



Teaching Guide				
Identifying Data			2021/22	
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	Freire Piñeiro, Ramon	E-mail	ramon.freire@udc.es	
Lecturers	Freire Piñeiro, Ramon	E-mail	ramon.freire@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</p> <p>No changes will be made.</p> <p>2. Methodologies</p> <p>* Teaching methodologies that are maintained</p> <p>Guest lecture / keynote speech</p> <p>Completion exercises</p> <p>Supervised projects</p> <p>* Teaching methodologies that are modified</p> <p>No changes will be made.</p> <p>3. Mechanisms for personalized attention to students</p> <p>Teams.</p> <p>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.</p> <p>E-mail.</p> <p>The teacher agrees to answer as soon as possible all questions sent asynchronously.</p> <p>Teacher's office phone.</p> <p>Extension 4226</p> <p>4. Modifications in the evaluation</p> <p>No changes will be made.</p> <p>* Evaluation observations:</p> <p>5. Modifications of the bibliography or webgraphy</p> <p>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 BC12 CC2 CC5 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 BC12 CC2 CC5 CC6

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



7. Health & Safety.	Occupational Risks Prevention related to Structure Maintenance.
8. Reports.	IACS. Surveyor's Glossary Hull Terms & Hull Survey Terms ISO 4618. Paints and Varnishes. Terms and definitions A.741 (18). ISM code 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 B2 B12 C2 C5 C6	21	21	42
Completion exercises	A21 B2 B12 C2 C5 C6	3	0	3
Supervised projects	A21 B2 B12 C2 C5 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. Os contidos pódense desenvolver en inglés.
Completion exercises	Exame final escrito sobre os conceptos da asignatura. 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. Casos sobre organización de inspeccións a bordo. Casos sobre preparación de superficies e esquemas de pintado.

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

Assessment			
Methodologies	Competencies / Results	Description	Qualification



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

## 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. <a href="http://www.frosiobook.no">www.frosiobook.no</a></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.