SHAKE THE FUTURE.

CENTRALE NANTES

Master

City and Urban Environments

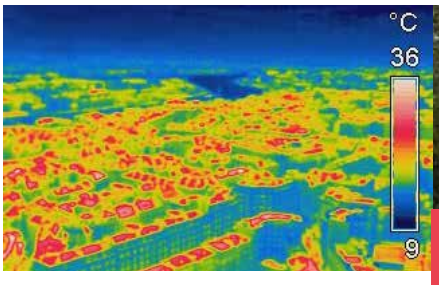
ATMOSPHERE, WATER AND ENVIRONMENT

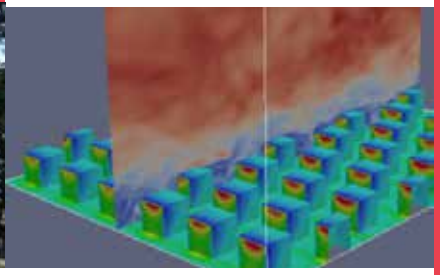
Graduate programme | Master in Sciences, Technologies and Health

OBJECTIVES

This Master develops skills for addressing environmental and health issues in the context of sustainable urban development, in research and in urban engineering.

The programme is designed to provide the scientific theoretical knowledge and tools necessary to understand and address the environmental physical problems resulting from the ever increasing urban population. Various key disciplines such as urban hydrology, urban atmosphere, building heat transfer and pollution of air water and soils are taught through advanced lectures and research work in laboratories renowned in these fields.





SKILLS

Specialism-specific

- Understand the physics and dynamics of fluids in urban environments
- Master analysis and modelling tools for hydrology and atmospheric sciences in urban environments
- Learn techniques of water management, treatment of soil, water and air, and mitigation of the urban heat island

General

- Express assumptions to solve and analyse a problem
- Communicate comprehensive results in a meaningful way
- Undertake bibliographic surveys from international research and professional literature
- Manage or be part of a project

JOB PROSPECTS & FURTHER PHD STUDIES

SECTOR: Urban planning and design; Urban environment, Energy, soil and water management.

FIELDS: Urban planning, Environmental fluid mechanics, Hydrology, Microclimatology, Air quality.

JOB POSITIONS: Engineer in consulting office or groups specialized in environmental engineering, Engineer in urban design and planning office or local authorities; Research and Innovation Engineer or Research and academic career (post PhD)

Location
Nantes, France -2 hours from Paris

International campus life

87 nationalities

43% international students

Master in Sciences, Technologies and Health

EXAMPLES OF PROJECTS DURING INTERNSHIPS

5 to 6 month internship in consulting offices and local authorities

> Integration of urban microclimate in building energy simulation.

> Climate and Energy territorial plan: adaptation to Urban Heat Island

5 to 6 month thesis in Research Labs

> Analysis of fluid exchange between a street canyon flow and the atmospheric boundary layer

> Model reduction for thermal modelling of urban surfaces

> Treatment of micropollutants by vegetation in run-off water management device.

FACULTY, INDUSTRIAL PARTNERS AND RESEARCH LABS

This Master relies on the Centrale Nantes' faculty and the School of Architecture of Nantes (Ensa Nantes) staff and research facilities of the LHEEA Laboratory, the AAU laboratory and the IRSTV (Research Institute on Urban Sciences and Technology). Centrale Nantes and Ensa Nantes have several professional partnerships such as with EDF, Veolia, ENERCON, Nantes Métropole, Air Pays de la Loire, CEREMA...

OTHER PROGRAMME INFORMATION

> Length of Studies: 2 years

> Language of instruction: English

> 3 semesters of courses and 1 semester of Master's thesis

Tuition & Fees - Scholarships - Application process - Deadlines

MORE INFORMATION AND FULL PROGRAMME:
www.ec-nantes.fr/masters

CONTACT: master.admission@ec-nantes.fr

CONTENT AND COURSES

(A Master Degree requires the validation of 120 ECTS credits)

M1 - AUTUMN SEMESTER	ECTS
Fluid Mechanics 1	5
Algorithmics for Engineering Modelling	4
Energetics and Building heat transfers	4
Introduction to Geographic Information Sciences	5
Introduction to research	4
Business Environment	4
Modern Languages	4
M1 - SPRING SEMESTER	**ECTS**
Hydrology and transfers in soils	4
Introduction to Computational Fluid Dynamics	5
Urban Realities Review	4
Urban Management and Planning	4
Fluid Mechanics 2	5
Environmental Data Analysis	4
Modern Languages	4
M2 - AUTUMN SEMESTER - IN FRENCH	**ECTS**
Turbulence: theory, modelling and analysis	4
Meteo & atmospheric boundary layers	4
Urban pollution	5
Urban water management and modelling	5
Urban climate and energy	4
Modern languages	4
Project	4
Conferences	-
M2 - SPRING SEMESTER	**ECTS**
Master Thesis or Industrial Internship	30

NB Course content may be subject to minor changes

École Centrale de Nantes, Direction de la communication, november 2019

This Master's programme

is accredited by French Ministry of Higher Education.

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE
MINISTÈRE DE L'ÉDUCATION NATIONALE, DE L'ENSEIGNEMENT SUPÉRIEUR ET DE LA RECHERCHE