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.

GENERAL DETAILS

Duration and start date
1.5 academic years, 90 ECTS credits. Starting September

Timetable and delivery
Afternoons. Blended learning

Fees and grants
Approximate fees for the master's degree, excluding degree certificate fee, €3,975 (€5,963 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 and Spanish, depending on the students' levels of comprehension.

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
15

Pre-enrolment
Pre-enrolment period open.
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 Management and Operation of Marine Energy Facilities (Marine Engineering) + Master in Naval Architecture and Marine Engineering of the Ningbo University (China)

PROFESSIONAL OPPORTUNITIES

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**

**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**

<table>
<thead>
<tr>
<th>Subjects</th>
<th>ECTS credits</th>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td><strong>FIRST SEMESTER</strong></td>
<td></td>
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<tr>
<td>Leadership and Management of Maritime Industries</td>
<td>5</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Management of Integrated Systems. Safety, Environment and Quality</td>
<td>5</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Management of Maritime Safety and Pollution Prevention</td>
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<tr>
<td>Maritime Economy and Shipping Business</td>
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<tr>
<td>Project Management</td>
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<td>Compulsory</td>
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<tr>
<td>Standards for Ship Inspection and Documentation</td>
<td>5</td>
<td>Compulsory</td>
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<tr>
<td><strong>SECOND SEMESTER</strong></td>
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<tr>
<td>Advanced on Board Electronic Systems</td>
<td>5</td>
<td>Compulsory</td>
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<tr>
<td>Marine Renewable Energies and Energy Optimization</td>
<td>5</td>
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<tr>
<td>Propulsion Systems and Electrical Plant</td>
<td>5</td>
<td>Compulsory</td>
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<tr>
<td>Subjects</td>
<td>ECTS credits</td>
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<tr>
<td>Steam Power Plants and Systems</td>
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<td>Thermal and Hydraulic Turbomachines</td>
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<tr>
<td>Thermal Engines</td>
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<tr>
<td><strong>THIRD SEMESTER</strong></td>
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<tr>
<td>Advanced Control of Marine Systems</td>
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<tr>
<td>Combined Cycles and Cogeneration</td>
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<td>Compulsory</td>
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<tr>
<td>Maintenance Engineering and Management</td>
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<td>Compulsory</td>
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<tr>
<td>Master's Thesis</td>
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<td>Project</td>
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