

# Master's degree in the Management and Operation of Marine Energy Facilities

The **master's degree in the Management and Operation of Marine Energy Facilities** gives students the knowledge and skills to design, plan, operate, maintain and manage marine facilities, covering the main safety, environmental and economic considerations in marine engineering from an interdisciplinary perspective.

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## GENERAL DETAILS

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### Duration and start date

1.5 academic years, 90 ECTS credits. Starting February and September

### Timetable and delivery

Afternoons. Blended learning

### Fees and grants

Approximate fees for the master's degree, excluding other costs, €1,661 (€3,890 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](#)

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## ADMISSION

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### General requirements

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

### Places

15

### Pre-enrolment

Pre-enrolment period open.

Expected deadline: 09/10/2023.

[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](#).

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## DOUBLE-DEGREE AGREEMENTS

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### With foreign universities

## PROFESSIONAL OPPORTUNITIES

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### Professional opportunities

Graduates of the master's degree in the Management and Operation of Offshore Energy Facilities will acquire the skills and competencies needed for the design, re-design, optimisation, construction, operation, maintenance and management of on-board electrical installations and auxiliary systems. Although this knowledge is primarily applicable to marine systems, it can easily be extrapolated to onshore industrial installations. Graduates therefore have a wide choice of career areas.

The recent growth of the maritime transport sector and the emergence of new offshore technologies suggest that graduate employment prospects are likely to improve. Growth areas to which graduates can contribute include the following: new propulsion systems and new on-board energy collection technologies, offshore energy, next-generation offshore platforms and industrial optimisation.

Graduates will possess the skills to work in any of the above areas and in new fields that emerge from these areas in the future, making them highly qualified professionals capable of improving existing processes and systems and contributing to the development of new technologies.

A wide range of career paths is open to graduates. The main areas of employment are those covered by companies specialising in the following tasks:

- Operation and maintenance of ships and marine platforms.
- Monitoring and maintenance of technical processes.
- Design and implementation of technical projects.
- Measurements, valuations, appraisals, analyses, studies and reports in the field of marine engineering.
- Construction and repair of ships, platforms, marine installations and marine systems.
- Works management for industrial facilities.
- Static and dynamic mechanical systems (i.e. structures and machines), hydraulic systems and power systems.
- Energy management and environmental management.
- Manufacturing of a wide range of industrial products.
- Occupational hazard prevention.
- Classification and quality assurance.
- Marine research.
- Prospecting and exploitation of marine resources.

### 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.

#### Specific competencies

On completing this master's degree, students will

- Be able to apply the principles of co-generation to the management of marine installations.
- Have the expertise required to apply the principles of renewable energy to marine installations.
- Have acquired the expertise needed to conduct inspections and certifications of marine installations.
- Be able to identify and apply the principles of electricity generation, transport and distribution.
- Have acquired the skills required to apply the principles of advanced control to maintenance, repair and operations processes.
- Be able to study and implement alternative solutions for the configuration and optimisation of engines and propulsion systems.
- Have the knowledge to carry out energy audits.

- Have acquired the knowledge required to manage secure maintenance and repair procedures.
- Have developed the expertise needed to manage and direct the maintenance of electromechanical systems in marine and industrial applications (offshore and inshore).
- Have learnt to monitor and interpret the operation of propulsion systems and auxiliary machinery, evaluate their performance and oversee operational safety.
- Be capable of identifying and defining the causes of operating malfunctions in marine installations.
- Have acquired the expertise needed to manage fuel, lubrication and ballast operations.
- Know how to oversee the operation of electrical and electronic control modules.
- Have acquired the expertise to locate and correct faults in electrical and electronic control modules.
- Know how to apply and adhere to regulations on the classification, construction and inspection of ships.
- Have the expertise to understand all ship documentation.
- Have learnt to differentiate between the nature and scope of the powers held by local, regional, national and international maritime authorities.
- Have acquired the knowledge required to oversee the management of seagoing vessels and maritime companies.
- Have developed the skills needed to manage projects and lead teams in the general field of marine engineering.
- Have learnt to apply their knowledge of inspection and certification procedures for marine installations.
- Have learnt to operate within the bounds of maritime safety and pollution prevention regulations in response to on-board emergencies and to take the appropriate measures to address the spillage of any contaminants.
- Have acquired the expertise in applied marine engineering to analyse and optimise the useful life of a ship, platform or floating structure.
- Have learnt to use their knowledge of international maritime trade and transport to define and optimise new ships and floating structures.
- Have learnt to apply their knowledge of economics and business management to the maritime sector.
- Have acquired the expertise to develop and manage engineering solutions for logistic support, maintenance and repair of ships and floating structures.
- Be able to apply analytical and experimental research techniques.

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## ORGANISATION: ACADEMIC CALENDAR AND REGULATIONS

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### UPC school

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

### Academic coordinator

[German de Melo](#)

### 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](#)

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## CURRICULUM

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Subjects	ECTS credits	Type
<b>FIRST SEMESTER</b>		
Leadership and Management of Maritime Industries	5	Compulsory
Management of Integrated Systems. Safety, Environment and Quality	5	Compulsory
Management of Maritime Safety and Pollution Prevention	5	Compulsory
Maritime Economy and Shipping Business	5	Compulsory
Project Management	5	Compulsory
Standars for Ship Inspection and Documentation	5	Compulsory

Subjects	ECTS credits	Type
<b>SECOND SEMESTER</b>		
Advanced on Board Electronic Systems	5	Compulsory
Marine Renewable Energies and Energy Optimization	5	Compulsory
Propulsion Systems and Electrical Plant	5	Compulsory
Steam Power Plants and Systems	5	Compulsory
Thermal and Hydraulic Turbomachines	5	Compulsory
Thermal Engines	5	Compulsory
<b>THIRD SEMESTER</b>		
Advanced Control of Marine Systems	5	Compulsory
Combined Cycles and Cogeneration	5	Compulsory
Maintenance Engineering and Management	5	Compulsory
Master's Thesis	15	Project