Degree competences to which the subject contributes

Specific:
- CE5MENTM. Carry out a watch on the bridge (in navigation, anchor and in port).
- CE8MENTM. Develop plans and manage maneuver (docking / undocking, anchoring, navigation channels and narrow steps, entrance to dock, etc.) in all ship types.

Transversal:
- 05 TEQ. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.

Teaching methodology

MD2. Participating expositive class
MD5. Learning based on problems/projects

Learning objectives of the subject

MANEUVER:
- Knowledge of the equipments used in maneuvers (rudder, propeller, bow and aft thrusters, anchor, ropes, mooring elements, tugs, azipods, waterjets), their design and operation, and the effect that they produce on the vessel.
- Knowledge of the basic concepts and skills to be taken into account in a maneuver (maintain a course, turning circles, rate of turn, stopping distances, control of speed, minimum steering speed, approach to a dock).
- Knowledge of the effect of the following factors on the vessel: wind, current, squat in shallow waters and proximity to another moving vessel.
- Knowledge of the phases of a maneuver, from the approach to the berthed/anchored position, and vice versa, from that position to the start of the sea voyage, including communication with the stations of pilots and traffic control of the port, embark/disembark of pilot, and the exchange of information between master and pilot.
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- Knowledge of the basic concepts of the main kinds of maneuvers of berthing, unberthing, anchoring and taking tugs in port, according to the type of ship (conventional, with maneuvering thrusters, with two propellers and/or with azips/waterjets) and the meteorological conditions.
- Knowledge of the basic concepts of man overboard maneuvers, ship to ship and towing at high seas.

REGULATIONS:
- Thorough knowledge of the International Regulations for Preventing Collisions at Sea, 1972, as amended (Rules of the Road or COLREGS).
- Comprehension of the situations that involve a risk of collision; knowledge of the effective and ineffective maneuvers to avoid the risk, and awareness of the importance of the look-out and early identification of risks, in order to make decisions in sufficient time to avoid situations of excessive approximation, in which, all maneuvers to avoid the collision are ineffective.
- Capacitation to analyze and interpret COLREGS in any situation, as well as to analyze cases of collision, detecting the breaches of the Regulations that have been made.
- A thorough knowledge of the IALA maritime beacon system.
- Use of the International Code of Signals, and knowledge of their flags.
- Knowledge of the letters and numbers of Morse code, in order to transcribe short messages from Morse to clear and vice versa, in writing and by luminous signals.

This subject provides the knowledge, understanding and proficiency of the following competences required and defined in the Seafarers' Training, Certification and Watchkeeping (STCW) Code, as amended, part A, table A-II/1 (Specification of minimum standard of competence for officers in charge of a navigational watch on ships of 500 GT or more):

- Competence: MAINTAIN A SAFE NAVIGATIONAL WATCH (partial competence):
  - Knowledge, understanding and proficiency of the above competence: Watchkeeping:
    1. Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended
    2. Thorough knowledge of the Principles to be observed in keeping a navigational watch
- Competence: TRANSMIT AND RECEIVE INFORMATION BY VISUAL SIGNALLING (complete competence):
  - Knowledge, understanding and proficiency of the above competence: Visual signalling:
    Ability to use the International Code of Signals
    Ability to transmit and receive, by Morse light, distress signal SOS as specified in Annex IV of the International Regulations for Preventing Collisions at Sea, 1972, as amended, and appendix 1 of the International Code of Signals, and visual signalling of single-letter signals as also specified in the International Code of Signals
- Competence: MANOEUVRE THE SHIP (complete competence):
  - Knowledge of:
    1. The effects of deadweight, draught, trim, speed and under keel clearance on turning c

<table>
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<th>Study load</th>
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<tr>
<td>Hours large group:</td>
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<td>Hours medium group:</td>
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<td>Hours small group:</td>
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<td>Guided activities:</td>
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<td>Self study:</td>
<td>135h</td>
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Content

<table>
<thead>
<tr>
<th>THEORY OF MANEUVER</th>
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<tbody>
<tr>
<td></td>
<td>Theory classes: 12h</td>
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</table>

**Description:**
- Knowledge of the equipments used in maneuvers (rudder, propeller, bow and aft thrusters, anchor, ropes, mooring elements, tugs, azipods, waterjets), their design and operation, and the effect that they produce on the vessel.
- Knowledge of the basic concepts and skills to be taken into account in a maneuver (maintain a course, turning circles, rate of turn, stopping distances, control of speed, minimum steering speed, approach to a dock).
- Knowledge of the effect of the following factors on the vessel: wind, current, squat in shallow waters and proximity to another moving vessel.
- Knowledge of the phases of a maneuver, from the approach to the berthed/anchored position, and vice versa, from that position to the start of the sea voyage, including communication with the stations of pilots and traffic control of the port, embark/disembark of pilot, and the exchange of information between master and pilot.

**Specific objectives:**
Competence of the STCW Code, Table A-II/1-Manoeuvre the ship: ship manoeuvre and handling (complete competence)

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<th>TYPES OF MANEUVERS</th>
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<tr>
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<td>Theory classes: 9h</td>
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**Description:**
- Knowledge of the basic concepts of the main kinds of maneuvers of berthing, unberthing, anchoring and taking tugs in port, according to the type of ship (conventional, with maneuvering thrusters, with two propellers and/or with azipods/waterjets) and the meteorological conditions.
- Knowledge of the basic concepts of man overboard maneuvers, ship to ship and towing at high seas.

**Specific objectives:**
Competence of the STCW Code, Table A-II/1-Manoeuvre the ship: ship manoeuvre and handling (complete competence)
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## COLREGS

**Description:**
- Thorough knowledge of the International Regulations for Preventing Collisions at Sea, 1972, as amended (Rules of the Road or COLREGS).
- Comprehension of the situations that involve a risk of collision; knowledge of the effective and ineffective maneuvers to avoid the risk, and awareness of the importance of the look-out and early identification of risks, in order to make decisions in sufficient time to avoid situations of excessive approximation, in which, all maneuvers to avoid the collision are ineffective.
- Capacitation to analyze and interpret COLREGS in any situation, as well as to analyze cases of collision, detecting the breaches of the Regulations that have been made.

**Specific objectives:**
Competence of the STCW Code, Table A-II/1-Maintain a safe navigational watch: watchkeeping (partial competence):
- Thorough knowledge of the content, application and intent of the International Regulations for Preventing Collisions at Sea, 1972, as amended
- Thorough knowledge of the Principles to be observed in keeping a navigational watch

**Learning time:** 30h
- Theory classes: 30h

## IALA BEACON SYSTEM

**Description:**
- A thorough knowledge of the IALA maritime beacon system

**Learning time:** 6h
- Theory classes: 6h

## INTERNATIONAL CODE OF SIGNALS AND MORSE CODE

**Description:**
- Use of the International Code of Signals, and knowledge of their flags.
- Knowledge of the letters and numbers of Morse code, in order to transcribe short messages from Morse to clear and vice versa, in writing and by luminous signals.

**Specific objectives:**
Competence of the STCW Code, Table A-II/1-Transmit and receive information by visual signalling (complete competence)

**Learning time:** 3h
- Theory classes: 3h
It must be ensured that students have attained the minimum knowledge required by the Seafarers' Training, Certification and watchkeeping (STCW) Code, as amended, part A, table A-II/1, regarding the competences attributed to this subject. Due to the usual percentage assessment does not guarantee this objective, because the total unknowledge of one or more competences can be compensated by a greater knowledge of the rest of them, the evaluation is carried out by geometric weighting instead of arithmetic one, much more reliable to ensure that: by approving the subject, the student is apt in the competencies established in the international convention.

Being:
PM: note of the evaluation of the practices of Maneuver in simulator,
TM: note of the exam of Maneuver theory,
TPM: note of the theoretical-practical exam of Maneuver (written description of complete maneuvers of berthing, unbethring, anchorage, etc., with the possibility of questions about theory),
TM: note of the work in group of Maneuver,
PR: note of the partial exam of Regulations (Rules 3-34 of COLREGS, and Morse/clear transcript and vice versa in writing),
FR: note of the final exam of Regulations (all COLREGS; beaconing; flags and use of the International Code of Signals, and Morse transmitted by light signals) and
CP: note of the practical cases of collision (analysis of real cases of collision);
The final note of the subject is:
Note = PM^0.125 * TM^0.25 * TPM^0.125 * PR^0.167 * FR^0.167 * CP^0.167
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Bibliography

Basic:


Complementary:


