280714 - Navigation Safety Management and Planning

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 742 - CEN - Department of Nautical Sciences and Engineering
Academic year: 2020
Degree: MASTER'S DEGREE IN NAUTICAL SCIENCE AND MARITIME TRANSPORT MANAGEMENT (Syllabus 2016). (Teaching unit Compulsory)
ECTS credits: 5  Teaching languages: Spanish, English

Opening hours
Timetable: Mondays and Fridays, from 1800 to 1930

Degree competences to which the subject contributes

Basic:
CB6. Possess knowledge and understanding that provide a basis or opportunity to be original in the development and/or application of ideas, often in a research context.
CB8. Students should be able to integrate knowledge and handle the complexity of making judgments based on information that, being incomplete or limited, includes reflections on the responsibilities social and ethical linked to the application of their knowledge and judgments.

Specific:
CE9-MNGTM. Conocimiento del comportamiento del buque en la mar y de su maniobrabilidad.
CE11-MNGTM. Conocimiento de oceanografía para el análisis del comportamiento de los buques, que deben ser tenidos en cuenta en la seguridad marítima y la lucha contra la contaminación.
CE4-MNGTM. Gestió i control de seguretat, la Navegació i el Tràfic Marítim.
Learning objectives of the subject

Ensure that the student has the necessary knowledge/skills to elaborate a voyage plan. Further than the concrete knowledge/skills (use of the equipments, correction of charts, etc.), ensure that the student has a global view about how to carry out a voyage plan.

On the other hand, one of the objectives of this subject is provide the knowledge, understanding and proficiency of the competences PLAN A VOYAGE AND CONDUCT NAVIGATION (complete competence: Table A-II/2-1), MAINTAIN THE SAFETY OF NAVIGATION THROUGH THE USE OF ECDIS AND ASSOCIATED NAVIGATION SYSTEMS TO ASSIST COMMAND DECISION MAKING (complete competence: Table A-II/2-7), DETERMINE POSITION AND THE ACCURACY OF RESULTANT POSITION FIX BY ANY MEANS (complete competence: Table A-II/2-2), FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS (part of the competence: table A-II/2-8), competences required and defined in Section A-II/2 (Mandatory minimum requirements for certification of masters and chief mates on ships of 500 GT or more) of the Seafarers' Training, Certification and Watchkeeping (STCW) International Code.

This competence will be evaluated through the simulator NAVIGATION/MANOEUVERING, in accordance of STCW Code.
280714 - Navigation Safety Management and Planning

**Study load**

| Total learning time: 45h | Hours large group: | 45h | 100.00% |
### 280714 - Navigation Safety Management and Planning

#### Content

<table>
<thead>
<tr>
<th>THEME 1: ORGANIZATION, CONTROL AND UPDATING OF THE NAUTICAL CHARTS AND PUBLICATIONS</th>
<th>Learning time: 14h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong> Organization of charts, publications controled on board (sailing directions, lists of lights, lists of radiosignals, tide tables) and publications not controled on board (conventions, ISM and ISPS manuals, other manuals of the company, and other publications). Content and use of the notices to mariners for updating nautical charts and publications controled on board. Inventories and corrections of nautical charts and publications controled on board. How to fill the Log Book y and the Navigation Diary, in relation to the voyage record data (noon position, run distances and times, facts).</td>
<td></td>
</tr>
<tr>
<td><strong>Related activities:</strong> Drawing and selection of routes on paper charts</td>
<td></td>
</tr>
<tr>
<td><strong>Specific objectives:</strong> Ensure that the student has the necessary knowledge/skills to elaborate a voyage plan. Competence of the STCW Code, Table A-II/2-1.2, 1.3: PLAN A VOYAGE AND CONDUCT NAVIGATION; Table A-II/2-2.1.1, 2.1.2: DETERMINE POSITION AND THE ACCURACY OF RESULTANT POSITION FIX BY ANY MEANS; Table A-II/2-8.3: FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THEME 2: KINDS OF ROUTES</th>
<th>Learning time: 25h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong> Overview of kinds of routes: rhumb line, great circle, mix between rhumb line and great circle, other variants of optimization of distances, and notions about the optimum track ship's routeing (OTSR). Manual calculation and by Excel of: distances, courses and longitudes/latitudes of change of chart for the track drawing on charts. Weather routeing, based mainly on information from the pilot charts, Ocean passages for the world, tides tables, tidal currents atlas and general information from sailing directions. (Necessary knowledge/skills in accordance with STCW Code: Forecast weather and oceanographic conditions: Use all appropriate nautical publications on tides and currents)</td>
<td></td>
</tr>
<tr>
<td><strong>Related activities:</strong> Drawing and selection of routes on paper charts</td>
<td></td>
</tr>
<tr>
<td><strong>Specific objectives:</strong> Ensure that the student has the necessary knowledge/skills to elaborate a voyage plan. Competences of the STCW Code, Table A-II/2-1.1, 1.2: PLAN A VOYAGE AND CONDUCT NAVIGATION; Table A-II/2-8.3: FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS.</td>
<td></td>
</tr>
</tbody>
</table>
THEME 3: PLANNING OF A ROUTE

Learning time: 31h
Theory classes: 6h
Self study: 25h

Description:
Voyage planning and navigation for all conditions by acceptable methods of plotting ocean tracks, taking into account, e.g.:
- restricted waters
- meteorological conditions
- ice
- restricted visibility
- traffic separation schemes
- vessel traffic service (VTS) areas
- areas of extensive tidal effects
Routeing in accordance with the General Provisions on Ships’ Routeing.
Reporting in accordance with the General principles for Ship Reporting Systems and with VTS procedures.
(The above knowledge/skills are necessary in accordance with STCW Code: Plan a voyage and conduct navigation)
Track drawing on charts, taking into account the above points, and the themes 1 and 2, moreover of:
- Selection of the charts in the catalogue, according to their scale (this knowledge is necessary in accordance with STCW Code: Determine position and the accuracy of resultant position fix by any means: Position determination in all conditions: (?) including the ability to use appropriate charts, notices to mariners and other publications (?)
- notes from previous voyages.
- monitoring of a route by GPS.
Elaboration of the voyage plan: list of WP, courses, run distances, distances to destination, and other interesting information.

Related activities:
Drawing and selection of routes on paper charts

Specific objectives:
Ensure that the student has a global view about how to carry out a voyage plan, and therefore, his capacity to manage and command of a ship.
Competences of the STCW Code, Table A-II/2-1.1, 1.2: PLAN A VOYAGE AND CONDUCT NAVIGATION; Table A-II/2-2.1.2: DETERMINE POSITION AND THE ACCURACY OF RESULTANT POSITION FIX BY ANY MEANS; Table A-II/2-8.2, 8.3: FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS.
280714 - Navigation Safety Management and Planning

**THEME 4: MONITORING OF A ROUTE BY ECDIS**

<table>
<thead>
<tr>
<th>Learning time: 9h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study: 9h</td>
</tr>
</tbody>
</table>

**Description:**
Management of operational procedures, system files and data, including:
- manage procurement, licensing and updating of chart data and system software to conform to established procedures
- system and information updating, including the ability to update ECDIS system version in accordance with vendor's product development
- create and maintain system configuration and backup files
- create and maintain log files in accordance with established procedures
- create and maintain route plan files in accordance with established procedures
- use ECDIS log-book and track history functions for inspection of system functions, alarm settings and user responses

Use ECDIS playback functionality for passage review, route planning and review of system functions.
(The above knowledge/skills are necessary in accordance with STCW Code: Maintain the safety of navigation through the use of ECDIS and associated navigation systems to assist command decision making)

**Related activities:**
Planning and monitoring of routes by ECDIS

**Specific objectives:**
Competence of the STCW Code, Table A-II/2-7.1, 7.2: MAINTAIN THE SAFETY OF NAVIGATION THROUGH THE USE OF ECDIS AND ASSOCIATED NAVIGATION SYSTEMS TO ASSIST COMMAND DECISION MAKING: 7.1, 7.2;
Table A-II/2-2.1.3: DETERMINE POSITION AND THE ACCURACY OF RESULTANT POSITION FIX BY ANY MEANS.
Application to ECDIS of the knowledge developed in the previous themes.

**Qualification system**

The final qualification is the sum of the following partial qualifications:

\[
Q_{final} = 0.6 \times Q_{fe} + 0.2 \times Q_{ps} + 0.2 \times Q_{ce}
\]

- **Qfinal**: Final qualification
- **Qfe**: Qualification of the final exam
- **Qps**: Qualification of the practices in simulator
- **Qce**: Qualification of the exercises and work in group (continuous evaluation)

**Regulations for carrying out activities**

It is compulsory the realization of the exercises, practices in simulator and a work about the theme 3 (valued within the continuous evaluation) that shall be exposed in class.
Bibliography

Basic:


Complementary:


Others resources:

- Catalogue of British Admiralty Charts and Publications (NP 131)
- British Admiralty Navigational Charts
- British Admiralty Notices to Mariners
- Symbols and Abbreviations used on Admiralty Charts (chart 5011)
- British Sailing Directions (ASD - Pilots)
- British Admiralty List of Lights and Fog Signals (ALL)
- British Admiralty List of Radio Signals (ALRS)
- British Admiralty Tide Tables (ATT)
- The Mariner's Handbook (NP 100)
- Ocean Passages for the World (NP 136)