



## INTERNATIONAL MASTER'S DEGREE

# / MICROALGAE BIOPROCESS ENGINEERING

The international Master's Degree in Microalgae Bioprocess Engineering is integrated in a two-year program in Process and Bioprocess engineering, with 3 academic semesters (lectures in English) and a 6-month internship in industry or in a research laboratory.



# INTERNATIONAL MASTER'S DEGREE / MICROALGAE BIOPROCESS ENGINEERING

**MICROALGAE, CYANOBACTERIA**

**BIOPROCESS ENGINEERING**

**PHOTOBIOREACTOR DESIGN AND CULTURE**

**DOWNSTREAM PROCESSING AND EXTRACTION**

## / SYLLABUS

Students enroll for a 2 semester program (second year of the Master's). A total of **60 ECTS** must be validated to graduate. For candidates entering the first year of Master's Degree (PM3E, Mines Nantes), the program will deliver fundamentals in process engineering and project management before entering the second year of the Master's Degree (Master's PM3E for details). All courses are taught in English. French courses are organised for foreign students. A French Summer School is also available on request (see language chapter).

### Syllabus structure (60 ECTS)

#### First Semester :

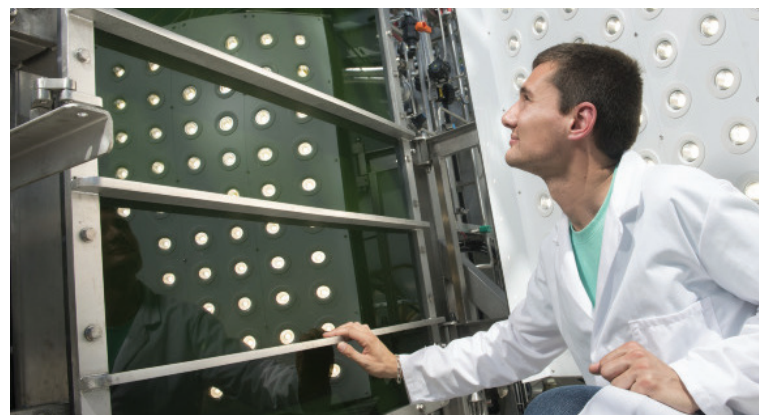
- Biology of microalgae - 4 ECTS
- Industrial valorization of microalgae - 2 ECTS
- Biochemical and Metabolic Engineering - 5 ECTS
- Microalgae culture and photobioreactor engineering - 4 ECTS
- Harvesting and Biorefinery of microalgae - 5 ECTS
- Process integration and operation of microalgae exploitation facilities - 5 ECTS
- Project - 3 ECTS
- Language - 2 ECTS

#### Second Semester :

- FEM - Master's Thesis - 30 ECTS

## / CAREER OPPORTUNITIES

- Engineer in industry or research
- Project engineer / Board
- R & D engineer
- Higher education and research, particularly through doctoral training



## / SKILLS

→ To develop an industrial process for microalgae valorisation, from production to final extracted products

→ To be able to conduct a research project on microalgae

→ To be able to manage an industrial project related to the microalgae field

→ To be familiar with the multidisciplinary approach needed in microalgae field (biology, engineering)

## / HOSTING RESEARCH LABS



**GEPEA - CNRS** [www.gepea.fr](http://www.gepea.fr)  
(Laboratory of processing engineering - environment - agrifood)



**ALGOSOLIS** [www.algosolis.com](http://www.algosolis.com)  
(Microalgae R&D Facility)

## / ADMISSION

It is a two-year Master's degree. Candidates with a Bachelor of Science degree will enroll in the first year of the Master's Degree (Master PM3E, Mines Nantes). Candidates with at least a 4 year Bachelor degree or First year of Master's Degree can ask to enroll directly in the second year of the Master's Degree. At Polytech Nantes, only the second year is accessible. Candidates must have a good knowledge in, not necessarily all, but a majority, of the following fields: *Chemical and bioprocess engineering, Biochemical engineering, Mechanical engineering, Environmental engineering, Physics, Chemistry and biology.*

## / CONTACT

→ Send the requested documents to :

**[master-mbe@univ-nantes.fr](mailto:master-mbe@univ-nantes.fr)**



## / THE ENROLMENT

→ For students coming from **a partner university** with Polytech, please contact the international office coordinator of your home university concerning the enrolment.

→ For students coming from a country that is part of the **Campus France** procedure, please enrol with Campus France first, and then send us the requested documents below.

→ For students coming from a country that is not part of the Campus France procedure, please send us directly the requested documents below.

→ a detailed CV in English (including the precise content of your studies, which topics were studied each year, grades/marks obtained, score obtained for an international test of English, reports you may have written during your studies)

→ a cover letter

→ a complete transcript in English of years of study at the University

→ a copy of your passport

→ an identity photo

→ a recommendation letter

➤ Fill in the application form on our website [www.univ-nantes.fr/polytech/internationalmasters](http://www.univ-nantes.fr/polytech/internationalmasters)

## / LANGUAGE

The program mainly aims at international students and is taught in English. **A good command of the English language is required** (B2 score as defined by the Council of Europe). Introductions to French language and European culture are provided locally at Polytech Nantes (Gavy Campus - Saint-Nazaire), (included in the fees and coordinated with the Master's program), but there are no prerequisites in the French language.

## / COSTS

This cost corresponds to education and training costs, and furthermore, it includes an internship in a lab, French courses, cultural outings and 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 :**

[www.univ-nantes.fr/polytech/internationalmasters](http://www.univ-nantes.fr/polytech/internationalmasters)

## / INTERNSHIP

During the 2nd semester, students complete a 5 month research thesis/internship in a laboratory or company which allows them to be paid around €2500 (€500 per month).

## / ACADEMIC CALENDAR

The courses start in early September.



### / LOCATION

For the Master's degree in **Data Science, Thermal Science and Energy, Visual Computing and Wireless Embedded Technologies**, courses are located in Nantes, on the Chantrerie Campus which hosts **5 Graduate Schools**, with **over 2,000 students**, **two university restaurants**, **a technology library**, as well as about 30 companies of advanced technology.

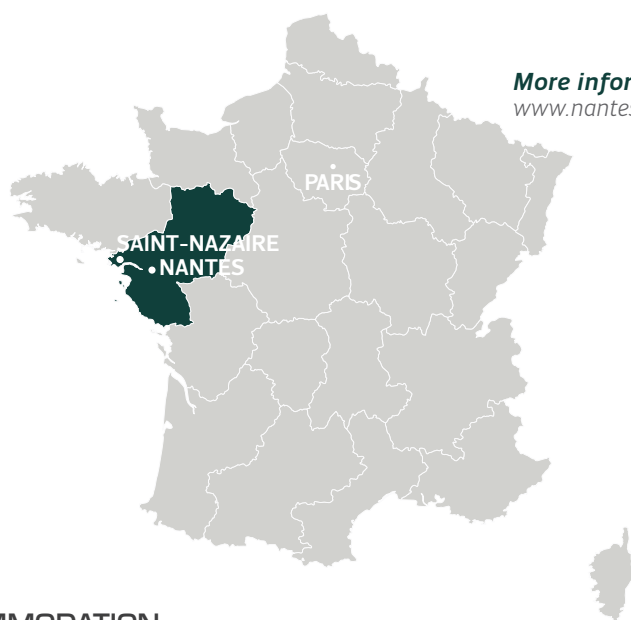
Nantes (600,000 inhab.) is located close to the Atlantic Ocean and is regularly rated as one of the most pleasant French cities to live in. Thanks to its beautiful parks, efficient public transport and other policies for sustainable development, Nantes has been awarded the status of European Green Capital.

For the Master's degree in **Electrical Energy and Microalgae Bioprocess Engineering**, courses are located in Saint-Nazaire, a coastal town of Western-France with several advantages for students on biotechnological fields :

*The Gavy campus hosts over 3000 students in various engineering courses (biotechnology, process, structural and electrical), two university restaurants and a university library just located a few meters from the sea.*

→ **Travelling to Nantes** from Paris, either from Paris CDG Airport or from the city centre, is easy and direct with fast trains (TGV).

→ **Travelling to Saint-Nazaire** from Paris is easy and direct with fast trains (TGV - 2h30 from Paris) and the region is linked with Nantes Atlantique Airport located in Nantes (40 min from Saint-Nazaire city center).



**More information :**  
[www.nantes-saintnazaire.fr](http://www.nantes-saintnazaire.fr)

### / 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.

For students who come from a partner university with Polytech Nantes, please contact **[incoming.mobility@polytech.univ-nantes.fr](mailto:incoming.mobility@polytech.univ-nantes.fr)** before next April for possibilities of cheap accommodation in **CROUS Residencies** (approximately 260€ per month).

**Polytech Nantes** is a founding member of the Polytech group, a network of 13 graduate engineering schools, and the graduate engineering of University of Nantes.

Polytech Nantes, 2 campuses for 1 school

The Chantrerie Campus is located at the heart of « Atlanpole », Nantes technology park. Its modern and well-equipped buildings provide an ideal learning environment of engineering students.

#### **Site Chantrerie**

Rue Christian Pauc  
CS 50609  
44306 NANTES Cedex 3  
FRANCE

The Gavy Campus is situated in Saint-Nazaire, amongst the aeronautics and shipbuilding industries, benefiting from the exceptional Guérande Peninsula atmosphere and a number of seaside resorts.

#### **Site Gavy**

Gavy Océanis  
CS 70152  
44603 SAINT-NAZAIRE Cedex  
FRANCE

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