# 280649 - Marine Pollution Prevention and Sustainability

**Coordinating unit:** 280 - FNB - Barcelona School of Nautical Studies  
**Teaching unit:** 742 - CEN - Department of Nautical Sciences and Engineering  
**Academic year:** 2019  
**Degree:** BACHELOR'S DEGREE IN MARINE TECHNOLOGIES (Syllabus 2010). (Teaching unit Compulsory)  
**ECTS credits:** 6  
**Teaching languages:** Catalan, Spanish

## Degree competences to which the subject contributes

**Specific:**  
1. Knowledge of environmental technologies and sustainability in the marine environment.

**Transversal:**  
1. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 1. Analyzing the world¿s situation critically and systemically, while taking an interdisciplinary approach to sustainability and adhering to the principles of sustainable human development. Recognizing the social and environmental implications of a particular professional activity.

## Teaching methodology

- Receive, understand and synthesize knowledge.  
- Set up and solve problems.  
- Develop critical thinking and reasoning and defend it orally or in writing.  
- Perform work and activities individually or in groups.

## Learning objectives of the subject

This course will evaluate the following STCW competences (STCW A-III/1):

10. Ensure compliance with pollution-prevention requirements  
15. Monitor compliance with legislative requirements

At the end of the course the student can demonstrate that:

- Learn about environmental technologies applicable to the ship.  
- Meet sustainability principles applicable to the ship.  
- Has extensive knowledge of marine environmental legislation.  
- Master all aspects of the prevention of marine pollution.
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- Apply sustainability criteria and ethical codes of the profession in the solution design and technology solutions.
- Identifies the need for legislation, regulations and standards.

On the other hand, one of the objectives of this subject is provide the knowledge, understanding and proficiency of the competencies:

Ensure compliance with the requirements for pollution prevention:
- Prevention of pollution of the marine environment.
- Knowledge of precautions will be taken to avoid pollution of the marine environment.
- Procedures and antipollution equipment.

Monitoring compliance with legal requirements:
- Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment.

Competences required and defined in Section A-III/1 Mandatory minimum requirements for certification of officers in charge of an engineering watch in a manned engine-room or designated duty engineer in a periodically unmanned engine-room (propulsion power of 750 kW or more) of the Seafarers Training, Certification and Watchkeeping (STCW) International Code

### Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 30h</th>
<th>20.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 15h</td>
<td>10.00%</td>
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<tr>
<td></td>
<td>Hours small group: 0h</td>
<td>0.00%</td>
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<tr>
<td></td>
<td>Guided activities: 15h</td>
<td>10.00%</td>
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<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
### Legal aspects of marine pollution.

*Learning time: 11h*
- Theory classes: 3h
- Laboratory classes: 1h
- Guided activities: 1h
- Self study: 6h

**Description:**

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

- 15.1 Basic working knowledge of the relevant IMO conventions concerning safety of life at sea, security and protection of the marine environment

### Pollution from land-locked activity and navigation.

*Learning time: 9h*
- Theory classes: 2h
- Laboratory classes: 1h
- Guided activities: 1h
- Self study: 5h

**Description:**
Type of pollutants. Ways of entry. Impact of marine pollution.

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

- 10.1 Prevention of pollution of the marine environment
- 10.2 Knowledge of the precautions to be taken to prevent pollution of the marine environment
- 10.3 Anti-pollution procedures and all associated equipment
- 10.4 Importance of proactive measures to protect the marine environment
<table>
<thead>
<tr>
<th>Prevention of pollution by oil</th>
<th>Learning time: 17h</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 3h</td>
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<tr>
<td></td>
<td>Laboratory classes: 2h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 2h</td>
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<tr>
<td></td>
<td>Self study: 10h</td>
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</tbody>
</table>

**Description:**

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

10.1 Prevention of pollution of the marine environment
10.2 Knowledge of the precautions to be taken to prevent pollution of the marine environment
10.3 Anti-pollution procedures and all associated equipment
10.4 Importance of proactive measures to protect the marine environment

<table>
<thead>
<tr>
<th>Prevention of pollution by noxius liquid substances.</th>
<th>Learning time: 13h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 3h</td>
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<tr>
<td></td>
<td>Laboratory classes: 1h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 1h</td>
</tr>
<tr>
<td></td>
<td>Self study: 8h</td>
</tr>
</tbody>
</table>

**Description:**

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

10.1 Prevention of pollution of the marine environment
10.2 Knowledge of the precautions to be taken to prevent pollution of the marine environment
10.3 Anti-pollution procedures and all associated equipment
10.4 Importance of proactive measures to protect the marine environment
<table>
<thead>
<tr>
<th>Prevention of pollution by sewage from ships.</th>
<th>Learning time: 12h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 2h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 1h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 1h</td>
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<td>Self study: 8h</td>
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</table>

**Description:**
Black and grey waters. Permitted discharges. Seawage plants and treatments.

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

10.1 Prevention of pollution of the marine environment
10.2 Knowledge of the precautions to be taken to prevent pollution of the marine environment
10.3 Anti-pollution procedures and all associated equipment
10.4 Importance of proactive measures to protect the marine environment

<table>
<thead>
<tr>
<th>Prevention of pollution by garbage.</th>
<th>Learning time: 12h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 2h</td>
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<tr>
<td></td>
<td>Laboratory classes: 1h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 1h</td>
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<tr>
<td></td>
<td>Self study: 8h</td>
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</tbody>
</table>

**Description:**

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

10.1 Prevention of pollution of the marine environment
10.2 Knowledge of the precautions to be taken to prevent pollution of the marine environment
10.3 Anti-pollution procedures and all associated equipment
10.4 Importance of proactive measures to protect the marine environment
Prevention of air pollution from ships.

**Description:**
Typology of pollutants. Certificates. Permitted Emissions

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

10.1 Prevention of pollution of the marine environment
10.2 Knowledge of the precautions to be taken to prevent pollution of the marine environment
10.3 Anti-pollution procedures and all associated equipment
10.4 Importance of proactive measures to protect the marine environment

**Learning time:** 15h
- Theory classes: 3h
- Laboratory classes: 2h
- Guided activities: 2h
- Self study : 8h

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Prevention of pollution by ballast waters.

**Description:**

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

10.1 Prevention of pollution of the marine environment
10.2 Knowledge of the precautions to be taken to prevent pollution of the marine environment
10.3 Anti-pollution procedures and all associated equipment
10.4 Importance of proactive measures to protect the marine environment

**Learning time:** 9h
- Theory classes: 1h
- Laboratory classes: 1h
- Guided activities: 1h
- Self study : 6h
### Port reception facilities.

**Description:**
Legal aspects in the UE. Spanish regulations. Facilities.

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

10.1 Prevention of pollution of the marine environment
10.2 Knowledge of the precautions to be taken to prevent pollution of the marine environment
10.3 Anti-pollution procedures and all associated equipment
10.4 Importance of proactive measures to protect the marine environment

**Learning time:** 7h
- Theory classes: 1h
- Laboratory classes: 1h
- Guided activities: 1h
- Self study: 4h

### Spill response.

**Description:**

**Specific objectives:**
This knowledge is necessary in accordance with STCW Code A-III/1 and it's developed according to OFFICER IN CHARGE OF AN ENGINEERING WATCH (Model course 7.04) (2014 Edition)

10.1 Prevention of pollution of the marine environment
10.2 Knowledge of the precautions to be taken to prevent pollution of the marine environment
10.3 Anti-pollution procedures and all associated equipment
10.4 Importance of proactive measures to protect the marine environment

**Learning time:** 13h
- Theory classes: 3h
- Laboratory classes: 1h
- Guided activities: 1h
- Self study: 8h

### Environment Management Systems

**Description:**

**Learning time:** 10h
- Theory classes: 2h
- Laboratory classes: 1h
- Guided activities: 1h
- Self study: 6h
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<table>
<thead>
<tr>
<th>Environment Technologies and Sustainability</th>
<th>Learning time: 23h</th>
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<tbody>
<tr>
<td></td>
<td>Theory classes: 5h</td>
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<tr>
<td></td>
<td>Laboratory classes: 2h</td>
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<tr>
<td></td>
<td>Guided activities: 2h</td>
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<td></td>
<td>Self study: 14h</td>
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<th>Description:</th>
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**Qualification system**

The final score is the sum of the following partial grades:

\[
N_{\text{final}} = 0.5 \cdot N_{\text{pf}} + 0.3 \cdot N_{\text{act}} + 0.2 \cdot N_{\text{aca}}
\]

- \(N_{\text{final}}\): final grade.
- \(N_{\text{pf}}\): final test score.
- \(N_{\text{act}}\): continuous assessment work.
- \(N_{\text{aca}}\): continuous assessment activities rating.

The final test consists of a part with issues related to the learning objectives of the course in terms of knowledge or understanding concepts, and a set of application exercises. Continuous assessment consists of different activities, both individual and group, summative and formative, made during the course (in the classroom and outside of it).

The reassessment of the course will consist of a final exam that will include all the contents of the subject.

**Regulations for carrying out activities**

- If not any of the ongoing evaluation activities performed, shall be deemed not scored.
- Be deemed not submitted the student / a not present at the final test or have not submitted at least 50% of the work and activities.
Bibliography

Basic:


Complementary:


