280618 - Stowage

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 742 - CEN - Department of Nautical Sciences and Engineering
Academic year: 2020
Degree: BACHELOR'S DEGREE IN NAUTICAL SCIENCE AND MARITIME TRANSPORT (Syllabus 2010). (Teaching unit Compulsory)
ECTS credits: 12

Teaching languages: Catalan, Spanish, English

Coordinator: Martinez De Osés, Francesc Xavier

Others: Campos Toresano, Cristina
         Martinez De Osés, Francesc Xavier

Opening hours

Timetable: It is published in the FNB web site for each professor.

Prior skills

Elementary knowledge of ship's theory: ships' nomenclature, drafts, trim, stability, cutting stresses, bending moments.

Degree competences to which the subject contributes

Specific:
3. Knowledge of the organization and management capacity for repair projects, installation, modification and maintenance of loading equipment, storage and security systems and means of loading and auxiliary vessel.
4. Knowledge of maintenance equipment load measurement and control systems of the atmospheres of cargo space and equipment of tankers for transportation of liquefied petroleum natural gas oil, transportation of crude oil derivatives and chemicals.

Transversal:
1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.

Teaching methodology

- Understanding, knowledge and sintetizing of all the concepts
- Propose and resolve problems
- Propose and resolve loading and unloading plans, including stowage
- Perform individual and group works
- Develop reasoning and critical spirit and defend it orally and / or in writing.
Learning objectives of the subject

The students at the end the subject will demonstrate:
- Know and is expert on the stowage and cargo lashing, systems.
- Is able to assess the loading and discharging, devices.
- Is able to carry out studies of stowage and lashing.
- Is able to design and calculate the cargo protection devices.
- Is able to organize and manage repairing projects, installation, modifying and maintenance of cargo, stowage and safety systems, cargo and auxiliary devices.

Competencies
The specific competencies included in CE 25, 26 and 27 together with the ones of chart A-II/1 of the STCW convention: "Monitor the loading, stowage, securing, care during the voyage and the unloading of cargoes" and part of the chart A-II/2: "Plan and ensure safe loading, stowage, securing care, during the voyage and unloading cargoes".

Study load

<table>
<thead>
<tr>
<th>Total learning time: 300h</th>
<th>Hours large group: 40h</th>
<th>13.33%</th>
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<tbody>
<tr>
<td></td>
<td>Hours medium group: 40h</td>
<td>13.33%</td>
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<tr>
<td></td>
<td>Hours small group: 2h</td>
<td>0.67%</td>
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<td></td>
<td>Guided activities: 38h</td>
<td>12.67%</td>
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<tr>
<td></td>
<td>Self study: 180h</td>
<td>60.00%</td>
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## Content

<table>
<thead>
<tr>
<th>(ENG) Estiba, introducción y evolución histórica.</th>
<th>Learning time: 26h</th>
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</thead>
</table>
| Description: Elements used for loading, unloading, and lashing. Cables, Cable calculations. | Theory classes: 4h  
Practical classes: 4h  
Self study: 18h |

<table>
<thead>
<tr>
<th>(ENG) RO- RO Cargo</th>
<th>Learning time: 26h</th>
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</thead>
</table>
| Description: Stowage, transport, calculations and stowage plans | Theory classes: 4h  
Practical classes: 4h  
Self study: 18h |

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<tr>
<th>(ENG) Containers.</th>
<th>Learning time: 59h</th>
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| Description: Stowage, DG cargo segregation, transport, calculations and stowage plans | Theory classes: 8h  
Practical classes: 10h  
Self study: 41h |

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<thead>
<tr>
<th>(ENG) Cereals.</th>
<th>Learning time: 26h</th>
</tr>
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</table>
| Description:  | Theory classes: 4h  
Practical classes: 4h  
Self study: 18h |
| Stowage, transport, calculations and loading /unloading plans |
### (ENG) Coal, minerals and concentrates

**Description:**
Stowage, transport, calculations and loading /loading plans

<table>
<thead>
<tr>
<th>Learning time: 26h</th>
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<tbody>
<tr>
<td>Theory classes: 4h</td>
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<tr>
<td>Practical classes: 4h</td>
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<tr>
<td>Self study: 18h</td>
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</tbody>
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### (ENG) Heavy loads.

**Description:**
Vessel types, loading and unloading systems, stowage, transport.

<table>
<thead>
<tr>
<th>Learning time: 13h</th>
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<tbody>
<tr>
<td>Theory classes: 2h</td>
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<tr>
<td>Practical classes: 2h</td>
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<tr>
<td>Self study: 9h</td>
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</tbody>
</table>

### (ENG) Liquid and gas bulk cargo.

**Description:**
Vessel types. loading and unloading systems, calculations, loading/unloading plans.

<table>
<thead>
<tr>
<th>Learning time: 41h</th>
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<tbody>
<tr>
<td>Theory classes: 6h</td>
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<tr>
<td>Practical classes: 6h</td>
</tr>
<tr>
<td>Laboratory classes: 2h</td>
</tr>
<tr>
<td>Self study: 27h</td>
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</table>

### (ENG) Operation in other type of vessels.

**Description:**
Reefer ships
Woodships carriers
Cement carriers
OBO, OSV, etc.

**Related activities:**
Practical loading activities of the described ships' types.

**Specific objectives:**
To provide the basic particulars and preliminary elements of working; of other types of ships not seen in other chapters.
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**Qualification system**

The final mark is the sum of the partial marks as follows:

\[ N_{\text{final}} = 0.4 \times N_{\text{pp1}} + 0.4 \times N_{\text{pp2}} + 0.2 \times N_{\text{ec}} \]

**Nfinal**: Final mark  
**Npp1**: First partial exam mark  
**Npp2**: Second partial exam mark  
**Nec**: Continuous evaluation

**Regulations for carrying out activities**

All activities and/or continuous evaluation acts, not made or late delivery, will not be evaluated.  
It is not afforded any kind of documents during the evaluation activities. Professors will provide tables and or information needed for the developing of the exercises.  
Copy or talk, during during an exam, will mean the retirement of the exam.

**Bibliography**

**Basic:**


**Complementary:**

International Association of Classification Societies. Bulk carriers: guidance and information on bulk cargo loading and discharging to reduce the likelihood of over-stressing the hull structure. London: IACS, 1997.


