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

### Degree competences to which the subject contributes

**Basic:**
- CB6. Possess knowledge and understanding that provide a basis or opportunity 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:**
- CE4-MNGTM. Gestió i control de seguretat, la Navegació i el Tràfic Marítim.

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.

CB9. That students can communicate their conclusions and the knowledge and Latest rationale underpinning to specialists and non-specialty clearly and unambiguously

CB10. Students must possess the learning skills that enable them continue studying in a way that will be largely self-directed or autonomous.
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 and the watchkeeping.

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.
## Study load

<table>
<thead>
<tr>
<th>Total learning time: 45h</th>
<th>Hours large group:</th>
<th>45h</th>
<th>100.00%</th>
</tr>
</thead>
</table>
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## Content

<table>
<thead>
<tr>
<th>THEME 1: ORGANIZATION, CONTROL AND UPDATING OF THE NAUTICAL CHARTS AND PUBLICATIONS</th>
<th>Learning time: 27h 47m</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Laboratory classes: 4h</td>
</tr>
<tr>
<td>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).</td>
<td>Self study: 23h 47m</td>
</tr>
<tr>
<td>Content and use of the notices to mariners for updating nautical charts and publications controled on board.</td>
<td></td>
</tr>
<tr>
<td>Inventories and corrections of nautical charts and publications controled on board.</td>
<td></td>
</tr>
<tr>
<td>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>
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</tbody>
</table>

**Related activities:**
- Drawing and selection of routes on paper charts

**Specific objectives:**
- Ensure that the student has the necessary knowledge/skills to elaborate a voyage plan.
- Competence of the STCW Code, Table A-II/2-1.1, 1.2: PLAN A VOYAGE AND CONDUCT NAVIGATION; Table A-II/2-1.3: PLAN A VOYAGE AND CONDUCT NAVIGATION; Table A-II/2-8.3: FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS.

<table>
<thead>
<tr>
<th>THEME 2: KINDS OF ROUTES</th>
<th>Learning time: 33h 20m</th>
</tr>
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<tbody>
<tr>
<td><strong>Related activities:</strong></td>
<td>Self study: 33h 20m</td>
</tr>
<tr>
<td>Drawing and selection of routes on paper charts</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
- 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)

**Related activities:**
- Drawing and selection of routes on paper charts

**Specific objectives:**
- 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.
THEME 3: PLANNING OF A ROUTE

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
- high risk areas

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; Tabla A-II/2-8.2, 8.3: FORECAST WEATHER AND OCEANOGRAPHIC CONDITIONS.
THEME 4: MONITORING OF A ROUTE BY ECDIS

<table>
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<tr>
<th>Learning time: 25h</th>
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<tr>
<td>Laboratory classes: 6h</td>
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<tr>
<td>Self study: 19h</td>
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**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.

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**Qualification system**

The final qualification is the sum of the following partial qualifications:
Qfinal = 0.46*Qfe + 0.54*Qce
Qfinal: Final qualification
Qfe: Qualification of the final exam
Qce: Qualification of the exercises, practices and works (continuous evaluation)
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 Paper Charts (NP 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)