Master's degree in Naval Architecture and Ocean Engineering

The **master's degree in Naval Architecture and Ocean Engineering** (**master's degree website**), introduced in the 2017-2018 academic year, qualifies you to practise the regulated profession of naval and ocean engineer. It gives you the knowledge you need to design, build, maintain and assess ships and vessels of all kinds, as well as platforms and devices for the use of ocean resources. You will also be trained in the management and supervision of maritime businesses.

Naval architects and ocean engineers are professionals who have the ability to conceive and develop technical solutions for the maritime transport of goods and people that are economically and environmentally sound and for the exploitation of ocean and seabed resources (fish, energy, minerals, etc.) and the appropriate use of marine habitats and maritime defence and security systems.

You can take one of the following specialisations:

Yacht and Pleasure Craft Design
Many of the recent advances in shipbuiling spring from innovations in yacht and racing boat design. In this specialisation students get to know and further their knowledge of the design and construction requirements for these vessels, so that as future professionals they are able to continue innovating in this area.

Ocean Energies
Many technologies are being developed for obtaining energy from the marine environment that could be primary energy sources in the near future, ranging from offshore wind farms to tidal or wave energy converters. In this specialisation students gain the knowledge they need to understand and develop these systems for harvesting energy, as well as to influence the uptake of these technologies in the future.

Specialisations

- Yacht and Pleasure Craft Design
- Ocean Energies

GENERAL DETAILS

Duration and start date
Two academic years, 120 ECTS credits

Timetable and delivery
Face-to-face

Fees and grants
Approximate fees for the master’s degree, excluding other costs, €3,320 (€4,980 for non-EU residents).
More information about fees and payment options
More information about grants and loans

Language of instruction

Subjects will be taught in Catalan or Spanish, depending on the student's level of comprehension and on the teaching objectives of the master's degree.

Location
Barcelona School of Nautical Studies (FNB)

ADMISSION

General requirements

Academic requirements for admission to master's degrees

Places

40

Pre-enrolment

Pre-enrolment closed (consult the new pre-enrolment periods in the academic calendar).

How to pre-enrol

Enrolment

How to enrol

Legalisation of foreign documents

All documents issued in non-EU countries must be legalised and bear the corresponding apostille.

DOUBLE-DEGREE AGREEMENTS

With foreign universities

- Master in Naval Architecture and Ocean Engineering, esp. in Ocean Energies + Master in Naval Architecture and Marine Engineering of the Ningbo University (China)

PROFESSIONAL OPPORTUNITIES

Professional opportunities

- Ship design and construction.
- Involvement in the leisure industry and the demand for marinas and floating sports complexes.
- Design and construction of floating and underwater industrial complexes and structures.
- Underwater mining.
- Underwater distribution, processing and communications systems.
- Underwater robotics.
- Marine fishing and fish farming.
- Coastal engineering.
- Energy harvesting from wind, waves, currents, thermal gradients, salinity gradients, etc.
- Marine power plants.

Competencies

Generic competencies

Generic competencies are the skills that graduates acquire regardless of the specific course or field of study. The generic competencies established by the UPC are capacity for innovation and entrepreneurship, sustainability and social commitment, knowledge of a foreign language (preferably English), teamwork and proper use of information resources.

ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

UPC school

Barcelona School of Nautical Studies (FNB)

Academic coordinator

Xavier Martínez García

Academic calendar

General academic calendar for bachelor’s, master’s and doctoral degrees courses

Academic regulations

Academic regulations for master's degree courses at the UPC

CURRICULUM

Subjects		ECTS credits	Type
FIRST SEMESTER			
Advanced Mathematics for Ship and Ocean Engineering		5	Compulsory
Economy and Shipping Business		5	Compulsory
Engineering for Ship and Ocean Systems		5	Compulsory
Oceanography		5	Compulsory
Project Management		5	Compulsory
Ship Dynamics		5	Compulsory
Specialisation in (Eng) Especialitat en Disseny de Iots i d'Embarcacions d'Esbarjo	Advanced Mathematics for Ship and Ocean Engineering	5	Compulsory
	Economy and Shipping Business	5	Compulsory
	Engineering for Ship and Ocean Systems	5	Compulsory
	Oceanography	5	Compulsory
	Project Management	5	Compulsory
	Ship Dynamics	5	Compulsory
Specialisation in (Eng) Especialitat en Energies Oceàniques	Advanced Mathematics for Ship and Ocean Engineering	5	Compulsory
	Economy and Shipping Business	5	Compulsory
	Engineering for Ship and Ocean Systems	5	Compulsory
	Oceanography	5	Compulsory
	Project Management	5	Compulsory
	Ship Dynamics	5	Compulsory
SECOND SEMESTER			
Advanced Hydrodynamics		5	Compulsory
Analysis and Design of Ship and Ocean Structures		5	Compulsory
Construction, Repair and Life Cycle of Ship and Ocean Structures		5	Compulsory
Design of Spaces in the Boat and Naval Devices		5	Optional
Instrumentation and Modelling in Oceanographic Engineering		5	Optional
Professional Communication in Naval Engineering		5	Optional
Specialisation in (Eng) Especialitat en Disseny de Iots i d'Embarcacions d'Esbarjo	Architectural Design of Yatchs	5	Compulsory
	Design of Sailing Yatchs	5	Compulsory
	Yatch Production Methods	5	Compulsory
	Advanced Hydrodynamics	5	Compulsory
	Analysis and Design of Ship and Ocean Structures	5	Compulsory
	Construction, Repair and Life Cycle of Ship and Ocean Structures	5	Compulsory
	Design of Spaces in the Boat and Naval Devices	5	Optional
	Instrumentation and Modelling in Oceanographic Engineering	5	Optional
	Professional Communication in Naval Engineering	5	Optional

Subjects		ECTS credits	Type
Specialisation in (Eng) Especialitat en Energies Oceàniques	Marine Foundations	5	Compulsory
	Ocean Energy Converters	5	Compulsory
	Offshore Wind Turbines	5	Compulsory
	Advanced Hydrodynamics	5	Compulsory
	Analysis and Design of Ship and Ocean Structures	5	Compulsory
	Construction, Repair and Life Cycle of Ship and Ocean Structures	5	Compulsory
	Design of Spaces in the Boat and Naval Devices	5	Optional
	Instrumentation and Modelling in Oceanographic Engineering	5	Optional
	Professional Communication in Naval Engineering	5	Optional
THIRD SEMESTER			
Advanced Project of the Ship		5	Compulsory
Design of Offshore Platforms and Structures		5	Compulsory
Exploitation of Marine Resources		5	Compulsory
Maintenance, Management and Life Cycle Optimization		5	Compulsory
Specialisation in (Eng) Especialitat en Disseny de lots i d'Embarcacions d'Esbarjo	High Speed Crafts and Special Ships	5	Compulsory
	Lightweigth Structural Design	5	Compulsory
	Advanced Project of the Ship	5	Compulsory
	Design of Offshore Platforms and Structures	5	Compulsory
	Exploitation of Marine Resources	5	Compulsory
	Maintenance, Management and Life Cycle Optimization	5	Compulsory
Specialisation in (Eng) Especialitat en Energies Oceàniques	Mooring Systems	5	Compulsory
	Offshore Hydromechanics	5	Compulsory
	Advanced Project of the Ship	5	Compulsory
	Design of Offshore Platforms and Structures	5	Compulsory
	Exploitation of Marine Resources	5	Compulsory
	Maintenance, Management and Life Cycle Optimization	5	Compulsory
FOURTH SEMESTER			
Research Project		15	Optional
Master's Thesis		15	Project
Specialisation in (Eng) Especialitat en Disseny de lots i d'Embarcacions d'Esbarjo	Research Project	15	Optional
	Master's Thesis	15	Project
Specialisation in (Eng) Especialitat en Energies Oceàniques	Research Project	15	Optional
	Master's Thesis	15	Project