



Marine Technology

Ocean Engineering

INTEGRATED MASTER-PHD TRACK

Centrale Nantes offers **high-potential students** the opportunity to join our 'two plus three'-year Integrated Master-PhD Track, fully taught in English for a cohort of international students. **This track draws on the areas of excellence of our research institutes and our existing MSc programmes** to bring together two years of Master's studies and three years at PhD level.

The Integrated Master/PhD track in Ocean Engineering aims to train the future leaders of the Marine Renewable Energy (MRE), naval and offshore sectors. The programme is built upon the recognized scientific excellence of the research units involved in free-surface hydrodynamics, numerical modelling, model-scale experimental methods and structural reliability and monitoring. The objective of this track is to give students advanced training on typical problems of free-surface hydrodynamics and structural mechanics applied to ocean engineering. This programme will train Master's and PhD graduates who will contribute to the development of those industries and the related research fields.

Why choose this track?

- Centrale Nantes, with Nantes Université, is ranked in the world's top 75 for Marine/Ocean Engineering in the Shanghai GRAS ranking 2025
- Well-respected scientific expertise of the LHEEA Laboratory in hydrodynamics research activities and of the GeM Laboratory in structural reliability and monitoring research activities
- Reinforced research activities right from year one: research projects, access to research facilities with practical work in the unique experimental test facilities
- Close supervision and mentoring by a member of faculty

Skills

Master

- Build and use models dedicated to hydrodynamics for ocean engineering
- Define and perform experiments for free-surface hydrodynamics problems
- Identify models, perform simulation and analyse results
- Perform numerical simulations with uncertainties
- Identify and select non-destructive tools and structural health monitoring systems
- Communicate comprehensive results in a meaningful way
- Undertake bibliographic surveys from international research and professional literature.

PhD

- Develop a project within a research team
- Deepen the specialized knowledge
- Develop teaching and project management skills.

OUR PROGRAMME

Core courses

- ✓ Algorithms for Engineering Modelling
- ✓ Applied Thermodynamics
- ✓ Continuum Mechanics
- ✓ Fluid Mechanics 1&2
- ✓ Structural Mechanics
- ✓ Tools and Methods for Research
- ✓ Numerical Methods
- ✓ Propulsion
- ✓ Research Projects
- ✓ Marine Hydrodynamics 1&2
- ✓ Water Waves and Sea States Modelling
- ✓ Wave-Structure Interactions and Moorings
- ✓ Language courses

NB: course content may be subject to minor changes

Elective courses (choose 3 out of 8)

- ✓ Approximation Methods in Computational Mechanics and Probabilistic Methods in Mechanics
- ✓ Metamodelling and Uncertainty Quantification
- ✓ Monitoring Strategy and monitoring systems
- ✓ Naval engineering
- ✓ Marine Renewable Energy
- ✓ Research in marine hydrodynamics
- ✓ Experimental hydrodynamics
- ✓ Numerical hydrodynamics

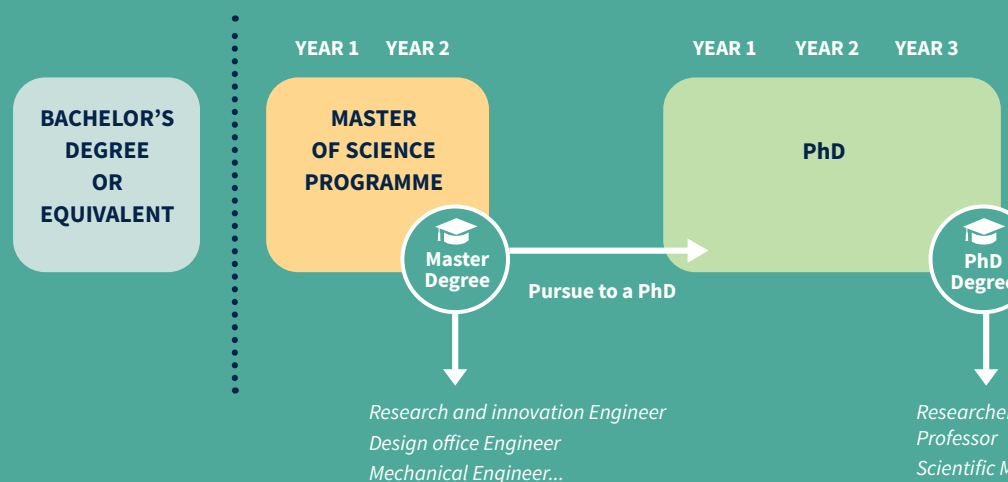
Master 1&2 (120 ECTS)

The last semester of the master's programme is set aside for the master's thesis

PhD - Advantages for Phd students

- ✓ Access to specific disciplinary or interdisciplinary courses and events
- ✓ Close contact with an academic tutor
- ✓ Access to support for international mobility
- ✓ Participate in organizing summer schools and other specific events
- ✓ Engage in mentoring Master's students

Integrated Master-Phd Track



Career Opportunities

Sectors

Offshore wind energy, Maritime transport, Marine renewable energy, Shipbuilding.

Fields

Ocean Engineering, Marine Engineering, Naval Architecture, Renewable Marine Energy, Offshore engineering, Coastal Engineering, Civil Engineering.



Admission

Academic requirements

- **At master's level:** applicants must hold a Bachelor's degree or equivalent (180 ECTS) in Engineering, Science or Technology and have a good level in Mathematics.
- **At PhD level:** progression to PhD subject to conferment of the Master's degree, acceptance by the ad hoc committee and award of a PhD grant.

Language requirements

- **At master's level:** Written and spoken fluency in English is required. Applicants whose native language is not English must submit a certificate for a recognised international test of English (minimum score to achieve: TOEFL - IBT 80, or ITP 550, Cambridge B2 First Test 173, Cambridge C1 Advanced Test - 160, IELTS - 6.5 or TOEIC - 800).
- **At PhD level:** Fluency in speaking, listening, reading and writing English.



REINVENT ENGINEERING



Contact

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