



# MSC ELECTRICAL ENERGY SYSTEMS

**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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<http://www.enseeiht.fr/fr/formation/masters-internationaux-masters-of-science/ees-electrical-energy-systems.html>



### APPLICATION

Deadline: June 30st

Tuitions 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 mostly taught in French with course materials in English.

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

[www.nplusi.com](http://www.nplusi.com)



## 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.



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:

- 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 provide us with contacts of 3 of your recent teachers (email and phone number)
- Cover letter 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.

## 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 a public research laboratory)