MSc FLUIDS ENGINEERING FOR INDUSTRIAL PROCESSES

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).

THIS EDUCATION PROGRAM IS FOCUSED ON FLUIDS ENGINEERING FOR INDUSTRIAL PROCESSES.

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).

CONTACT

master_fluids@univ-toulouse.fr

APPLICATION

Deadline: April 15th
Tuition fees: 9000€/year
Reduction down to 5000€/year for academic partners and selected students
www.toulouse-tech.net

FOCUS

Masters of Science are national degrees 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
Programs are taught in English

INP - ENSEEIHT, INP-ENSIACET and INSA are members of the N+i network

www.nplusi.com
PROGRAM CONTENT

Fluids Mechanics and CFD
- Process Engineering and Industrial systems
- Compressible flows and Turbo-machines
- Advanced courses in Fluid Mechanics
- Numerical Analysis and Simulations
- Practical training on Fluid Mechanics

Multiphase Flows and Reactions
- Reaction Engineering, Transport Phenomena
- Turbulence in Fluids, Numerical Simulations
- Complex Fluids and Interfacial Phenomena
- Heterogeneous media and Multiphase Flows
- Transfer and Reactions

Industrial Project

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
- Transformation of ground material: ARCELOR/ MITTAL, Saint-Gobain, Air Liquide
- Nuclear Engineering and Energy: AREVA – EDF – CEA
- 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 material, Water management and Waste treatment, Food manufacture

Required documents:
- 2 passport-size photos
- Photocopy of passport or ID card
- English language test (if your native language is not English): TOEIC (750) or TOEFL (80), IELTS (6.5)
- Certified academic transcripts
- Certified copies of academic diplomas
- Curriculum Vitae in English (max. 2 pages)
- Short statement of motivation in English

The real cost is 9000 euros per year. Acceptance to scholarships of INP-INSA can reduce the course fees to a minimum of 5000 euros per year. Scholarship through a reduction of the fees can be offered to students coming from partner universities. Exceptionally the same kind of scholarship can be given to top level students.

Scholarships (based upon eligibility and acceptance)
- Scholarships from the French government (Eiffel, Embassies,..)
- Scholarships from the European Union (Erasmus, Leonardo, etc.),
- Scholarships from French regional authorities [cities, Regions, etc..]
- Stipends for the internships in academic labs or industrial companies.

Scholarships from the French government (Eiffel, Embassies,..)
- Scholarships from the European Union (Erasmus, Leonardo, etc.),
- Scholarships from French regional authorities [cities, Regions, etc..]
- Stipends for the internships in academic labs or industrial companies.
MSC GREEN CHEMISTRY AND PROCESSES FOR BIOMASS (GREEN CAP)

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 bioproceses.
- Master the transformation of renewable resources by catalytic or biotechnological means,
- Develop functional, safe and innovative bioproducts, according to an ecodesign approach.

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.

CONTACT

pascale.decaro@ensiacet.fr

APPLICATION

Deadline: June 15th
Tuition fees: 9000€/year
Reduction down to 5000€/year for academic partners and selected students
www.toulousetech.net

FOCUS

Masters of Science are national degrees 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
Programs are taught in English
Integration of students in the field of process and green chemistry.

The first semester (M1) is a semester for international master (SIM) shared with other international masters of INPT-INSAS, and dedicated to the scientific integration of students It includes a bibliographic project.

The second semester (M1) includes thematic courses combining tutorials, seminars and a project. It is divided in 4 teaching units (TU).
- TU1 - Sustainable Process
- TU2 - Tools for a green Chemistry
- TU3 - Polymer Sciences
- TU4 - Language and Project

The third semester (M2) is divided into 6 TU:
- TU1 - Tools in green chemistry and processes
- TU2 - Bioprocess
- TU3 - Formulation
- TU4 - Conception of Bioproducts
- TU5 - Catalysis for alternative Energies
- TU6 - Project

The fourth semester (M2) is dedicated to the internship (Master thesis) of 5 to 6 months in a company, in a research & development center or in one of the laboratories linked to the master.

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.


Required documents:
- CV, motivation letter, copy of Bachelor diploma, english level attestation.

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.
MSC ELECTRONICS SYSTEMS FOR EMBEDDED AND COMMUNICATING APPLICATIONS

A 2-years master degree at «Université de Toulouse» supported by INP-N7 and INSA two «grandes écoles» in engineering sciences.

State of the art expertise in Electronics for Embedded Systems with specific applications to the avionics and spatial industry.

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 career.

APPLICATION

Deadline: April 31th
Tuitions fees: 9000€/year
Reduction down to 5000€/year for academic partners and selected students
www.toulousetech.net

CONTACT

master_eseca@univ-toulouse.fr

INP - ENSEEIHT and INSA are members of the N+i network

www.nplusi.com

FOCUS

Masters of Science are national degrees 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

Programs are taught in English
**PROGRAM CONTENT**

- Embedded Electronics Design
- Autonomous systems
- Optoelectronics
- Instrumentation
- Electromagnetic compatibility for integrated circuits
- Energy management

**Radio-Frequencies**

- RF active and passive circuits
- Antennas
- Electrodynamics

- Digital Signal and Image Processing

- Telecoms for spatial applications
- Radar and remote sensing applications

- A 100h research project in a research institution
- A 6 months final project as a trainee in a laboratory or in the industry with minimum wages 500€/month

**RESEARCH INSTITUTIONS & INDUSTRIAL PARTNERS**

All teachers are part of major research institutions that are part of the French National Scientific Research Center (CNRS):

- LAAS-CNRS
- LAPLACE
- IRIT
- or world leading industrial groups: Thales, Airbus, etc...

**JOB OPPORTUNITIES**

- PhD - more than 40% of the graduated students
- R&D for the manufacturing industry in aeronautics, automotive, semiconductors, communications...

**Required documents:**

- Full transcripts, Passeport copy, Diplomas
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).
**Program Content**

**Semester 1:**
Scientific basis, cultural integration, linguistics and methodology.

**Semester 2:**
Core courses on waste water treatment and waste water management including energy and mass valorisation.

**Semester 3:**
Water production and water resource management including desalination and water reuse.

**Semester 4:**
Graduation Internship [5-6 months] in academic Laboratories or in Industrial companies.

The first semester is a transition semester with 80h of french courses. If necessary or wished, additional intensive french courses are available in the summer.

**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.

**Required Documents:**

- Scholarships from the institution (based upon eligibility and acceptance)
- Scholarships from the French government (Eiffel, Embassies,...)
- Scholarships from the European Union (Erasmus, Leonardo, etc.),
- Scholarships from French regional authorities (cities, Regions, etc..)
- Stipends for the internships in academic labs or industrial companies.

- Scholarships from the French government (Eiffel, Embassies,..)
- Scholarships from the European Union (Erasmus, Leonardo, etc.)
- Scholarships from French regional authorities (cities, Regions, etc.)

- Stipends for the internships in academic labs or industrial companies.

**Scholarship Possibilities:**

- Scholarships from the institution (based upon eligibility and acceptance)
- Scholarships from the French government (Eiffel, Embassies,...)
- Scholarships from the European Union (Erasmus, Leonardo, etc.),
- Scholarships from French regional authorities (cities, Regions, etc..)
- Stipends for the internships in academic labs or industrial companies.

- Scholarships from the French government (Eiffel, Embassies,..)
- Scholarships from the European Union (Erasmus, Leonardo, etc.)
- Scholarships from French regional authorities (cities, Regions, etc.)

- Stipends for the internships in academic labs or industrial companies.

**Career 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).

**Scholarship Possibilities:**

- Scholarships from the institution (based upon eligibility and acceptance)
- Scholarships from the French government (Eiffel, Embassies,...)
- Scholarships from the European Union (Erasmus, Leonardo, etc.),
- Scholarships from French regional authorities (cities, Regions, etc..)
- Stipends for the internships in academic labs or industrial companies.

- Scholarships from the French government (Eiffel, Embassies,..)
- Scholarships from the European Union (Erasmus, Leonardo, etc.)
- Scholarships from French regional authorities (cities, Regions, etc.)

- Stipends for the internships in academic labs or industrial companies.

**Scholarship Possibilities:**

- Scholarships from the institution (based upon eligibility and acceptance)
- Scholarships from the French government (Eiffel, Embassies,...)
- Scholarships from the European Union (Erasmus, Leonardo, etc.),
- Scholarships from French regional authorities (cities, Regions, etc..)
- Stipends for the internships in academic labs or industrial companies.

- Scholarships from the French government (Eiffel, Embassies,..)
- Scholarships from the European Union (Erasmus, Leonardo, etc.)
- Scholarships from French regional authorities (cities, Regions, etc.)

- Stipends for the internships in academic labs or industrial companies.
MSC INDUSTRIAL AND SAFETY ENGINEERING (ISE)

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.

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).

CONTACT
master_ise@univ-toulouse.fr
http://www.safety-engineering.org/
http://www.icsi-eu.org/en/

APPLICATION
Deadline: June 15th
Tuition fees: 9000€/year
Reduction down to 5000€/year for academic partners and selected students
www.toulousetech.net

FOCUS
Masters of Science are national degrees 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
Programs are taught in English

INP - ENSIACET and INSA are members of the N+i network
www.nplusi.com


Semester 4 (30 ECTS): Graduation internship (5-6 months) in industrial companies or in research laboratories.

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

Required documents:
CV, cover letter, copies of academic diploma, academic transcripts, passport or ID card
TOULOUSE

INP - ENSAT is a member of the N+i network
www.nplusi.com

AIMS OF THE PROGRAM

The newly trained graduates shall be able to develop a clear vision about the complexity of agricultural food chains, their contemporary transformation and the emerging issues. This program aims to accompany students in the acquisition of:

- specific knowledge, methods and skills to diagnose problems at all levels of the value chains, develop a prospective analysis of emerging issues, identify current and future needs and work with different stakeholders on the elaboration of innovative and sustainable answers,
- managerial and interpersonal skills necessary to lead research and development projects in collective settings and an international environment.

For that propose, the training approach is based on a combination of lectures, numerous real-life case studies and research-development projects tutored by researchers and professionals.

The current context of demographic, food and agro-ecological transitions raises new challenges for actors along local as well as global agricultural food chains: securing food supply in a sustainable way, managing risks and food safety, value enhancement and/or re-use of by-products...

This two-year program is designed for highly motivated students looking to work as researchers, industry executives or international experts, on building innovative and sustainable agricultural and food value chains. The main originality and strength of this program are built upon a multidisciplinary and complex thinking approach consisting in the integration of different disciplines (mainly agronomy, agricultural economics, ecology and food sciences), and the partnership with a unique network of research centers and companies.

FOCUS

Masters of Science are national degrees 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
Programs are taught in English
The Agrofood Chain program is designed to train future researchers and executives aiming at international careers in the private or state sectors of agriculture, food, environment and non-food valorisation of agro-resources. Researchers in food enterprises and agricultural research institutes, experts in governmental and international institutions, academics, associates in consulting firms, advisors in farmer organizations are examples of job positions held by former students.

After their Master degree, about one-fourth of the students enroll in a Ph.D. program in the areas of agricultural and food sciences.

Toulouse INP offers scholarships through a reduction of fees. Students can apply to different other 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:
- Curriculum vitae
- Motivation letter
- Certified academic transcripts
- Certified copies of academic diplomas (Bachelor diploma or equivalent)
- Photocopy of passport or ID card
- English language test for non-native English students (TOEIC 750, TOEFL 80, IELTS 6.5)

**RESEARCH INSTITUTIONS & INDUSTRIAL PARTNERS**

The program benefits of a unique research and professional environment. It is supported by the Toulouse Agricampus consortium which federates 8 universities and research institutes. The teaching staff is composed of faculty members who are part of major French research laboratories and institutes, and of international guest researchers and professors. The very dense and diversified local network of agricultural and food companies offers to students many opportunities to conduct real-life case studies, research-development projects tutored by experts, and internships.

**PROGRAM CONTENT**

**First year – Semester 1 (S1) and Semester 2 (S2)**
- Agrofood chains, sustainability and innovation: concepts and methods (S1)
- Fundamentals of agronomy, agricultural economics, ecology and biotechnology sciences (S1)
- Multidisciplinary courses in industrial organizations, rural development, agro-ecology, valorisation of biotic and abiotic resources (S2)
- Fundamentals of research methodology (S1, S2)
- Case studies and multidisciplinary problem resolution projects (S1, S2)
- Global seminar in partnership with international universities (S2)
- Two-month internship in a research lab or enterprise (S2)
- Scientific and corporate communication in French and English (S1, S2)

**Second year – Semester 1 (S1) and Semester 2 (S2)**
- Managing quality, risk and uncertainty in agrofood chains (S1)
- Food security, food safety and nutrition (S1)
- Advanced courses in agronomy, agricultural economics, ecology and food sciences (S1)
- Advanced courses in research methodology (S1)
- Project management (S1)
- Multidisciplinary research projects (S1)
- Five to six-month internship in a research lab or enterprise / Research essay (S2)
This education program focuses on areas of Electrical Energy Systems dedicated to several industrial applications.

They are related to energy production, its storage, conversion, transportation and consumption. The high level lectures and projects concern Power Electronics, Electrodynamics and Mechatronics, New Technologies of Energy, Energy System Control.

**AIMS OF THE PROGRAM**

This ambitious program offers an attractive societally asked expertise to design new power electronic systems and modern, innovative structures of electromechanical converters. It develops sustainable strategies of energy management for electrical systems with multi-sources and multi-loads. The novel concepts of control and diagnostic methodologies are proposed for smart actuators, smart grids and smart standalone systems.

**CONTACT**

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master_ees@univ-toulouse.fr

**APPLICATION**

Deadline: June 31st
Tuition fees: 9000€/year
Reduction down to 5000€/year for academic partners and selected students

**FOCUS**

Masters of Science are national degrees 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
Programs are taught in English

INP - ENSEEIHT is a member of the N+i network
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Program Content

MSc EES-M1 level offers an adaptation semester, followed by a learning to strengthen the background in electrical engineering fields:

- Electrical Machines, Structures and Modelling
- Design of Power Converters
- Automatics, Real-time control, Signal Processing and Optimization
- Simulations and experimental verification
- Human and Social Skills

MSc EES-M2 level includes innovative courses and advanced-level short projects around energy conversion.

Third semester (M2)

- Design and Control of Static Converters
- Design and Control of Actuators
- Mechatronics, Design by System Optimization
- Stationary and Embedded Systems, Power Grids and Smart Grids
- Actuators and Generators
- Systemic Design and Eco-design
- Hybrid Systems, Smart Grids and Electrochemical Storage
- Renewable Energies

Fourth semester (M2)

- Long Project (6 weeks)
- Diploma Internship (6 months in R&D industrial centers or in one of research laboratories)

Required documents:

- 2 passport-size photos
- Photocopy of passport or ID card
- English language test (if your native language is not English): TOEIC (750) or TOEFL (80), IELTS (6.5)
- Certified academic transcripts
- Certified copies of academic diplomas
- Curriculum Vitae in English (max. 2 pages)
- Support letters – please use provided evaluation template
- Cover letter in English