280676 - Ship and Naval Artifact Design

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 742 - CEN - Department of Nautical Sciences and Engineering
Academic year: 2017
Degree: BACHELOR’S DEGREE IN MARINE TECHNOLOGIES/BACHELOR’S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2016). (Teaching unit Compulsory)
BACHELOR’S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2010). (Teaching unit Compulsory)
ECTS credits: 9
Teaching languages: Spanish

Teaching staff
Coordinator: JULIO GARCIA ESPINOSA
Others: JULIO GARCIA ESPINOSA - 1

Teaching methodology
The teaching methodology will be based on an equal mixture of classical teaching of theoretical concepts and project-based learning.
Project-based learning will be mainly developed through workshops based on real or theoretical projects. The students will be distributed in various working groups with specific responsibilities, acting as technical office departments, which must develop the project jointly.
Thus, classes are organized as coordination meetings, led by the teacher, in which the different groups to exchange information and experiences, and solve the problems and doubts found. In addition to the coordination meetings, the different groups that will be assigned a responsible, will share and exchange information through cloud-based systems.
Prior to conducting the above mentioned workshops, different teacher-led practices will be carried out, focused on reviewing the different matters that make up the areas of ship design covered in the course.

Learning objectives of the subject
- Know, understand and apply the methods of design of ships and artifacts.
- Use knowledge and strategic skills to the creation and management of projects with innovative vision, apply systematic solutions to complex problems.
- Apply sustainability criteria and rules in the design and assessment of technological solutions.
- Identifies the need to apply legislation, regulations and policy.
- Meet the concept of life cycle of a product and to be applied to the development of products and services in the field of naval arquitectura and marine engineering, using the appropriate regulations and legislation.
- Plan and use the information needed for a project or scholar work from a critical appraisal of the information resources used.
- Perform the tasks on schedule, according to the guidelines set by the teacher. Identifies progress and degree of compliance with the learning objectives.
- Performs tasks based on the guidelines set by teachers, deciding the time and resources required. Assesses his/her own strengths and weaknesses and acts accordingly.
- Identify user needs and develops a definition of product-process-service and initial specifications. Follow a management model of the design process based on standards. Assesses the implementation of legislation and regulations.
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<table>
<thead>
<tr>
<th>Study load</th>
<th>Hours large group:</th>
<th>40h</th>
<th>17.78%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>10h</td>
<td>4.44%</td>
</tr>
<tr>
<td></td>
<td>Hours small group:</td>
<td>0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities:</td>
<td>40h</td>
<td>17.78%</td>
</tr>
<tr>
<td></td>
<td>Self study:</td>
<td>135h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
### Content

<table>
<thead>
<tr>
<th>Section 1. Project of the ship</th>
<th>Learning time: 30h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 0h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 4h</td>
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<tr>
<td></td>
<td>Self study: 20h</td>
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</tbody>
</table>

**Description:**

**Related activities:**
Practice on the dimensioning of the vessel.

<table>
<thead>
<tr>
<th>Section 2. Hull shape design</th>
<th>Learning time: 41h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 8h</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 4h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 4h</td>
</tr>
<tr>
<td></td>
<td>Self study: 25h</td>
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</tbody>
</table>

**Description:**

**Related activities:**
Practice on the design of the hull shape. Design competition (workshop).

<table>
<thead>
<tr>
<th>Section 3. General arrangement</th>
<th>Learning time: 14h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td></td>
<td>Practical classes: 0h</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 3h</td>
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<tr>
<td></td>
<td>Self study: 5h</td>
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</tbody>
</table>

**Description:**

**Related activities:**
Practices on general arrangement of the ship.
### Section 4. Structural design and calculation of displacement

**Learning time:** 27h

- Theory classes: 8h
- Practical classes: 0h
- Guided activities: 4h
- Self study: 15h

**Description:**

**Related activities:**

### Section 5. Stability, maneuverability and seakeeping

**Learning time:** 41h

- Theory classes: 9h
- Practical classes: 2h
- Guided activities: 5h
- Self study: 25h

**Description:**

**Related activities:**

### Section 6. Tonnage Measurement and freeboard

**Learning time:** 9h

- Theory classes: 2h
- Practical classes: 0h
- Guided activities: 2h
- Self study: 5h

**Description:**

**Related activities:**
Practical exercises.
## Section 7. Final workshop

<table>
<thead>
<tr>
<th>Learning time: 63h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 1h</td>
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<tr>
<td>Practical classes: 4h</td>
</tr>
<tr>
<td>Guided activities: 18h</td>
</tr>
<tr>
<td>Self study: 40h</td>
</tr>
</tbody>
</table>

### Description:
Introduction. Workshop on the project of a ship.

### Related activities:
Workshop in working groups on the project of the ship.

## Qualification system

The final mark will be the weighted average of all the different evaluating activities in the subject:

\[ N_{\text{final}} = 0.60 \cdot N_{\text{ec}} + 0.40 \cdot N_{\text{ex}} \]

- \( N_{\text{final}} \): final mark
- \( N_{\text{ec}} \): mark of the different exercises and practices
- \( N_{\text{ex}} \): mark of the exam

The re-evaluation will consist on carrying out a practical exercise defined by the professors. This work will be focused on the aspects of the matter failed by the student. The student will be required to deliver a written report on the work at the day of the exam. Furthermore, the student could be asked for an oral presentation or written exam on the work.

## Regulations for carrying out activities

The student not presenting to any evaluation act will be qualified as "not taken"
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Bibliography

Basic:


