280683 - Operation and Maintenance of High Voltage Systems

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 709 - EE - Department of Electrical Engineering
Academic year: 2018
Degree: BACHELOR'S DEGREE IN MARINE TECHNOLOGIES (Syllabus 2010). (Teaching unit Optional) BACHELOR'S DEGREE IN MARINE TECHNOLOGIES/BACHELOR'S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2016). (Teaching unit Optional)
ECTS credits: 6
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: PABLO CASALS TORRENS
Others: Segon quadrimestre: PABLO CASALS TORRENS - 1

Degree competences to which the subject contributes

Specific:
1. Knowledge of the organization and project management of repair, installation, modification, redesign and maintenance of machines and systems of ships, within the scope of its special ad, ie, operation and exploitation.

General:
3. IDENTIFY I resoldre Capacitat PER L'Ambit problemes IN MARINA DE L'ENGINYERIA. Capacitat per the plantejament i resolució of problemes de l'àiòmbit enginyeria assumint marina iniciatives, prenet decisions i aplicant solucions creatives in the marc d’a systematic methodology.

Transversal:
2. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.

Learning objectives of the subject

- Know the high voltage technology (installations> 1000 V)
- Know the insulating materials used
- Know and apply the regulations and regulations of Classification Societies
- Establish and apply security procedures
- Have the ability to perform premature fault detection
- Understand the effects of surges in AT systems
- Identify system typology
- Use equipment and materials for the detection, location and repair of faults

"This course will evaluate the following STCW competences Section A-III/6: " E1. Monitor the operation of electrical, electronic and control systems, KUPs E.1.1 to E.1.4 and E4. Operate and maintain power systems in excess of 1,000 volts, KUPs E.4.1 to E.4.4."
## Study load

<table>
<thead>
<tr>
<th>Total learning time: 150h</th>
<th>Hours large group: 30h</th>
<th>20.00%</th>
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<tbody>
<tr>
<td></td>
<td>Hours medium group:</td>
<td>15h</td>
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<tr>
<td></td>
<td>Hours small group:</td>
<td>10h</td>
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<tr>
<td></td>
<td>Guided activities:</td>
<td>5h</td>
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<td>Self study:</td>
<td>90h</td>
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## Content

<table>
<thead>
<tr>
<th>Topic 1. High Voltage Systems</th>
<th>Learning time: 5h</th>
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<tbody>
<tr>
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<td>Theory classes: 5h</td>
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### Description:
Introduction, high voltage power systems, electric discharge, electric arc, grounded. Insulating materials. How to read electrical diagrams, representation of circuits and electrical appliances.

"This course will follow the STCW competences Section A-III / 6:" E1. Monitor the operation of electrical, electronic and control systems, KUPs E.1.1 to E.1.4 and E4. Operate and maintain power systems in excess of 1,000 volts, KUPs E.4.1 to E.4.4.

<table>
<thead>
<tr>
<th>Topic 2. High voltage safety regulations</th>
<th>Learning time: 5h</th>
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<tbody>
<tr>
<td></td>
<td>Theory classes: 5h</td>
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### Description:
Risks and electrical precautions, security operations. Standards and regulations. Security isolation procedures, the safe use of test equipment, Energized electrical work permit. Procedures that must be followed before, during and after performing any high voltage work.

"This course will follow the STCW competences Section A-III / 6:" E1. Monitor the operation of electrical, electronic and control systems, KUPs E.1.1 to E.1.4 and E4. Operate and maintain power systems in excess of 1,000 volts, KUPs E.4.1 to E.4.4.

<table>
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<tr>
<th>Topic 3. Distribution tables and protections</th>
<th>Learning time: 7h</th>
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<td>Theory classes: 7h</td>
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</table>

### Description:

"This course will evaluate the following STCW competences Section A-III/6: " E1. Monitor the operation of electrical, electronic and control systems, KUPs E.1.1 to E.1.4 and E4. Operate and maintain power systems in excess of 1,000 volts, KUPs E.4.1 to E.4.4."
Bibliography

Basic:


Others resources: