

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 shipbuilding 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

2 academic years, 120 ECTS credits

Timetable and delivery

Face-to-face

Fees and grants

Approximate fees for the master's degree, **excluding other costs** (does not include non-teaching academic fees and issuing of the degree certificate):

€2,215 (€12,662 for non-EU residents).

[More information about fees and payment options](#)

[More information about grants and loans](#)

Language of instruction

Check the language of instruction for each subject in the course guide in the curriculum.

Information on [language use in the classroom and students' language rights](#).

Location

[Barcelona School of Nautical Studies \(FNB\)](#)

Official degree

[Recorded in the Ministry of Education's degree register](#)

ADMISSION

General requirements

[Academic requirements for admission to master's degrees](#)

Places

30

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 universities around the world

- Master's degree in Naval Architecture and Ocean Engineering, specialisation in Ocean Energies + Master's degree in Naval Architecture and Marine Engineering (Ningbo University (NBU), Ningbo, China)
- Master's degree in Naval Architecture and Ocean Engineering, specialisation in Ocean Energies + Diplôme d'Ingénieur (EC Nantes) (Grandes Écoles Centrale (GEC), Nantes, France)

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 lots 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 Floating Offshore Wind Turbines	5	Optional	
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	
Simulation of Vessel's Engine Room	5	Optional	

Subjects		ECTS credits	Type
Specialisation in (Eng) Especialitat en Disseny de lots 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 Floating Offshore Wind Turbines	5	Optional
	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
	Simulation of Vessel's Engine Room	5	Optional
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 Floating Offshore Wind Turbines	5	Optional
	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
	Simulation of Vessel's Engine Room	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

Subjects		ECTS credits	Type
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