



International Master's Degree in THERMAL SCIENCE AND ENERGY

This programme is a second year specialty of Nantes Université's Master's degree in Mechanics. Through this training, students will acquire and expand their scientific and technological knowledge and practical experiences to understand and contribute to innovative research and development processes in the field of thermal energy. This will give them the opportunity to become fully involved in the various challenges of the energy transition.

Syllabus

Third semester (30 ECTS)

(i.e. first semester of this second year of master)

This semester is devoted to the acquisition and deepening of the mandatory fundamentals in thermal and energy sciences. They are systematically put into practice and illustrated both in the case of complex media (composite or heterogeneous materials, for example) and emerging applications of the energy transition.

- Fundamentals of heat transfer (physics and engineering approach of heat transfers : conductive, convective and radiative heat transfer)
- Experimental and digital methods (experimental methods and protocols, digital methods and tools)
- Fluid mechanics (fundamentals, turbulence and turbulent flow, hydrodynamic stability and dynamic systems)
- Heat transfer in solids, composites and heterogeneous media (heat transfer at interfaces, heat transfer during composite injection, heat transfer with phase change, polymers and composite thermophysical properties)
- Energy systems (thermal energy storage, system optimization, energy transition)

Fourth semester (30 ECTS)

(i.e. second semester of this second year of master)

This semester is dedicated to a fulltime scientific and technical internship (minimum 5 months) related to a research & development project conducted in academic labs or private companies.

Validations of both the exam session and the master internship (defense and report) lead to the French Master's Degree in Mechanics from Nantes Université.

Academic calendar

Courses start in early September.



Concentrating solar technology - PROMES CNRS

Skills

- > Perform engineering design of industrial projects
- > Conduct experimental and numerical analysis studies and analysing results

Career Opportunities

The Master's environment should facilitate future involvement in international PhD top level programmes.

This programme leads students on to a wide range of R&D functions in many domains where energy management is involved. This can be the case in Energy production, Energy conversion/storage and valorization, Transportation industries (aeronautics, automotive), ,...

Business sectors

- > Energy systems and processes
- > Thermal based/driven technologies
- > Energy Process optimization (efficiency, decarbonation, waste heat valorization,...)
- > Energy transition, sustainable developement.

Hosting research lab

Research laboratory in Heat Transfer and Energy, Nantes Université and CNRS.

www.polytech.univ-nantes.fr/ltn/en



POLYTECH NANTES

As the graduate school of engineering of Nantes Université, Polytech Nantes benefits from the scientific and educational environment of a university.

Polytech Nantes is the founding member of the Polytech group, a national network of 16 graduate engineering schools in France.

20%

foreign students

+70

Partner schools

Admission

The Master's Degree is a two-year degree. At Polytech Nantes, only the second year is accessible, so applicants should hold a degree which is at least a 4-year degree in higher education (i.e. a 3-year Bachelor is not acceptable).

Applicants should be able to give evidence (from transcripts of their degrees) and show good knowledge in the following fields:

- > mathematics (tools for engineer)
- > thermodynamics
- > heat transfer
- > fluid mechanics
- > digital methods (coding)



Requirements

- > **Transcripts of records, GPA**
- > **Ranking in the promotion (position of student/number of students)**
- > **87 TOEFL / 785 TOEIC / 5.0 IELTS / B2**

How to apply ?

> For students **coming from a Polytech Nantes partner university**, please contact your international coordinator who will deal with your enrolment.

> For students coming from a country that is **part of the Campus France procedure**, please enrol with Campus France campusfrance.org/en/application-etudes-en-france-procedure

> For students coming from a country that is **not part of the Campus France procedure**, please Complete the application form on our website (univ-nantes.fr/polytech/internationalmasters) and send us the following documents:

- a detailed CV in English (including the precise content of your studies, which topics were studied each year, obtained grades, international English test score, reports you may have written during your studies)
- a cover letter
- a complete transcript in English of all previous years of study at the University including your GPA and official ranking
- a copy of your passport

Cost

The price includes the education and the training costs, as well as the French courses for foreigners, some cultural outings and the student social security*.

**It is included if you are less than 28 years old. If not, you will have to pay your own social security.*

More information :

<https://polytech.univ-nantes.fr/en/financial-and-practical-information>

Accommodation

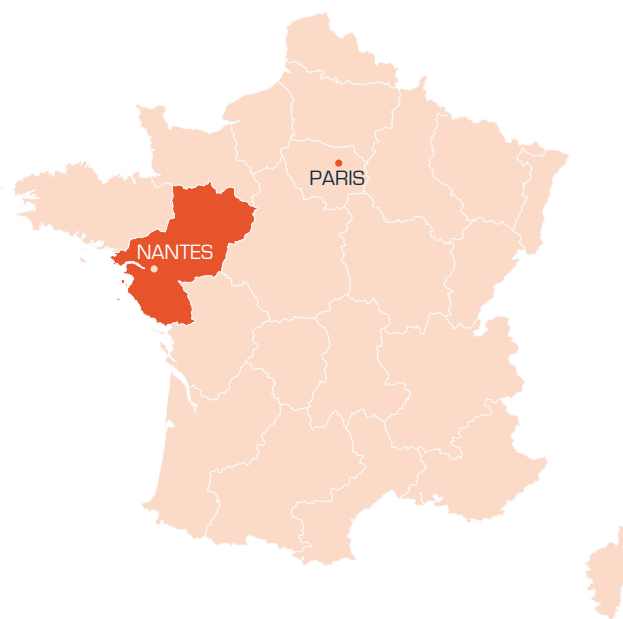
The rent for students' accommodations may vary between €350 and €450 per month (allow for a deposit : usually 1 month rent). The housing market is saturated in September. It is highly recommended to seek accommodation in June or July. Expect to pay for insurance for any accommodation, as well as the housing tax for accommodation in town.



Location

The programme is held in Nantes, on the Chantrerie Campus which hosts several Graduate Schools, with over 4,000 students, two university restaurants, a technology library, as well as about 30 companies of advanced technology.

Greater Nantes (670,000 inhab.) is located close to the Atlantic Ocean and is regularly rated as one of the most pleasant French cities to live in. Thanks to its beautiful parks, efficient public transport and other policies for sustainable development, Nantes has been awarded the status of European Green Capital.



Language

The programme is entirely taught in English, thus, a good command of the English language is required (B2 score as defined by the Council of Europe). Please, note that French students also apply.

Contact

master-te@univ-nantes.fr

polytech.univ-nantes.fr

