



| Teaching Guide           |   |        |                       |         |
|--------------------------|---|--------|-----------------------|---------|
| Identifying Data         |   |        |                       | 2020/21 |
| Subject (*)              | Maintenance of the Hull   | Code   | 631510215             |         |
| Study programme          | Mestrado Universitario en Náutica e Transporte Marítimo   |        |                       |         |
| Descriptors              |   |        |                       |         |
| Cycle                    | Period  | Year   | Type                  | Credits |
| Official Master's Degree | 2nd four-month period   | First  | Optional              | 3       |
| Language                 | Spanish   |        |                       |         |
| Teaching method          | Face-to-face  |        |                       |         |
| Prerequisites            |   |        |                       |         |
| Department               | Ciencias da Navegación e Enxeñaría Mariña   |        |                       |         |
| Coordinador              | Pacheco Martínez, Eliseo Antonio  | E-mail | eliseo.pacheco@udc.es |         |
| Lecturers                | Pacheco Martínez, Eliseo Antonio  | E-mail | eliseo.pacheco@udc.es |         |
| Web                      |   |        |                       |         |
| General description      | The main objective of this subject is to provide theoretical knowledge for the maintenance of the structure of the ship using coating systems.  |        |                       |         |
| Contingency plan         | <p>1. Changes in content<br/>No changes will be made.</p> <p>2. Methodologies<br/>* Teaching methodologies that are maintained<br/>Guest lecture / keynote speech<br/>Completion exercises<br/>Supervised projects<br/>* Teaching methodologies that are modified<br/>No changes will be made.</p> <p>3. Mechanisms for personalized attention to students<br/>Teams.<br/>Synchronous tutoring is open at any time, with the limit of the teacher's availability. An attempt will be made to coordinate with the student the time of the tutoring.<br/>E-mail.<br/>The teacher agrees to answer as soon as possible all questions sent asynchronously.<br/>Teacher's office phone.<br/>Extension 4226</p> <p>4. Modifications in the evaluation<br/>No changes will be made.<br/>* Evaluation observations:</p> <p>5. Modifications of the bibliography or webgraphy<br/>No changes will be made.</p> |        |                       |         |

| Study programme competences / results |   |
|---------------------------------------|---|
| Code                                  | Study programme competences / results   |
| A21                                   | Capacidade para identificar danos e defectos, elaborar informes e implantar medidas correctivas.  |
| B2                                    | Capacidade para resolver problemas de forma efectiva.   |
| B12                                   | CB6 -Posuír e comprender coñecementos que aporten unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, a miúdo nun contexto de investigación |
| C2                                    | Capacidade para dominar a expresión e a comprensión de forma oral e escrita nun idioma estranxeiro  |



|    |   |
|----|---|
| C5 | Capacidade para entender a importancia da cultura emprendedora e coñecer os medios ao alcance das persoas emprendedoras                           |
| C6 | Capacidade para valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse. |

| Learning outcomes  |                                       |             |                   |
|--|---------------------------------------|-------------|-------------------|
| Learning outcomes  | Study programme competences / results |             |                   |
| Identify damage to the ship's structure and make reports.  | AJ21                                  | BC2<br>BC12 | CC2<br>CC5<br>CC6 |
| Identify damage to the protective coatings of the ballast tanks, cargo spaces and the structure of the ship, carry out its maintenance and repair. | AJ21                                  | BC2<br>BC12 | CC2<br>CC5<br>CC6 |

| Contents                |  |
|-------------------------|--|
| Topic                   | Sub-topic  |
| 1. Regulations.         | Ship structure. Importance. Damage to the structure.<br>A.1120 (30). Survey Guidelines under the Harmonized System of Survey and Certification (HSSC), 2017<br>A.1049 (27) 2011 ESP Code. MSC.371 (93). Amendments to 2011 ESP Code.<br>MSC / Circ.1117. Guidance for Checking the Structure of Bulk Carriers.<br>Other regulations related to maintenance.  |
| 2. Corrosion.           | Definition.<br>Types of corrosion.<br>ISO 4628/3. Corrosion assessment.<br>Corrosion prevention systems.   |
| 3. Paints.              | Paints: classification by components and by uses.<br>MSC.1 / Circ.1330. Guidelines for maintenance and repair of protective coatings<br>MSC.1 / Circ.1399. Guidelines on Procedures for In-Service Maintenance and Repair of Coating Systems for Cargo Oil Tanks of Crude Oil Tankers<br>MEPC.208 (62). 2011 Guidelines for Inspection of Anti-Fouling Systems on Ships<br>A.798 (19). Guidelines for the selection, application and maintenance of corrosion prevention systems of dedicated seawater ballast tanks.<br>Other guides and circulars. |
| 4. Surface preparation. | Surface preparation.<br>ISO 8501-1<br>Equipment for surface preparation.   |
| 5. Coating Application. | Technical File.<br>Coating scheme.<br>Coating application systems.<br>Coating Inspection: ISO 4628/2, ISO 4628/4, ISO 4628/5   |
| 6. Other Maintenance.   | MSC / Circ.1071. Guidelines for Bulk Carrier Hatch Cover Surveys and Owner's Inspections and Maintenance.<br>MSC.1 / Circ.1331. Guidelines for Construction, Installation, Maintenance and Inspection / Survey of Means of Embarkation and Disembarkation.<br>MSC.1-Circ.1279. Guidelines for corrosion protection of permanent means of access arrangements<br>ILO Convention number 152. Lifting equipment. Arts. 22.2, 23.1, 24.1, 25.1<br>Piping   |



|                     |  |
|---------------------|--|
| 7. Health & Safety. | Occupational Risks Prevention related to Structure Maintenance.  |
| 8. Reports.         | IACS. Surveyor's Glossary Hull Terms & Hull Survey Terms<br>ISO 4618. Paints and Varnishes. Terms and definitions<br>A.741 (18). ISM code<br>MSC.286 (86). Ship Condition Assessment Plan (CAS). |

| Planning                       |                        |                                      |                               |             |
|--------------------------------|------------------------|--------------------------------------|-------------------------------|-------------|
| Methodologies / tests          | Competencies / Results | Teaching hours (in-person & virtual) | Student's personal work hours | Total hours |
| Guest lecture / keynote speech | A21 B12 B2 C2 C5<br>C6 | 21                                   | 21                            | 42          |
| Completion exercises           | A21 B2 B12 C2 C5<br>C6 | 3                                    | 0                             | 3           |
| Supervised projects            | A21 B2 B12 C2 C5<br>C6 | 0                                    | 28                            | 28          |
| Personalized attention         |                        | 2                                    | 0                             | 2           |

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

| Methodologies                  |   |
|--------------------------------|---|
| Methodologies                  | Description   |
| Guest lecture / keynote speech | Presentación oral dos temas que compoñen a materia, buscando tamén a participación activa de todos os alumnos.<br>Os contidos pódense desenvolver en inglés.<br>Será necesaria a asistencia á clase (80%) para ter dereito a avaliación continua.<br>A falla de puntualidade pode ser motivo para non ser aceptado na aula. |
| Completion exercises           | Exame final escrito sobre os conceptos da asignatura.<br>No caso de pedir demostrar o coñecemento na aplicación de certa normativa, se poderá permitir a consulta da mesma no exame.  |
| Supervised projects            | Resumos normativos.<br>Casos sobre organización de inspeccións a bordo.<br>Casos sobre preparación de superficies e esquemas de pintado.  |

| Personalized attention                                |   |
|---|---|
| Methodologies   | Description   |
| Supervised projects<br>Guest lecture / keynote speech | For health safety, as it is impossible to maintain the recommended distances, the following methods will be used for tutoring:<br><br>Teacher's office phone:<br>Extension 4226<br><br>E-mail:<br>The teacher will try to answer all emails as soon as possible.<br><br>Teams<br>The synchronous tutoring schedule must be previously coordinated with the teacher. |

| Assessment |
|------------|
|------------|



| Methodologies        | Competencies / Results | Description  | Qualification |
|----------------------|------------------------|--|---------------|
| Supervised projects  | A21 B2 B12 C2 C5<br>C6 | Normative summaries.<br>Cases on organization of inspections on board.<br>Cases on surface preparation and painting schemes.   | 80            |
| Completion exercises | A21 B2 B12 C2 C5<br>C6 | Final written exam on the concepts of the subject.<br>In the case of asking to demonstrate knowledge in the application of certain regulations, it may be allowed to consult it in the exam. | 20            |

### Assessment comments

The evaluation criteria set out in Table A-III / 2 of the STCW Code, and set out in the Quality Assurance System, will be taken into account when designing and carrying out the evaluation.

### Sources of information

|                      |   |
|----------------------|---|
| <b>Basic</b>         | <ul style="list-style-type: none"> <li>- IACS. (). Rec 87 Guidelines for Coating Maintenance &amp; Repairs for Ballast tanks and Combined Cargo-Ballast tanks on Oil Tankers. .</li> <li>- FROSIO. (2017). Certification Book for Surface Treatment. www.frosiobook.no</li> <li>- CARIDIS, P. (2009). Inspection, Repair and Maintenance of Ship Structures. 2nd ed.. Witherbys. Livingston.</li> <li>- VERVLOESEN, W. (2003). Hatch Cover Inspections. . The Nautical Institute. London.</li> <li>- IMO. (2004). Model course 3.07 plus compendium. Hull and Structural Surveys. .</li> <li>- IMO. (1994). Model Course 2.01. Maintenance Planning and Maintenance Execution. .</li> </ul> |
| <b>Complementary</b> |   |

### Recommendations

#### Subjects that it is recommended to have taken before

#### Subjects that are recommended to be taken simultaneously

Nautical Inspections Management /631510209

#### Subjects that continue the syllabus

#### Other comments

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.