 years**
- ✓ **PhD: 3 years**

Initial training or
Apprenticeship training or
Ongoing training

- 3600 students,
- More than 300 faculty members,
- 65 technical and administrative staff,
- 11 Bachelor degrees
- 10 Master degrees and 9 Engineering degrees
- 1 doctorate school shared with UPHF

Broad Disciplinary fields

Transportation and mobility

- ✓ Mechanical Engineering and Energetics
- ✓ Embedded Systems and Telecommunications
- ✓ Transportation and Energy
- ✓ Mechatronics
- ✓ Ecomobility

Industry of the Future

- ✓ Automation Engineering
- ✓ Control Engineering
- ✓ Logistics
- ✓ Industrial Engineering
- ✓ Electrical Engineering and Industrial Computer Science
- ✓ Quality, Health and safety
- ✓ Materials science and engineering

Computer Science, Digital media and Networks

- ✓ Computer science, Cyber security, Metaverse
- ✓ Networks and Telecommunications
- ✓ Audiovisual and multimedia
- ✓ Civil Engineering (BIM)

General Sciences

- ✓ Mathematics
- ✓ Physics and Chemistry

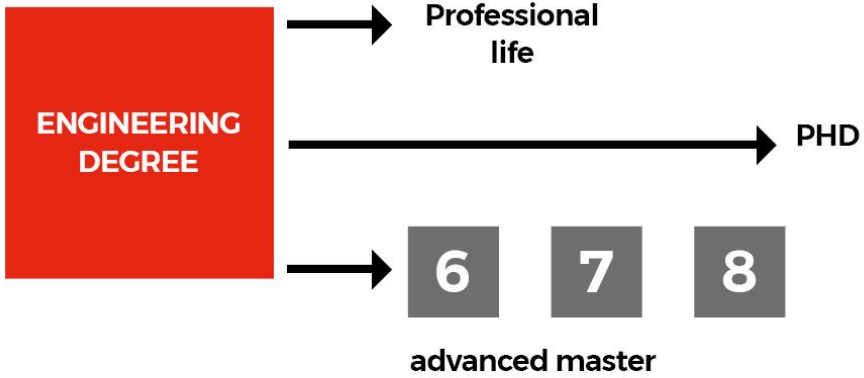
Engineering Degree

A 5-year post-secundary course of excellence in engineering with a progressive specialization

1 2 → 3 4 5

preparatory level
general scientific and technical education

engineering specialization
specialization in one of the departments



- 20% of the curricula dedicated to social sciences & humanities (foreign languages, communication, management…)

Engineering Degree

8 initial training fields:

- Mechatronics
- Mechanics and Energetics
- Embedded systems and Telecommunications
- Industrial Engineering
- Civil Engineering and Building
- Computer Science and Cyber security
- Industrial Automation and Control
- Multimedia

4 apprenticeship training fields:

- Industrial Engineering
- Electrical Engineering and Industrial Computer Science
- Mechanics and Energetics
- Computer Science and Cyber security

Certifications

Cti
Commission
des titres d'ingénieur

CERTIFIED LR ISO 9001

Qualiopi
processus certifié
RÉPUBLIQUE FRANÇAISE

Master Degree (selection after Bachelor Degree) co-delivered with Université Polytechnique Hauts-de-France

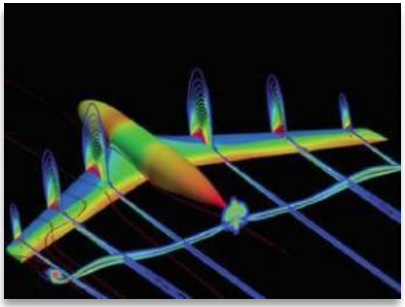
- Audiovisual, Digital Interactive Media, Games
- Transport, Mobility, Networks
- Materials Science and Engineering
- Networks and Telecommunications
- Civil Engineering
- Computer Science : TNSID, Metavers and IT4SSM (International Master)
- Production Management, Logistics, Purchasing
- Quality, Health and Safety
- Energy (International Master)

Internships, Apprenticeships, Ongoing Studies and Industrial projects

- ✓ All degrees in initial training have a final internship : from 3 months to 6 months according to the degree.
- ✓ Apprenticeship is possible for many of our degrees: It can be either half a week or every two weeks or every three weeks according to the degree.
- ✓ Ongoing studies (return to studies for employees or unemployed people) are possible nearly for all the degrees.
- ✓ Master and Engineering projects take place during the final year. Innovative projects, proposed by our partners, are carried out by our students under the supervision of a Professor.

International Master in Transportation and Energy

An international Master program in the fields of automotive, railway and aeronautic engineering



- Entirely taught in **English**
- **Lectures, practical works and team R&D projects** in the fields of automotive, railway and aeronautic engineering, energy management, …

Master degree co-accredited with the **Polytechnic University of Hauts-de-France**

International Master in Transportation and Energy

Strong links with Research and Industry

- Follow courses given by **teachers-researchers** of INSA Hauts-de-France and **industrial experts** and develop **high theoretical and practical skills**
- Take benefit of the numerous **experimental platforms** of INSA Hauts-de-France and presence of **internationally recognized Research laboratories** at Université Polytechnique Hauts-de-France
- Interact with **industrial partners** (RATP, Alstom, Mercedes Benz, Renault, Audi, Onera, Capgemini, Siemens, Railtech...) and strengthen your practical skills thanks to a full **semester dedicated to internship** in a company

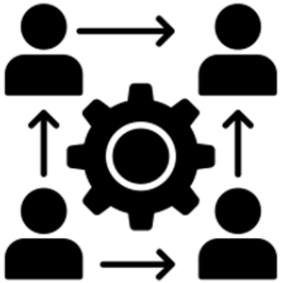
Strong regional industrial tissue

Teaching and Research at INSA Hauts-de-France match the actual need of transportation sector, strongly implanted in Valenciennes area (Alstom, Stellantis, Renault, Transdev....),

- **High hiring rate** of graduated students

Courses in English

- Embedded systems and Telecommunications
- Mechatronics
- Computer Science and Cyber security
- Industrial Automation and Control
- Industrial Engineering



Computer Science and Cyber security

- To provide training in **computer science**, thus enable future engineers to have the capacity to meet the needs of large DSCs (Digital Services Companies), in the fields of IT (Web, mobile development, strong skills in security).

- To be able to design applications in concordance with the complex and **entire software development chain** (compilation, software architecture), and to master risk management and security incident handling.

Industrial Engineering

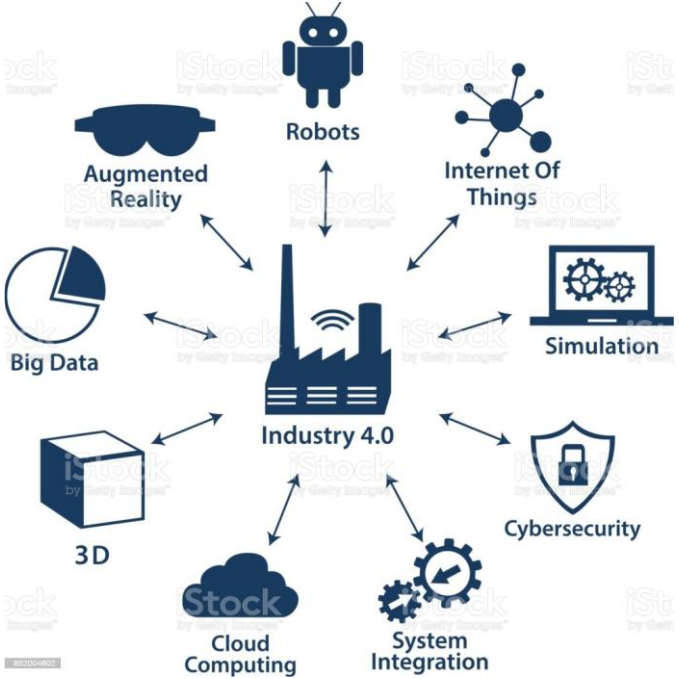
- Skills and knowledge in PSGS design: **Production Systems for Goods** (cars, trains, computers, food, …) and Services (health, finance, …)

- Design and optimization of PSGS, logistics/maintenance/quality, management of information related to PSGS

- E-Logistics, Digital Factory

Industrial Automation and Control

- To train research and development engineers with strong theoretical and practical skills to design, analyze, develop and implement **control systems**, using automation and industrial computing systems.
- To be able to define the overall architecture of modern **automated systems** and to implement them by using elementary components and by ensuring their network.
- Application frameworks: Industry 4.0, transportation, robots, health technologies, smart buildings.



OUR RESEARCH HUBS

1-Health and care of the future

- Promoting health and cultural transformation
- Mobility, territorial networking and health services
- Autonomy and aging

Goals

2-Cities, Mobility and territory of the Future

- Smart and citizen connected city
- Intelligent mobility and transition to new methods and uses
- Smart housing and ecological transition

Goals

3-Industry of the future, eco-friendly materials and associated processes

- ecosystems of the ecological transition
- Creative and digital industries accelerating eco-design and recycling
- Functionalized, intelligent materials with high ecological value

Goals

Uses, Digital, Standards and Security

Heritage, Territories and Space

Ethics, Discourse and Meaning

Cross-cutting challenges

Research activities

Our guidelines:

- ✓ Go from the basic research to the technology transfer,
- ✓ Aim at PhD grants through the INSA Group cooperation agreements (Chinese CSC grants, Indonesian agreement, Lebanon…),
- ✓ Are in direct contact with societal issues, our campus being focused on Transport and Mobility,
- ✓ Are closely coupled with the training of Engineers, Masters and PhD students (partnerships in France and abroad),
- ✓ Promote INSA Hauts-de-France in large research ecosystems.

Research Laboratories

2 joint labs with CNRS (French National Center for Scientific Research)

Université Polytechnique HAUTS-DE-FRANCE

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES HAUTS-DE-FRANCE

Université de Lille

centralelille

JUNIA Grande école d'ingénieurs

cnrs

LAMIH UMR CNRS 8201

Laboratory of Industrial and Human Automation and Control, Mechanical Engineering and Computer Science

290 permanent and non-permanent staff

CERAMATHS

Ceramic materials, manufacturing and processes, physicochemical characterization, bioceramics

Partial differential equations, topological optimization, probability-statistics, number theory, algebra and history of mathematics

51 faculty and staff members

cnrs

iemn Institut d'Electronique, de Microélectronique et de Nanotechnologie UMR CNRS 8520

Digital communications, Micro and nano systems, Ultrasonic control and characterization, Acousto-optic systems, Optronics

230 faculty and staff members, among them 86 in Valenciennes

Research Laboratories

Université Polytechnique HAUTS-DE-FRANCE

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES HAUTS-DE-FRANCE

LARSH LABORATOIRE DE RECHERCHE SOCIÉTÉS & HUMANITÉS

Laboratory of Societies and Humanities

Territories (environment, resources, mobilities), Organizations (contracts, institutions, risks), Identities (cultures, memories, valuation)
Powers (knowledge, actors, arbitration)

Praxis of languages, voices, bodies, literary and artistic works
Digital tools and ethics of creation

Pictures and sounds
City and housing
Organizations and society
Digital humanities

Companies Network

More than 1500 partner companies among which 40 of them have signed a specific agreement of proactive policy in different sectors of activity.

ARIA INDUSTRIE AUTOMOBILE HAUTS-DE-FRANCE

DAIMLER

AIF Réseau de compétences ferroviaires

UNIVERSITÉ DES MÉTIERS DU NUCLÉAIRE

BOSCH

INSA Hauts-de-France International Office

Promote international academic and industrial networks: INSA HdF has developed an international network of more than 250 companies and research institutes.

1 – Abroad internships either in companies or in research Institutes:

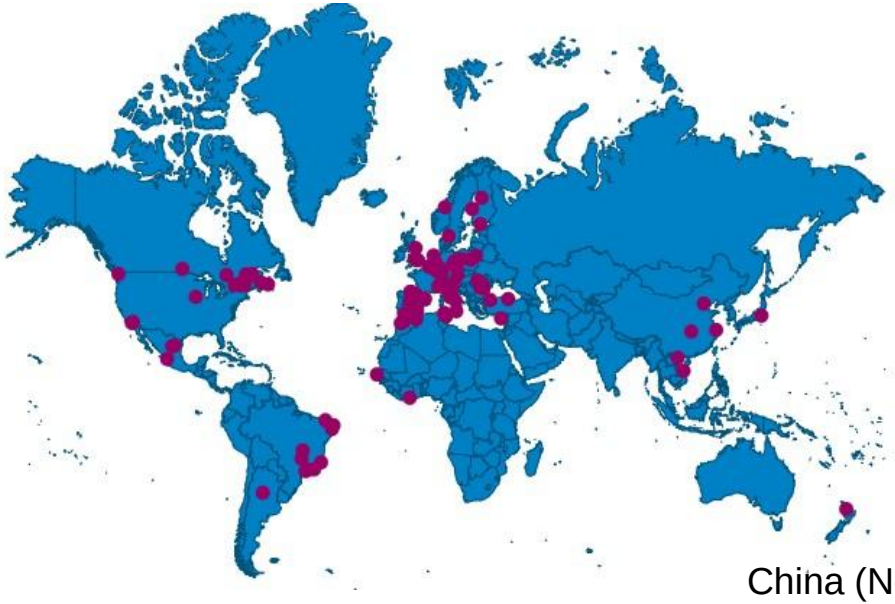
- More than 100 internships per year for undergraduate and Master students
- More than 250 6 months-internships per year for engineering students (a minimum of 6 months abroad is compulsory for Engineers during their studies)

2 – Host of students

- 2 International Masters: « Transportation and Energy » ; « Information Technology for Smart and Sustainable Mobility (IT4SSM) »
- Courses in English for a minimum of one semester (course catalogue)
- Double degree (INSA + partner University degrees)
- Internships in our research laboratories

3 - Host of Researchers according to our research activities and courses: Invited Professors

International academic network



More than 200 academic partners around the world:

Germany (Saarbrücken, Dresden, Stuttgart),
Spain (Barcelone, Bilbao, Madrid),
Italy (Milan, Parme, Turin),
Norway (Trondheim),
Romania (Bucarest)

Morocco (Tanger, Rabat, Casablanca),
Tunisia (Monastir, Tunis)

USA (Florida Institute of Technology),
Brasil (Brasilia, Campinas, Uberlândia, Rio de Janeiro, Sao Paulo…),
Canada (Montréal, Laval…)

China (North-East Forestry University, Beihang University, Tongji University, Shenyang Ligong University, Wuhan Institute of Technology, China Three Gorges University),
Vietnam (Danang, Hanoï),
Japan (Tsukuba, Keio)
Indonesia (ITS)

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Thanks for your attention