Science – Engineering – Health
The French system

Research
- Research laboratories

Teachers - researchers

Education
- Faculty of Science and engineering
- Teaching departments
  - Bachelors degrees
  - Master degrees
- Special institutes

Doctoral schools

Next: Topics of the FSI
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Topics of the FSI

Fields of Research and Development

- Aeronautics, Space, Embedded systems
- Energy: Production, Storage, Conversion
- Communication: Computer Science, Mathematics, Networks and Telecommunications
- Health: Biology, Genomics, Proteomics, Oncology, Toxicology, Health engineering

Next: teaching parts
Eight teaching departments:
- Biology-Geoscience
- Chemistry
- Electronics, Electrical Energy, Automatic control
- Computer Science
- Languages and Management
- Mathematics
- Mechanics
- Physics

An internal engineering school (Upssitech)
An Institute for Research and Teaching in Sciences (IRES)
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FSI overview

Key figures

- 11000 students
- 1250 teachers-researchers
- 600 teachers from industry
- 393 technical and administrative staff

- 11 bachelor’s degree disciplines
- 22 master’s disciplines
- 8 vocational bachelor degrees
- 3 specialties of engineering degree
- 6 masters of engineering (CMI)
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An environment dedicated to research and innovation (1)

Toulouse: European capital of aeronautics and space
The Oncopole site

7 competitiveness clusters

- Aerospace Valley (Aeronautics, Space, Embedded systems)
- Agri-Sud-Ouest Innovation (Agriculture / Agro-food)
- Cancer-Bio-Santé (Biotechnologies / Health)
- Derbi (Energy)
- Eau (Ecotechnologies / Environment)
- Elopsys (Optics / Photonics)
- Pôle Européen de la Céramique (Consumer goods materials)

Next: Academic partners
Academic research Partners

- Research institutes: CNRS, INSERM, INRA, IRD
- University of Toulouse (COMUE) and founding members: Toulouse 1 - Capitole, Toulouse – Jean Jaurès, INSA Toulouse, INPT, ISAE
- CNES (National Center for Space Studies), ONERA (National Aerospace Research Cent), CEA (Atomic Energy Commission)…
Labs and very close environment

- 60 research laboratories involved in the FSI Education
- 4 Laboratories of Excellence (LabEx)
- Toulouse Tech Transfer (TTT): 60 patents per year on average
- 9 PhD schools: 400 new PhD students every year
FSI courses / Bachelor’s

- Chemistry
- Electronics, Electrical Energy, Automatic control
- Civil Engineering
- Computer Science
- Mathematics
- Mathematics and computing applied to human and social sciences
- Mechanics
- Physics
- Management (for 3rd year students)
- Earth Sciences
- Life Sciences
FSI courses / Masters

- Electronics, Electrical energy, Automatic control
- Computer science
- Mechanical engineering
- Materials science
- Chemistry
- Networking and telecommunications
- Mathematics and applications
- Astrophysics and space sciences

FSI Masters (18)

- Fundamental physics and applications
- Earth and planetary sciences, environment
- Energetics, thermic
- Fundamental physics and applications
- Chemical and biological process engineering
- Biodiversity, ecology and evolution
- Biotechnologies
- Bioinformatics
- Plant sciences
- Ocean, atmosphere and weather sciences

Next: Topics
Masters are strongly linked with research topics

Industrial partners: Aeronautics, Space, Embedded systems

Energy: Production, Storage, Conversion

Communication: Computer Science, Mathematics, Networks and Telecommunications

Environment: Ecology, Green Chemistry, Biomaterials, Agrifood, Renewable Energy

Health: Biology, Genomics, Proteomics, Oncology, Toxicology, Health engineering

Next: industrial partnership
Strong partnership with private companies

- Participation at all levels of decision (Councils)
- Supervisors of student internships and industrial projects
- 600 lecturers involved in our diplomas
- Educational curricula are jointly elaborated

Next: integration of graduates
Less than 2 months for 1st employment

Net rate of employment after 30 months: 92%

89% of executive, 84% with stable employment

UPS graduates are heading top companies, particularly in the health and engineering areas.
An international vocation

- Deeply related with other European countries for mobility of students and teachers
- Openness towards major universities in North America, the Mediterranean region, Brazil, China, South Africa, India, Indonesia and Russia

International teaching and exchange programs

- 12 Erasmus Mundus programs worldwide
- Bi-graduation Canada-France: Plasma science and technology
- 400 foreign incoming students in 2014 as part of an exchange program, increasing every year
- Creation of the TOUL’BOX (2014) and WELCOME DESK (2015) programs at University of Toulouse, an unique service aiming to better welcome foreign students and partners
Internationally oriented research

- 11 international laboratories set up in conjunction with Canada, Taiwan, Morocco, Japan, Vietnam, Uruguay and Russia
- 2 European laboratories set up in conjunction with Slovenia and Spain
- 1 international joint unit with India
- 11 European and international research groups (Ukraine, USA, Russia, Italy, Poland, Germany etc.).
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The research environment

✓ Competitiveness clusters: Aerospace Valley + IRT St Exupéry
✓ Research laboratories: ICA, CIRIMAT, CEMES, LAAS, LAPLACE, IRIT, IRAP…
✓ Labex: OCEVU, NEXT
✓ Membership of European and International networks and consortiums
✓ Partnership with the CNES and private companies (Airbus, Thalès, Continental…)

Next: Masters in technological area

Aeronautics, Space, Embedded systems
The concerned masters

- Aeronautics, Space, Embedded systems

Masters concerned in technology area

- Electronics, Electrical energy, Automatic control
- Computer science
- Mechanical engineering
- Materials science
- Networking and telecommunications
- Mathematics and applications

Next: Masters in fundamental area
The concerned masters

Masters concerned in fundamental area

- Astrophysics and space sciences
- Fundamental physics and applications
- Earth and planetary sciences, environment

The ChemCam instrument (IRAP&CNES)
Fields of interest

Communication: Computer Science, Mathematics, Networks and Telecommunications

- Artificial intelligence, Robotics
- Machine learning, Human-computer interaction…
- Signal and image processing
- Big data
- Safety of software development, Cybersecurity…
- Internet of things, internet of everywhere…
The research environment

- Research laboratories: IRIT, LAAS, IMT...
- LabEx: CIMI, AMIES, NEXT
- Competitiveness clusters: Aerospace Valley, Cancer bio-health, Agri-Sud-Ouest Innovation, ASE-IRT St Exupéry
- Collaboration in European and international projects
- Partnership with Airbus, Thales, CNES, CEA, EDF, KLM, SAS, several research and development SME from Toulouse and surrounding area…

Communication: Computer Science, Mathematics, Networks and Telecommunications
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The concerned masters

- Electronics, Electrical energy, Automatic control
- Computer Science
- Mathematics and applications
- Networking and Telecommunications
- Telecommunications and IT networks
- Robotics and Interactive Systems

Spencer robot completed tests guiding KLM passengers at Schiphol.
The LAAS partner of this project.

Next: Energy topic
The research environment

- Competitiveness cluster: DERBI (80 companies, 20 research laboratories)
- Laboratories involved: IMFT, LAPLACE, IRSAMC (4 research laboratories), LAAS, CEMES, CIRIMAT...
- LabEx: NEXT, GANEX
- Partnership with AREVA, CECAM, EDF R&D, CEA, ONERA, ENGIE INEO, SAFT...
The concerned masters

- Electronics, Electrical energy, Automatic control
- Energetics, thermic
- Fundamental physics and applications
- Chemical and biological process engineering
- Materials science

Energy: Production, Storage, Conversion

Next: green chemistry, ecology
The research environment

- More than 50 research laboratories: ECOLAB, CESBIO, EDB, LCC, IPBS, CIRIMAT, CEMES, LAPLACE, ...
- Many competitiveness clusters: Water cluster, Cancer bio-health, Green Chemistry cluster, Agrimip innovation, Pôle européen de céramique ...
- Labex: TULIP
- Partnership with BRGM, TOTAL, UMICORE, AGRONUTRITION, BIOGEMMA, TERREAL, SYNGENTA ...

Environment: Ecology, Green Chemistry, Biomaterials, Agrifood, Renewable Energy
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The concerned masters

- Biodiversity, ecology and evolution
- Biotechnologies
- Bioinformatics
- Plant sciences
- Chemistry
- Chemical and biological process engineering
- Electronics, Electrical energy, Automatic control
- Energetics, thermics
- Fundamental physics and applications
- Materials science
- Ocean, atmosphere and weather sciences

Environment: Ecology, Green Chemistry, Biomaterials, Agrifood, Renewable Energy

Next: Biology, health
The research environment

Health: Biology, Genomics, Proteomics, Oncology, Toxicology, Health engineering

- Many research laboratories implicated: IPBS, LGC, LCC, ISCT, CBI, I2MC, CRCT...
- Connections with the LabEx: TULIP and TOUCAN
- Competitiveness clusters: Cancer-bio-health, Elopsys
- Partnership with about 80 companies as SANOFI, Pierre Fabre, Dassault Systems, Geno Toul,…
The concerned masters

- Biology-health
- Bioinformatics
- Biotechnologies
- Chemistry
- Chemical and biological process engineering

- Computer science
- Mathematics and applications
- Electronics, Electrical energy, Automatic control
- Fundamental physics and applications
- Mechanics

Health: Biology, Genomics, Proteomics, Oncology, Toxicology, Health engineering