280665 - Ship Power Plant

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 709 - EE - Department of Electrical Engineering
Academic year: 2019
Degree: 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: 4,5 Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: PABLO CASALS TORRENS
Others: Segon quadrimestre: PABLO CASALS TORRENS - 1, 2, 3, 4, 5, 6, 7 JOAN NICOLAS APRUZZESE - 1, 2, 3, 4, 5, 6, 7

Requirements
Subjet 280641

Degree competences to which the subject contributes

Basic:
2. Knowledge of electrical machines and marine electrical systems.

Transversal:
1. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 1. Planning oral communication, answering questions properly and writing straightforward texts that are spelt correctly and are grammatically coherent.

Teaching methodology
Real applications analysis.
Application of theoretical knowledge to the laboratory practices.
Attitude and skills development for power plants operation.
Case studies and articles on the subject.
Perform work individually.

Learning objectives of the subject

- Understanding the basics of electrical machines.
- Understand the schemes and connections of different types of machines and applications.
- Understand the regulatory systems of V, f, P, Q in synchronous generators in island and parallel.
- Having the ability to do calculations and solve problems of electrical machines, using the corresponding equivalent circuits.
- Perform calculations for electrical installations of the ship.
## Study load

<table>
<thead>
<tr>
<th></th>
<th>Hours large group:</th>
<th>Hours medium group:</th>
<th>Hours small group:</th>
<th>Guided activities:</th>
<th>Self study:</th>
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<tbody>
<tr>
<td><strong>Total learning time:</strong></td>
<td>112h 30m</td>
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<tr>
<td>Hours large group:</td>
<td>30h</td>
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<td>Hours medium group:</td>
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<td>Hours small group:</td>
<td>10h</td>
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<tr>
<td>Guided activities:</td>
<td>5h</td>
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<td>Self study:</td>
<td>67h 30m</td>
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- **Total learning time:** 112h 30m
- **Hours large group:** 30h (26.67%)
- **Hours medium group:** 0h (0.00%)
- **Hours small group:** 10h (8.89%)
- **Guided activities:** 5h (4.44%)
- **Self study:** 67h 30m (60.00%)
# Content

<table>
<thead>
<tr>
<th>Topic</th>
<th>Degree competences to which the content contributes:</th>
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<tbody>
<tr>
<td><strong>Synchronous machine</strong></td>
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<td><strong>Energy balance</strong></td>
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<td><strong>Asynchronous machine</strong></td>
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<td><strong>Start systems</strong></td>
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<td><strong>Static converters</strong></td>
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<td><strong>Harmonic and transient</strong></td>
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<td><strong>Protections</strong></td>
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<td><strong>Industrial automation</strong></td>
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During the course there will be evaluations, according to the following percentages:
Continuous evaluations 30% (Exams Lab., Practices Lab., Expositions, Tasks)
Partial Exam 40%
Final Exam 30%

Reevaluation: Test that includes the concepts and objectives set for the final test.

Attendance and completion of the hands-on labs, is a compulsory requirement.

Basic:

Complementary:

Others resources:
Computer material
Apunts, Articles tècnics i Models de simulació aportats pels professor en ATENEA.