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Masters of science

Masters of Science

A range of training courses
offered by 2 public schools of engineers

TOULOUSE INP

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES TOULOUSE

msc-inp-insa-toulouse.fr

Toulouse INP and INSA Toulouse offer a wide range of programs in Science and Technology within the "Université de Toulouse".

Toulouse INP and INSA Toulouse are public schools of engineers.

Masters of Science are degrees fully accredited by the French Ministry of Higher Education.

Master of Science is internationally recognized and may lead to PhD programs or jobs in industrial companies.

The Master of Science is a 2-year full time program. It is usually aimed at undergraduate students who already have a Bachelor degree. The lectures are focused on specific scientific and technical fields.

Our programs are taught in English
N.B. : Some programs* may also include some contents in French

MSc
Electronics systems for embedded and Communicating Applications (ESECA)

Presentation

This master joint program between Toulouse INP-ENSEEIHT and INSA Toulouse is a gateway to jobs or doctoral research in electronics for embedded systems. It is aimed at students with a Bachelor degree in electronics, electrical engineering, telecommunications, computer science, robotics, physics or equivalent.

Aims of the program

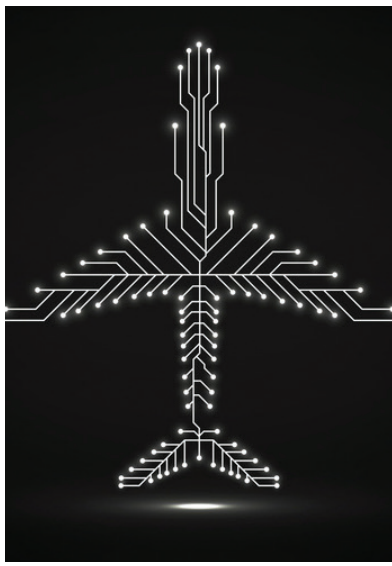
Enroll top-level international students in the field of electronics. Provide the most up-to-date teaching in electronics for embedded systems, in tight relations to the aeronautics industry as well as prime level research institutions.

Graduate students that will take part in the research activities as PhD or R&D engineers and will have an opportunity to build an international carreer.

Research institutions & industrial partners

The lecturers are from the « Aerospace Valley », which regroups renown research laboratories (LAAS, Laplace, IRIT) and worldwide industry leaders in aeronautics, space and embedded systems (Airbus, Thales, Continental, Astrium, Rockwell Collins..).

The students can benefit from this partnership network in the framework of their project or the search of an internship.



Job opportunities

Over 40% of students go on to PHD studies. R&D for the manufacturing industry in aeronautics, automotive, semiconductors, communications...

MSc Satellite Communication Systems : from engineering to end-to-end systems (SATCOM systems)

Presentation

Satellite communication systems have been taught in Toulouse for over 40 years.
Today, it takes the form of a 2-year MSC, run by INP-ENSEEIHT.
Toulouse being the French capital of Space, the Master program benefits of a unique research and professional environment. It also profits from the strong connections with the aerospace and defence industries developed by faculty members of INP-ENSEEIHT.

Aims of the program

The SATCOM systems program aims to train autonomous graduates in the field of satellite telecommunications. The level of expertise acquired in electronics, digital communications, networks and systems allows them to quickly access positions of responsibility in this field and more generally in the field of telecommunications.

Research institutions & industrial partners

Toulouse is the French capital of Space.

The Master program is supported by major actors in the field of satellite communications (Airbus Defense and Space, Thales Alenia Space, CNES, SES, EUTELSAT, INMARSAT...). The teaching staff is composed of faculty members who are part of major French research laboratories and experts of satellite industry.

Job opportunities

The main sector of activity is satellite telecommunications, but graduates can integrate into the entire field of telecommunications.

Graduates are mainly hired by the major European players in the field of satellite telecommunications (system and service providers): industrials (Thales Alenia Space, Airbus Defense and Space, etc.), agencies (CNES, DLR, ESA, etc.), operators (EUTELSAT, SES, INMARSAT). Large companies i n the field of telecommunications in general such as Thales and Orange for example are also employers. Graduates are also recruited by SMEs such as: CLS, Silicom, Sigfox, etc. Graduates can work as R&D engineers, system or project engineers. They can also go on to PhD studies.

MSc Electrical Energy Systems (EES)

Presentation

This education program focuses on areas of Electrical Energy Systems dedicated to several industrial applications.

The lectures and projects are dispatched in 3 separated paths: Power Electronics and Grids, Electrodynamic and Mechatronics, New Technologies of Energy.

Aims of the program

This program enables students to acquire new skills related to the production, storage, transmission, conversion (including electromechanical conversion) and use of electrical energy. The high-level teaching team, whose members belong to the LAPLACE, LAAS and LGC research laboratories, teaches students the design of power systems (dimensioning and control): static converters, electromechanical converters, mixed energy configurations, including renewable energies, transport and autonomous networks (smartgrids). This design approach is based on analytical system modeling, numerical optimization and simulation, considering couplings and interactions between system parts. Aspects of sustainability and efficiency are also taken into account.

The courses are supported by numerous group projects designed to help students apply theoretical knowledge.

Language: 100% Eng. in M1 and M2
(lectures in French, documents in English).

Research institutions & industrial partners

All teachers are researchers of the laboratories affiliated to French National Scientific Research Center (CNRS): Plasma and Energy Conversion Laboratory (LAPLACE), Chemical Engineering Laboratory (LGC) and Laboratory for Analysis and Architecture of Systems (LAAS).

A significant percentage of the lectures and industrial projects are managed or given by Industrial R&D partners such as: Airbus, Thales Alenia Space, Actia, Continental, EDF, GDF, SUEZ, CEA, ADEME, Liebherr Aerospace, Airbus Space & Defense, SNCF.

Relationships with industry are strengthened by industrial projects and six-month long internships.

Job opportunities

Academic Researches (30% of graduate students continue with a PHD) Industrial Researches & Development in:

- Companies of Energy Production and Transfer and also Transport Companies.
- Manufacturers of Power Equipment: power generators, storage elements, power converters, propulsion actuators.
- Industry related to transport: aeronautic, space, vehicular, railway, ships.

MSc Industrial and Safety Engineering (ISE)

Presentation

Turning innovations into innovative products requires the control of industrial design processes for bringing to market within a reasonable time and price, while providing assurance of their quality and safety. Increasingly, quality and safety requirements also concern the manufacturing process. All these processes involve various human, managerial, technical and financial skills, taking the influence of many external constraints into account (regulatory, normative, legal, and societal, as well as technological).

Aims of the program

The Master's program aims to train specialists providing answers to these new industrial and societal expectations in an international context. At the end of the degree, the student will be able to manage the quality and the risks of technological systems (products and facilities) relating to their specification, their design, their implementation, their manufacturing and their operation, and to provide insurance of the actual quality and risk control in a legal, economic and social environment.

Research institutions & industrial partners

Academic lecturers are members of the French National Scientific Research Center (CNRS). Industrial lecturers are senior practitioners from various fields: energy (oil and gas, nuclear), aerospace, transportation, chemistry, etc.

The Institute for an Industrial Safety Culture (ICSI) brings together a large variety of companies. This institute provides a professional environment and support for students throughout their training: lectures, case studies, internships.

Job opportunities

Placement opportunities are varied as the training includes design, production and operation, as well as Management. They include but are not limited to:

- Research laboratories of universities
- Research and development departments of large industrial companies
- Production facilities (production of goods, energy, etc.)
- Engineering companies and consultancy

Language: 100% Eng. in M1 and 20% Eng. in M2 (lectures in French, documents in English).

MSc Fluids engineering for industrial processes

Presentation

Applications are related to fluid flows in petroleum engineering, chemical engineering, energy transformation... The purpose of the lectures is concerned with the physics and modelling of transport phenomena in multiphase flows (bubbles, drops, granular media, emulsions and foams).

Aims of the program

It will give you state of the art expertise in Fluids Mechanics and its application to raw material and energy transformation processes.
Multiphase flows are of major importance for modelling the behaviour of industrial processes.
Advanced courses on turbulence, coupling chemical reactions and flows, heat and mass transfer are complemented by exercises and practical training.
The students will be trained to work with Computational Fluid Dynamics tools (commercial codes but also research and industrial softwares).

Research institutions & industrial partners

All teachers are part of major research institutions affiliated to the French National Scientific Research Center (CNRS): IMFT (Fluids Mech.) / LISBP (Bio-processes and Water management) / LGC (Chem Eng.)
Several opportunities for internships in industrial corporate (production, research...):

- Petroleum and Gas Engineering: TOTAL – SAIPEM – IFP-EN - GDF - BP Chemical - TECHNIP
- Transformation of ground material: ARCELOR/MITTAL, Saint-Gobain, Air Liquide
- Nuclear Engineering and Energy: AREVA – EDF – CEA - IRSN
- Water Management and Production: SUEZ Environnement – VEOLIA - DEGREMONT

Job opportunities

PhD - around 30% of the graduate students
R&D positions in petroleum, nuclear or chemical engineering major companies. Process of raw materials and energies transformation, Water management and Waste treatment, Food manufacture.

MSc Water Engineering and Water Management (WEWM)

Presentation

The master will provide students with shared theoretical and practically-oriented knowledge in the field of water engineering and water management.

Students in the program should acquire the ability to design water engineering projects and to realize these projects efficiently in line with the principles of sustainability (integration of energy efficiency and mass/energy valorisation).

Aims of the program

The master focuses on chemical engineering and hydrology applied to unit operations of water treatment and water sciences (aquatic system and its preservation). The purpose of the lectures is concerned with biological and chemical reactors for pollution removal, unit operations of separation for the high quality water production (membrane separation, adsorption...), hydrology and ecology for the management of aquatic system. In addition, students will follow courses on international regulations, environmental management and project management to be able to face water-related societal, governmental and industrial stakes.
Along the two years of formation, the student will have strength interactions with industrial partners and research laboratories.

Job opportunities

Job in industries in the environmental sector (water/air/waste treatment eco-industries) or in various other fields (chemistry, petrochemistry, food, pharmacy and cosmetics, specialised materials) to take into account environmental constraints (eco-processes).

Research institutions & industrial partners

Industrial applications of the program are related to desalination, drinking water production, waste water treatment, water reuse, industrial water treatment, eco-conception of processes

INSA is member of the national cluster of Excellence WATER and of the regional cluster of Water, Sensor and Membrane. The laboratories involved in this master are ranked A+, a plus for future students whose education will be closely linked to the research.

MSc Green Chemistry and Processes for Biomass (Green CAP)

Presentation

Today the chemical industry must adapt to cope with the increasing scarcity of resources, the new regulations, and the social, ecological and political pressure. In this context, the use of renewable resources like feedstocks or microbial biomass represent a real interest to prepare functional bioproducts and to contribute to energetic transition which constitutes significant levers for innovation. By combining the different disciplines Green chemistry, Catalysis, (Bio)Processes, and Formulation this master aims at providing the essential tools to develop clean and safe processes involved in the new emerging fields of agribusiness.

Aims of the program

- Train engineers able to implement clean technologies in a context of sustainable development to provide solutions in the fields of green chemistry and bioprocesses.
- Master the transformation of renewable resources by catalytic or biotechnological means,
- Develop functional, safe and innovative bioproducts, according to an ecodesign approach.

Job opportunities

The educational staff in charge of the master are research faculty members. They work in these internationally recognised laboratories in the fields of green chemistry, catalysis, green processes and bioprocesses.

- LCA (Laboratory of Agro-Industrial Chemistry), a joint research centre INRA1010, supported by the transfer centre: CRITT-CATAR Agroressources,
- LGC (Laboratory of Chemical Engineering), a joint research centre INPT-UPS and INSIS, supported by the transfer centre: CRITT Génie des Procédés et de l'environnement (in French).
- LCC (Laboratory of Coordination Chemistry), a CNRS research unit.

The three laboratories have close relations with the industry, as shown by the publication of many patents, by the awards received and by the affiliation with institutions of excellence (Institut Carnot 3BCAR, Laboratory of Sustainable energy).

The students can benefit from this partnership network in the framework of their project or the search of an internship.

Research institutions & industrial partners

The GreenCAP Master is particularly suited to students wishing to specialize in the valorisation of the valorization of biomass for industrial applications by using clean processes.
Placements and prospects are mainly in the fields of research and development, production, engineering, consultancy or environmental assessment.
Employment sectors are: Energy production chains, Ecotechnologies, Fine Chemistry, Bioproducts of specialities, Cosmetics & health, Agro-industry and the Environment.

MSc Industrial BioTechnology for a Bio-Based Economy (BioTechEco)

Presentation

The international BioTechEco Master in Industrial Biotechnology and Processes for a Bio-Based Economy is a newly conceived master's degree offering a cross-disciplinary educational program that includes life sciences, chemical and bioprocess engineering, bioethics, sustainability, economics, and environmental regulations.

BioTechEco is a two-year, full-time master's program entirely taught in English. The program is specifically designed to shape international and French university students into bright, well-prepared professionals specialized in an emerging field. Students receive high-quality teaching delivered by lecturers and researchers from universities ranked among the 300 best institutions in the world (NTU and ARWU rankings, 2020). The curriculum comprises a full semester undertaken abroad in select partner universities in Europe, Asia and the USA, and a 6-month internship at a research laboratory of the university consortium or an industrial company.

BioTechEco master's program is included in EUR BIOECO, supported by the French State and managed by the French National Research Agency (ANR) under the Investments for the Future Program (PIA) ANR-18-EURE-0021.

Aims of the program

BioTecEco aims to train its students with cross-disciplinary skills and expertise. A coupled training delivered by both University Faculties and Research Units in Biological and Chemical Sciences and Economics will provide new and unique expertise to students, making them attractive to the emerging bioeconomy market and allowing them to develop new industrial segments.

The added-value and originality of BioTechEco stem from the integration of the master's program in a Graduate School of Research in BIOTECHNOLOGY FOR BUILDING A BIO-BASED ECONOMY.

The close ties of the degree with a doctoral program and international scientific competitions will ensure its relevance to research and education centers in Toulouse with innovative pedagogical practices.

Research institutions & industrial partners

Teaching delivered by lecturers and researchers from niversities ranked among the 300 best institutions (NTU and ARWU rankings).

Job opportunities

Bright international careers in the emerging field of a sustainable bio-based economy, a growing sector offering new jobs in public or private companies, including green chemistry, health, bioenergy, water and waste treatment, biomaterials, cosmetics, among many others.

ID card
of a Master of Science

Duration : 2 years | ECTS : 120

FURTHER STUDIES

Advanced Masters / MBA / PhD

CAREER PROSPECTS

Executive positions within national or international companies & more...

Networks : Toulouse INP and INSA Toulouse are public schools of engineers and members of Campus France.

Fees : 9 018€/year

Reduction fees :

Reduction down to 5 389 €/year for academic partners, european, some developping countries and selected students on a merit basis.)

ⓘ *National registration fees may change each year.*

Students can apply to different scholarship programs (governmental scholarships, European student mobility programs, French Eiffel and French embassies' scholarship programs, training support programs from private foundations and companies).

Required documents :

- Photocopy of ID card or passport,
- CV in English (maximum 2 pages),
- Cover letter in English,
- English level attestation (if your native language is not English):
  - TOEIC (750) or TOEFL (80), IELTS (6.5).
  - If you do not have these documents, an interview will take place.
- Certified copies of academic diplomas, certified academic transcripts.

Bonus :

Support letters: Please provide us with the contacts of 3 of your recent teachers (email and phone number).

How to candidate?

Direct application by e-mail on the website of Masters of Science with all the required documents.

Our programs are taught in English
N.B. : Some programs* may also include some contents in French

FOCUS

- Masters of Science are national degrees fully accredited by the French ministry of higher education.
- Further studies: PhD program (3 years).
- All MSc Degree holders are allowable to take a step forward in the academic track to get the PhD degree.
- Pre-requisite: Bachelor's degree.
- Holders of a Master's degree can directly enter the second year under conditions.
- Toulouse INP and INSA Toulouse welcome many international students each year and are more than happy to help them for practical and administrative formalities.

TOUL BOX

Pack will take care of you from A to Z : You can get the « essentiel » pack with all options (except for guided tour) or « cité internationale » pack.

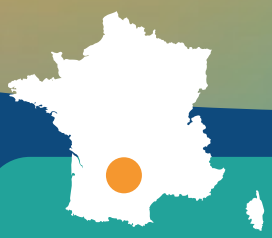
TOULOUSE INP

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES TOULOUSE

August	Semester 1 (September)	Semester 2 (July)	Semester 3 (September)	Semester 4 (July)
1 month of scientific french summer school *(optional)*	Courses, lectures, projets		Lectures, projets	6 month internshit >600€/month minimum stipend

Direct intake with a bachelor BSc, BTech, ...

Direct intake with a master (MTech MSc) or a BThech BSc + 3 years of professionel experience in the field.



Welcome to France

TOUL BOX

Toul'Box is the tool for students, teachers, PhD students and researchers. To facilitate your installation in Toulouse and its region.

Université de Toulouse

CONTACT US

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GO AHEAD

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