280643 - Materials Science and Technology

**Coordinating unit:** 280 - FNB - Barcelona School of Nautical Studies  
**Teaching unit:** 713 - EQ - Department of Chemical Engineering  
**Academic year:** 2019  
**Degree:**  
- BACHELOR'S DEGREE IN MARINE TECHNOLOGIES (Syllabus 2010). (Teaching unit Compulsory)  
- BACHELOR'S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)  
- BACHELOR'S DEGREE IN MARINE TECHNOLOGIES/BACHELOR'S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2016). (Teaching unit Compulsory)  
**ECTS credits:** 6  
**Teaching languages:** Catalan, Spanish

### Teaching staff

**Coordinator:** GUILLEM REVILLA LÓPEZ  
**Others:**  
**Primer quadrimestre:**  
- LUIS JAVIER DEL VALLE MENDOZA - 1  
- JORGE PUIGGALI BELLALTA - 1  
- GUILLEM REVILLA LÓPEZ - 1  
- MANUEL RIVAS CAÑAS - 1  

**Segon quadrimestre:**  
- LUIS JAVIER DEL VALLE MENDOZA - 1  
- JORGE PUIGGALI BELLALTA - 1  
- GUILLEM REVILLA LÓPEZ - 1  
- MANUEL RIVAS CAÑAS - 1

### Opening hours

**Timetable:** Monday and Friday from 08:00 to 10:00

### Prior skills

N.A

### Requirements

N.A

### Degree competences to which the subject contributes

**Specific:**  
1. Knowledge of the fundamentals of materials science and its application to real behavior of solid structures, facilities and marine equipment.  
2. Knowledge of science and technology of materials and capacity for selection and evaluation of their behavior
280643 - Materials Science and Technology

**Teaching methodology**

- To obtain, understand and summarize knowledge in the subject field.
- To solve problems related to the subject field.
- To develop reasoning and critical thinking in the field of the subject and being able to express it orally and written.
- To deliver a Lab notebook after the practical sessions

**Learning objectives of the subject**

To know the fundamentals of material science and technology and applying these principles to the selections, operation and maintenance of the maritime systems equipment.

**Study load**

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 27h</th>
<th>18.00%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 27h</td>
<td>18.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 6h</td>
<td>4.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 90h</td>
<td>60.00%</td>
</tr>
<tr>
<td>Content</td>
<td>Learning time: 35h</td>
<td></td>
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<td>---------</td>
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<td></td>
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<tr>
<td><strong>(ENG) Estructura i propietats dels materials.</strong></td>
<td>Practical classes: 6h</td>
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<tr>
<td></td>
<td>Laboratory classes: 2h</td>
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<tr>
<td></td>
<td>Guided activities: 6h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self study: 21h</td>
<td></td>
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</tbody>
</table>

**Description:**

<table>
<thead>
<tr>
<th>Content</th>
<th>Learning time: 29h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(ENG) Metalls i aliatges.</strong></td>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 2h</td>
</tr>
<tr>
<td></td>
<td>Self study: 21h</td>
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</table>

**Description:**

<table>
<thead>
<tr>
<th>Content</th>
<th>Learning time: 25h</th>
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<tbody>
<tr>
<td><strong>(ENG) Corrosió.</strong></td>
<td>Theory classes: 5h</td>
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<tr>
<td></td>
<td>Guided activities: 5h</td>
</tr>
<tr>
<td></td>
<td>Self study: 15h</td>
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</table>

**Description:**

<table>
<thead>
<tr>
<th>Content</th>
<th>Learning time: 10h</th>
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</thead>
<tbody>
<tr>
<td><strong>(ENG) Materials ceràmics.</strong></td>
<td>Theory classes: 2h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 2h</td>
</tr>
<tr>
<td></td>
<td>Self study: 6h</td>
</tr>
</tbody>
</table>

**Description:**
Ceramic materials of nautical interest. Glasses: types, composition and properties.
The final mark is calculated according to:

\[ N_{\text{final}} = 0.5 \times N_{\text{pf}} + 0.35 \times N_{\text{ac}} + 0.15 \times N_{\text{eL}} \]

- **Nfinal**: Final mark.
- **Npf**: Final exam mark.
- **Nac**: Continuous assessment.
- **NeL**: Practical lab sessions mark.

The final exam may include test, problems and development questions on the syllabus of the subject. The continuous assessment consist in different collective and individual activities all along the course. The mark of the practical lab sessions is the average of the different lab activities.

The re-assessment act will comprise the whole syllabus of the subject.

### Qualification system

#### Regulations for carrying out activities

- Any missing lab, continuous assessment and final exam activity will be considered as markless.
- Students will be considered as "No presentat" if they have not perform any assessment activity.
- No written support for mathematical and physical formulae can be used in the exams.

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**Qualification system**

The final mark is calculated according to:

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The re-assessment act will comprise the whole syllabus of the subject.

### (ENG) Materials polimèrics.

**Learning time**: 30h

- Theory classes: 5h
- Laboratory classes: 2h
- Guided activities: 5h
- Self study: 18h

**Description**: Polymers and copolymers. Thermal properties, mechanical properties, base polymer and additives. Thermoplastics of general use. Thermosets of general use. Engineered polymers and special polymers. Polymer degradation.

### (ENG) Materials compostos.

**Learning time**: 15h

- Theory classes: 3h
- Guided activities: 3h
- Self study: 9h

**Description**: Matrix and reinforcement polymers. Types and properties of composites used in ship building.

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**Qualification system**

The final mark is calculated according to:

\[ N_{\text{final}} = 0.5 \times N_{\text{pf}} + 0.35 \times N_{\text{ac}} + 0.15 \times N_{\text{eL}} \]

- **Nfinal**: Final mark.
- **Npf**: Final exam mark.
- **Nac**: Continuous assessment.
- **NeL**: Practical lab sessions mark.

The final exam may include test, problems and development questions on the syllabus of the subject. The continuous assessment consist in different collective and individual activities all along the course. The mark of the practical lab sessions is the average of the different lab activities.

The re-assessment act will comprise the whole syllabus of the subject.

### Regulations for carrying out activities

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- No written support for mathematical and physical formulae can be used in the exams.
Bibliography

Basic:


Others resources: