280710 - Propulsion and Auxiliary Systems

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 742 - CEN - Department of Nautical Sciences and Engineering
Academic year: 2018
Degree: MASTER'S DEGREE IN NAUTICAL SCIENCE AND MARITIME TRANSPORT MANAGEMENT (Syllabus 2016). (Teaching unit Compulsory)
ECTS credits: 5  Teaching languages: English

Coordinator: MARCEL·LA CASTELLS SANABRA

Opening hours
Timetable: Marcel·la Castells: Monday 10-12, Wednesday 12-14 and Thursday 12-14
Clara Borén: Monday 14-16

Degree competences to which the subject contributes

Specific:
CE9MENTM. Operating and managing auxiliary machinery that is responsible for graduates in sailing.

CE10MENTM. Apply basic knowledge of marine engines, marine propulsion and estimates of income and consumption.

Generical:
CG2MENTM. Apply general knowledge of the structure and behavior in the Sea ship.

Teaching methodology
MD1. Lectures
MD3. Cooperative learning
MD4. Self study by solving exercises
MD5. Learning based in problems / projects

Learning objectives of the subject

Acquire a basic knowledge of engines and auxiliary ship systems and existing marine propulsion systems.

On the other hand, one of the objectives of this subject is provide the knowledge, understanding and proficiency of the competency "Operate remote controls of propulsion plant and engineering systems and services", competency required and defined in Section A-II/2-11 (Mandatory minimum requirements for certification of masters and chief mates on ships of 500 gross tonnage or more) of the Seafarers' Training, Certification and Watchkeeping (STCW) International Code.

This competence will be partially evaluated thought the simulator in accordance of STCW Code.
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<th>Study load</th>
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<td><strong>Total learning time:</strong> 45h</td>
<td>Hours large group: 45h</td>
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The work of a propulsion unit is to convert engine power into thrust. Propellers are devices that overcome the drag of a body when it moves within a fluid and, in addition, can also keep your movement in this fluid.

Ships, along history have used different types of propellers. This chapter provides a detailed description of each of them, their main features, advantages and disadvantages will be performed.

When a ship generates a certain power within the Engine Room, this power will be transmitted along the propeller shaft and eventually to the tips of the propeller blades. This chapter shows the powers between the Engine Room and the propeller tips (Effective power, thrust power, delivered power, shaft power, brake power and Indicated power) and will analyse losses of power enroute.

This topic describes the basic characteristics of a propeller. Calculations will be explained considering different velocities acting on the propeller and the use of the design diagrams for propellers and rudders.

When a ship is completed, various trails take place in order to confirm that the ship's performance is as specified by the shipowner and are described in this chapter.
The final score is the sum of the following partial grades:

\[ N_{\text{final}} = 0.4N_{\text{pf}} + 0.4N_{\text{pp}} + 0.2N_{\text{ec}} \]

- \( N_{\text{pf}} \): final score
- \( N_{\text{pp}} \): partial exam
- \( N_{\text{ec}} \): score of the continuous assessment

Examination and assessment of evidence of competence A-II/2-11 will be obtained from approved engine room simulator training.

Criteria of evaluate competence A-II/2-11: Plant, auxiliary machinery and equipment is operated in accordance with technical specifications and within safe operating limits at all times.
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Regulations for carrying out activities

- You can't pass the course if all work activities and continuous assessment are carried out and submitted.
- In any case, the student can use any kind of predesigned form in controls or tests.
- If the student does not carry out partial and/or final exam, he or she will be considered as: Not Presented.
- If student pass the partial exam, topics passed shall be approved and will not enter at the final exam.

Bibliography

Basic:


Complementary:

