Course guide  
280643 - 280643 - Materials Science and Technology

Unit in charge: Barcelona School of Nautical Studies  
Teaching unit: 713 - EQ - Department of Chemical Engineering.  
Degree: BACHELOR’S DEGREE IN MARINE TECHNOLOGIES (Syllabus 2010). (Compulsory subject).  
BACHELOR’S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2010). (Compulsory subject).

Academic year: 2022  
ECTS Credits: 6.0  
Languages: Catalan, Spanish, English

LECTURER

Coordinating lecturer: LUIS JAVIER DEL VALLE MENDOZA - MARIA DEL MAR PÉREZ MADRIGAL  
Others: Primer quadrimestre:  
LUIS JAVIER DEL VALLE MENDOZA - DT, GESTN  
JORGE PUIGGALI BELLALTA - DT, GESTN  
MANUEL RIVAS CAÑAS - DT, GESTN  
MARIA DEL MAR PÉREZ MADRIGAL - DT, GESTN

Segon quadrimestre:  
LUIS JAVIER DEL VALLE MENDOZA - GESTN, GTM  
MARIA DEL MAR PÉREZ MADRIGAL - GESTN, GTM  
JORGE PUIGGALI BELLALTA - GESTN, GTM  
GUILLER REVILLA LÓPEZ - GESTN, GTM  
MANUEL RIVAS CAÑAS - GESTN, GTM

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:  
GESTN.CE8. Knowledge of science and technology of materials and capacity for selection and evaluation of their behavior  

STCW:  
ME.1. A-III/1-3. Function: Maintenance and repair at the operational level  
ME.2. A-III/1-3.1 Appropriate use of hand tools, machine tools and measuring instruments for fabrication and repair on board  
ME.3. A-III/1-KUP 3.1.1 Characteristics and limitations of materials used in construction and repair of ships and equipment  
ME.4. A-III/1-KUP 3.1.2 Characteristics and limitations of processes used for fabrication and repair

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  
- Perform autonomous work tasks.  
- If applicable, group work and oral presentation of content.
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>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>90,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>27,0</td>
<td>18.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>27,0</td>
<td>18.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>6,0</td>
<td>4.00</td>
</tr>
</tbody>
</table>

**Total learning time:** 150 h

CONTENTS

1. Estructura i propietats dels materials

**Description:**

**Full-or-part-time:** 36h

- Practical classes: 6h
- Laboratory classes: 2h
- Guided activities: 7h
- Self study : 21h

2. Metalls i aliatges

**Description:**

**Full-or-part-time:** 30h

- Theory classes: 6h
- Guided activities: 3h
- Self study : 21h

3. Materials ceràmics

**Description:**
Ceramic materials of nautical interest. Glasses: types, composition and properties.

**Full-or-part-time:** 11h

- Theory classes: 2h
- Guided activities: 3h
- Self study : 6h
4. Materials polímerics

Description:

Full-or-part-time: 31h
Theory classes: 5h
Laboratory classes: 2h
Guided activities: 6h
Self study: 18h

5. Materials compostos

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

Full-or-part-time: 16h
Theory classes: 3h
Guided activities: 4h
Self study: 9h

6. Corrosió

Description:

Full-or-part-time: 26h
Theory classes: 5h
Guided activities: 6h
Self study: 15h

GRADING SYSTEM

The final mark is calculated according to:
Nfinal = 0,5 Npf + 0,40 Nac + 0,10 NeL

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.
**EXAMINATION RULES.**

- 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 performed any assessment activity.
- No written support for mathematical and physical formulae can be used in the exams.

**BIBLIOGRAPHY**

**Basic:**

**RESOURCES**

**Other resources:**
Villalobos, Miquel. Ciència i tecnologia dels materials : pràctiques i temes de l'assignatura. 2011