280648 - Maritime Safety & Security

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 742 - CEN - Department of Nautical Sciences and Engineering
Academic year: 2020
Degree: BACHELOR'S DEGREE IN MARINE TECHNOLOGIES (Syllabus 2010). (Teaching unit Compulsory)
BACHELOR'S DEGREE IN NAVAL SYSTEMS AND TECHNOLOGY ENGINEERING (Syllabus 2016). (Teaching unit Compulsory)
ECTS credits: 6
Teaching languages: Spanish

Opening hours
Timetable: It will be attended in person by appointment by sending an email to jmrobledano@fomento.es.

Degree competences to which the subject contributes

Specific:
1. Knowledge, use and application of the ship from the principles of safety and security of the ship, fire fighting and survival, preventing and combating pollution.
2. Knowledge, use and application of the principles of the ship systems and quality management applied to the vessel and safety management audits of the ship.

Transversal:
1. ENTREPRENEURSHIP AND INNOVATION - Level 2. Taking initiatives that give rise to opportunities and to new products and solutions, doing so with a vision of process implementation and market understanding, and involving others in projects that have to be carried out.

Teaching methodology

The teaching methods to be used, according to the defined topics, are summarized below (% in general ECTS time):
- Expository method / Master lesson (20%) 
- Problem-based learning / projects (20%)
- Participatory exhibition class (20%)
- Cooperative learning (10%)
- Autonomous learning by solving exercises and problems and case studies (30%)

Learning objectives of the subject

Assume that the ship’s safety depends not only on its equipment but also on its construction and the people related to it (crews, designers, companies, inspection entities, ...).
Understand, interpret and freely use international conventions and other regulations regarding maritime safety and security.
Differentiate the concept of Safety from the Security and recognize on board the equipment, procedures or facilities related to one or the other.

This course will evaluate the following STCW competences:
1. Use internal communication systems. Operation of all internal communication systems on board.
2. Ensure compliance with pollution- prevention requirements. Prevention of pollution of the marine environment, knowledge of the precautions to be taken to prevent pollution of the marine environment, anti-pollution procedures and all associated equipment, importance of proactive measures to protect the marine environment.
3. Prevent, control and fight fires on board. Fire prevention and fire-fighting appliances, ability to organize fire drills, knowledge of classes and chemistry of fire, knowledge of fire-fighting systems, action to be taken in the event of fire, including fires involving oil systems.
4. Operate life saving appliances. Life-saving, ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their launching appliances and arrangements, and their equipment, including radio life-saving appliances, satellite EPIRBs, SARTs, immersion suits and thermal protective aids.
5. Monitor compliance with legislative requirements. Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and security.
6. Contribute to the safety of personnel and ship. Knowledge of personal survival techniques, knowledge of fire prevention and ability to fight and extinguish fire, knowledge of personal safety and social responsibilities.

At the end of the course the student will show that:
Has extensive knowledge of the safety and security techniques of ships.
Knows the systems of management of the quality and security applied to the ship, as well as of the processes of audit of management of the ship.

| Study load |
|-------------|-------------|-------------|
| **Total learning time:** 150h | Hours large group: 30h | 20.00% |
|  | Hours medium group: 15h | 10.00% |
|  | Hours small group: 0h | 0.00% |
|  | Guided activities: 15h | 10.00% |
|  | Self study: 90h | 60.00% |
## Content

<table>
<thead>
<tr>
<th>OMI. SOLAS. Definitions.</th>
<th>Learning time: 7h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 2h</td>
</tr>
<tr>
<td>Basic working knowledge of the relevant IMO conventions concerning safety of life at sea and protection of the marine environment.</td>
<td>Guided activities: 1h</td>
</tr>
<tr>
<td>(These knowledges are required by the STCW Code on table A-III/1)</td>
<td>Self study: 4h</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Design and construction.</th>
<th>Learning time: 10h</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td><strong>Related activities:</strong></td>
<td>Self study: 6h</td>
</tr>
<tr>
<td>Practice on access to enclosed spaces.</td>
<td><strong>Specific objectives:</strong></td>
</tr>
<tr>
<td><strong>KUPs from the table A-III/1 of the STCW code:</strong></td>
<td>Prevention of pollution of the marine environment. Knowledge of the precautions to be taken to prevent pollution of the marine environment. Anti-pollution procedures and bilge water separator equipment. Importance of proactive measures to protect the marine environment. Fire prevention. Knowledge of the relevant IMO conventions concerning safety and protection of the marine environment on engine room. Knowledge of personal safety. Operation of internal communication systems.</td>
</tr>
</tbody>
</table>
## Prevention, control and fire fighting on board.

**Learning time:** 47h  
- **Theory classes:** 12h  
- **Practical classes:** 10h  
- **Guided activities:** 1h  
- **Self study:** 24h

**Description:**  
The safety precautions to be taken during the guard and the steps to implement immediately in case of fire or accident with particular reference to the fuel.  
**Prevention and Firefighting.**  
**Knowledge of fire prevention.**  
**Ability to organize fire fighting exercises.**  
**Knowledge of the various classes of fires and chemical characteristics.**  
**Knowledge of fire fighting systems.**  
**Measures to take in case of fire including affecting oil systems.**  
**Operation of internal communication systems on board.**  
(These knowledges are required by the STCW Code on table A_III/1).

## Operation of life-saving appliances.

**Learning time:** 29h  
- **Theory classes:** 8h  
- **Practical classes:** 4h  
- **Guided activities:** 1h  
- **Self study:** 16h

**Description:**  
Life saving.  
**Ability to organize abandon ship drills and knowledge of the operation of survival craft and rescue boats, their devices and lowering your organization and equipment including radio life-saving appliances, satellite EPIRBs, SART, immersion suits and thermal protective aids.**  
**Knowledge of survival techniques at sea.**  
**Basic working knowledge of the relevant IMO conventions concerning safety of life at sea.**  
**Knowledge of personal safety and social responsibilities.**  
(These skills are required by the STCW Code on table A-III/1)
### Safety of navigation.

**Learning time:** 6h  
Theory classes: 2h  
Self study: 4h

**Description:**  
SOLAS V and COLREG, ROUTEING, manning.  
What are the traffic separation schemes? How is the minimum safe manning established? What should be the working language? Lights and navigation marks. Course and maneuver rules.

**Specific objectives:**  
KUPs from the table A-III/1 of the STCW code:  
Prevention of pollution of the marine environment. Knowledge of the precautions to be taken to prevent pollution of the marine environment.  
Knowledge of the relevant IMO conventions concerning safety of navigation.  
Knowledge of personal safety.

### Global maritime distress and safety system

**Learning time:** 9h  
Theory classes: 3h  
Self study: 6h

**Description:**  
What is the GMDSS? What the concerning equipment are? IAMSAR and maritime radiocommunications

**Specific objectives:**  
KUPs from the table A-III/1 of the STCW code:  
Knowledge of the relevant IMO conventions concerning safety.  
Knowledge of personal safety.  
Life-saving. Radio life saving appliances, satellite EPIRBs, SARTs.  
Personal survival techniques. Knowledge of personal safety and social responsibilities.
### Security

<table>
<thead>
<tr>
<th>Learning time: 23h</th>
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<tbody>
<tr>
<td>Theory classes: 6h</td>
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<tr>
<td>Practical classes: 5h</td>
</tr>
<tr>
<td>Self study: 12h</td>
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</tbody>
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**Description:**

**Related activities:**
- Security evaluation and preparation of a security plan.

**Specific objectives:**
- KUPs from the table A-III/1 of the STCW code:
  - Knowledge of the relevant IMO conventions concerning security.
  - Knowledge of personal safety.
  - Operation of internal communication systems.
  - Knowledge of personal survival techniques.

### Safety Management onboard: ISM Code

<table>
<thead>
<tr>
<th>Learning time: 13h</th>
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</thead>
<tbody>
<tr>
<td>Theory classes: 4h</td>
</tr>
<tr>
<td>Guided activities: 1h</td>
</tr>
<tr>
<td>Self study: 8h</td>
</tr>
</tbody>
</table>

**Description:**
- INTERNATIONAL SAFETY MANAGEMENT CODE. RISK ANALYSIS.
- What is the objective of the ISM Code? What are its tools? How are risks on board evaluated and barriers established?

**Related activities:**
- Application of the risk matrix.

**Specific objectives:**
- KUPs from the table A-III/1 of the STCW code:
  - Prevention of pollution of the marine environment. Knowledge of the precautions to be taken to prevent pollution of the marine environment. Anti-pollution procedures and associated equipment. Importance of proactive measures to protect the marine environment.
  - Fire prevention and fire-fighting appliances. Action to be taken in the event of fire.
  - Knowledge of the relevant IMO conventions concerning safety management.
  - Knowledge of personal safety and social responsibilities.
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<table>
<thead>
<tr>
<th>Human factor.</th>
<th>Learning time: 6h</th>
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</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Theory classes: 2h</td>
</tr>
<tr>
<td></td>
<td>Self study: 4h</td>
</tr>
</tbody>
</table>

**Specific objectives:**
- Knowledge of the relevant IMO conventions concerning safety management.
- Knowledge of personal safety and social responsibilities.

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<tr>
<th>Guarantee of maritime safety.</th>
<th>Learning time: 3h</th>
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</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Theory classes: 1h</td>
</tr>
<tr>
<td></td>
<td>Self study: 2h</td>
</tr>
</tbody>
</table>

**Specific objectives:**
- Knowledge of the relevant IMO conventions concerning safety inspection and PSC.
- Knowledge of personal safety and social responsibilities.

**Qualification system**

Two or three team works will be proposed during the course. The average grade of these works will represent 50% of the final grade.

There will be an exam with two parts, one problem and a questionnaire whose average grade will be 50% of the final grade.

There will be a visit to a ship during which a photographic album will have to be made, the score of which will increase the final grade by 10%.

\[
N_{as} = N_f + 0.1 \times N_f
\]

\[
N_{as} = \text{note of the subject}
\]

\[
N_f = 0.5 \times N_t + 0.5 \times N_e, \text{ where } N_t = \text{average grade of the works and } N_e = \text{average grade of the exam.}
\]

**Regulations for carrying out activities**

For the works a list with the obligatory content will be provided.
The QUESTIONNAIRE of the exam will have a maximum duration of one hour and will consist of 50 questions. Those questions that no student had answered correctly will not compute.

The PROBLEM will have the maximum duration that is established the same day of the exam and its level will be fixed by its duration: the exercise will be collected ten minutes after the first student finishes.

Any supporting material can be brought the exam.

The re-evaluation exam will consist of carrying out a work.
Bibliography

Basic:


