



Master

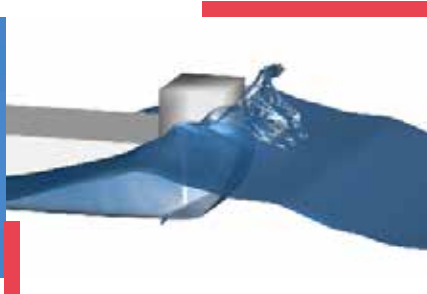
Marine Technology

HYDRODYNAMICS FOR OCEAN ENGINEERING

OBJECTIVES

This master programme provides advanced training on the typical problems of free-surface hydrodynamics applied to ocean engineering: ship resistance, seakeeping, marine renewable energy systems, etc.

Training involves theoretical courses together with the practical use of software to solve problems through a variety of numerical methods: e.g. boundary elements under potential flow or finite differences and finite-volumes for viscous flows. The unique academic large-scale facilities available at ECN: a towing tank and a large ocean wave basin will also contribute to the teaching programme. This way, physical, modeling, numerical and experimental aspects are studied.



SKILLS

Specialism-specific

- > Build and use models dedicated to hydrodynamics for ocean engineering
- > Define and perform experiments for free-surface hydrodynamics problems
- > Solve numerically free surface problems for ocean engineering applications

General

- > Identify models, perform simulation and analyse results
- > 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: Transportation, Renewable Energy, Classification societies, Civil Engineering, Research and Innovation, Consulting.

FIELDS: Marine Renewable Energies, Maritime Transportation, Offshore Engineering, Naval shipyards, Coastal engineering.

JOB POSITIONS: Research and Innovation Engineer, Design Office Engineer, Exploitation Engineer, Mechanical Engineer.





Location

Nantes, France -2 hours from Paris

International campus life

87
nationalities

43%
international students



EXAMPLES OF FINAL YEAR PROJECTS

5 to 6 month internship in Industry

- > Naval numerical computations
- > Development of a Fluid-Structure Interaction model for the optimisation of a Wave Energy Converter
- > Coupling of VIV on the offshore wind turbine

5 to 6 month thesis in Research Labs

- > Experimental investigation of improved dynamic response of barge type floating offshore wind turbine
- > Modeling of the response on irregular waves
- > Wave-current interactions in a HOS model

FACULTY, INDUSTRIAL PARTNERS AND RESEARCH LABS

This Master relies on the Centrale Nantes' faculty, staff and research facilities of the LHEEA Laboratory. Centrale Nantes has several industrial partnerships such as with Bureau Veritas, DCNS, STX, IDEOL, Technip, SAIPEM, etc.

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
Continuum Mechanics	5
Fluid Mechanics	5
Algorithmics for Engineering Modelling	4
Numerical Methods	4
Vibration and Differential Equations	4
Business Environment	4
Modern Languages	4
M1 - SPRING SEMESTER	ECTS
Fluid Mechanics 2	5
Mechanical Design	4
Energetics	5
Propulsion	5
Hydrodynamics	5
Conferences and Initiation to Research	2
Modern Languages	4
M2 - AUTUMN SEMESTER	ECTS
General concepts of hydrodynamics	4
Water waves and sea states modelling	4
Wave-structure interactions and moorings	4
Numerical hydrodynamics	5
Experimental hydrodynamics	4
Modern Languages	4
Conferences	-
AUTUMN SEMESTER - SPECIALISATION COURSE (CHOOSE ONE OF THREE)	
Marine Renewable Energy	5
Naval Engineering	5
Hydrodynamics R&D	5
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. novembre 2019

