

## Sciences, Technology and Health

### Ingénieur diplômé (Engineering Master Degree)

## Major in Energy



### PROGRAM SPECIFIC ADMISSION REQUIREMENTS

First year:

> Selection is based on qualifications and an interview. Applicants must have successfully completed a two-years cycle in Science (Physics, Chemistry) or in Engineering (Heat, Energy, Civil engineering, Environment), Physical Measurement Technologies, etc. Approval to continue studies (French "avis favorable à la poursuite d'étude") is required for students.

Admission is also opened to students in Science, through the Polytech (previously Archimède) competitive entrance examination process.

In case you are not sure your situation meets these requirements, please contact the School office for further information (phone and e-mail below).

### POLYTECH COMPETITIVE ENTRANCE EXAMINATION

> Application should be filed before mid-January - [www.scei-concours.fr](http://www.scei-concours.fr)  
[www.demain-ingenieur.fr](http://www.demain-ingenieur.fr)

### OBJECTIVES

> Energy is one of today's major challenges: its production, transport, storage and utilization have a deep impact on environment, society, business and people. Because they design and develop infrastructure, facilities, equipments and buildings, engineers have a decisive role to play. With its top-performing research laboratories, recognized in the scientific and corporate world, Institut Galilée has decided to add to its Engineering School (Sup Galilée) a specialty in Energy. The focus is to train engineers who will be able to invent and implement the best solutions to the complex energy equation: choosing the best energy systems, developing innovative technologies and improving energy efficiency.

### EMPLOYMENT PROSPECTS

> In the construction industry, including residential, services and manufacturing buildings, engineers design and implement solutions that will improve the energy efficiency of existing or new buildings.

> In all large businesses involved with energy: production, transport, storage, distribution, new technologies

> In the service industry: for design and consultancy firms or within public authorities working in link with building contractors or with energy operators.

### ASSESSMENT AND EVALUATION PROCEDURES

> Knowledge evaluation is organized on a yearly basis. Repeating a year is only allowed once throughout the program. Engineering candidates must meet all academic requirements and in addition must have proficiency in English (European level B2). After successfully completing the three-years program, the student will be awarded the title of Ingénieur diplômé (Master in Engineering) of Université Paris 13, specialty in Energy. This title is fully accredited by the French "Commission des titres d'ingénieurs" (CTI).

### APPLICATION

> Application forms and procedures are available as from March on: [www-galilee.univ-paris13.fr](http://www-galilee.univ-paris13.fr)

# Program Organization

## 1 FIRST YEAR

### Setting the knowledge base of energy engineering

The learning outcomes of Year 1 are basic knowledge generally required for energy engineering. The cycle starts on general courses that aim at harmonizing the students' knowledge base, given their different educational backgrounds. The program comprises a common basis shared by all Sup Galilée's engineer-students, in mathematics, probability and statistics, numerical and computing methods.

The program also includes courses dedicated to thermal flows, fluid mechanics, electrotechnics and material science.

An industrial survey undertaken under the supervision of an engineer will allow the student to get familiar to his future career.

An internship (one month) in a company will complete the year.

## 2 SECOND YEAR

### Approaching specialization

The learning outcomes relevant to this second year are a broader and deeper set of knowledge preparing for both options of the following year. Courses cover various fields:

- Energy producing systems and technologies, including recent renewable technologies and fossil fuels
- Conversion between energy systems: electric, heat, radiant, chemical, flow (wind, hydro)
- Intelligent systems to control and regulate energetic transfers and flows
- Economics of energy: how do markets structure and operate

A three-months internship will complete the second year.

### > INTERNATIONAL

Engineer students can choose to carry out part of their program abroad through different organizations and academic exchange schemes such as Erasmus, Socrates, Micefa, Crepuq.

## 3 THIRD YEAR

### Choosing an option

Engineer students will choose between two options:

**a) Energetic Option for industry**, with courses focused both on energy and processes. Fields will cover themes such as (i) chemical processes involved in implementation of energetic solutions, (ii) storage processes and transport of liquid and gas as natural gas and hydrogen (iii) chemical and electrochemical conversion and storage processes (thermochemical cycles, cells and batteries) and (iv) numerical simulation of processes.

**b) Energetic Option for Building**, with a strong focus on heat isolation, climatic engineering and HVACs as well as on architecture, indispensable for students to integrate the building and civil engineering industry.

An internship in the industry, of at least four months, will end the year, during which the engineering student will complete his or her personal project.



### RESEARCH ORIENTATION

In the third year of the program, students can, under certain conditions, validate the "master Physique-Chimie" from Institut Galilée. In this case, the end-of-studies internship takes place in a research laboratory.

### INTERNSHIPS

- First year: one month
- Second year: three months
- Third year: from four to six months

Director of Institut Galilée Frédéric Roupin • Associate Director, responsible for Education Jean-Philippe Passarello

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