



## Teaching Guide

Identifying Data					2022/23
Subject (*)	Ship Damage Stability	Code	730542023		
Study programme	Master Universitario Erasmus Mundus en Sostibilidade e Industria 4.0 aplicada ao Sector Marítimo				
Descriptors					
Cycle	Period	Year	Type	Credits	
Official Master's Degree	1st four-month period	Second	Optional	6	
Language	English				
Teaching method	Face-to-face				
Prerequisites					
Department	Enxeñaría Naval e IndustrialEnxeñaría Naval e Oceánica				
Coordinador	Miguez Gonzalez, Marcos	E-mail	marcos.miguez@udc.es		
Lecturers	Miguez Gonzalez, Marcos Santiago Caamaño, Lucía	E-mail	marcos.miguez@udc.es lucia.santiago.caamano@udc.es		
Web					
General description	The objective of this course is that the students acquire the capabilities needed for understanding the process of damage of a ship or floating structure, including the theoretical basis, the capability of solving practical cases and the knowledge and application basis of contemporary damage stability requirements.				

## Study programme competences

Code	Study programme competences
B7	CG1 ? To display the adequate intercultural competence to successfully navigating within multicultural learning environments and to implement basic management principles suitable for a multicultural working environment.
B8	CG2 ? To express an attitude of intellectual inquisitiveness and open-mindedness.
B11	CG5 ? To have the capability to identify, formulate and solve engineering problems within realistic constraints.
C2	CT2 - Mastering oral and written expression in a foreign language.
C4	CT4 - Acting as a respectful citizen according to democratic cultures and human rights and with a gender perspective.
C6	CT6 - Acquiring skills for healthy lifestyles, and healthy habits and routines.
C7	CT7 -Developing the ability to work in interdisciplinary or transdisciplinary teams in order to offer proposals that can contribute to a sustainable environmental, economic, political and social development.

## Learning outcomes

Learning outcomes	Study programme competences
Knowledge of the basic theoretical concepts in which the analysis of the process of damage of a ship or floating structure is based, including the capability to solve practical cases, together with the knowledge and application basis of contemporary damage stability requirements.	BC6 CC2 BC7 CC4 BC10 CC6 CC7

## Contents

Topic	Sub-topic
Introduction.	Introduction to ship damage stability.
Ship equilibrium after damage.	Lost buoyancy method. Added weight method. Ship longitudinal and transverse equilibrium after damage.
Deterministic damage stability regulations.	Introduction to damage stability regulations. Floodable lengths concept. Damage stability deterministic regulations and criteria.
Probabilistic damage stability regulations. Probability.	Basic concepts of probability.
Probabilistic damage stability regulations. Criteria.	Introduction to probabilistic damage stability regulations. IMO SOLAS. Theoretical concepts.



Probabilistic damage stability regulations. Practical implementation.	Practical implementation and analysis of results of IMO SOLAS damage stability requirements.
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Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student's personal work hours	Total hours
Guest lecture / keynote speech	B7 C2 C4 C6 C7	28	42	70
Mixed objective/subjective test	B8 B11 C2	2	0	2
Oral presentation	B7 B8 B11 C2 C7	1	4	5
ICT practicals	B11	9	13.5	22.5
Supervised projects	B7 B8 B11 C2 C4 C6 C7	5	42.5	47.5
Personalized attention		3	0	3

(\*)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	Oral presentation (using audiovisual material and student interaction) designed to transmit knowledge and encourage learning. Presentations of this type are variously referred to as ?expository method?, ?guest lectures? or ?keynote speeches?.
Mixed objective/subjective test	Mixed test consisting of essay-type and objective test questions. Essay section consists of open (extended answer) questions; objective test may contain multiple-choice, ordering and sequencing, short answer, binary, completion and/or multiple-matching questions.
Oral presentation	Core component of teaching-learning process involving coordinated oral interaction between student and teacher, including proposition, explanation and dynamic exposition of facts, topics, tasks, ideas and principles.  In this course, the oral presentation will consist on the presentation of the technical report in front of the rest of students and the professors.
ICT practicals	Practice-based learning method for theoretical subject content using ICT resources (demonstrations, simulations, etc.) ICT is an excellent medium for practical knowledge applications and information processing, and a key aid to student learning and skills development.  In this course, MAXSURF and others will be used to practically evaluate some of the contents described during the theoretical lectures.
Supervised projects	Supervised learning process aimed at helping students to work independently in a range of contexts (academic and professional). Focused primarily on learning ?how to do things? and on encouraging students to become responsible for their own learning.  In this course, the supervised project will consist on a group based technical report based on an assignment done by the professors, and dealing about some of the topics of the course. This report may be presented in front of the rest of students. This fact will be announced in Moodle/Teams at the beginning of the course.

Personalized attention	
Methodologies	Description
Supervised projects Oral presentation Guest lecture / keynote speech	The professors will provide personalized attention to the students both personally and remotely using MS Teams or email.  In this course, this personalized attention will consist on support while developing the supervised projects, the ICT practicals and doubts and questions related to the contents elaborated during the lectures.



Assessment			
Methodologies	Competencies	Description	Qualification
Supervised projects	B7 B8 B11 C2 C4 C6 C7	The qualification of the group based technical report will represent a 60 % of the student's final qualification.	60
Oral presentation	B7 B8 B11 C2 C7	In case the oral presentation is finally programmed, the percentage of its qualification will be a 10 %, including the presentation and the answers to the questions formulated by the professors and other students.  In case the oral presentation is not scheduled, its contribution will be transferred to the other methodologies (35 % Theoretical exam - 65 % Group Based Technical report)	10
Mixed objective/subjective test	B8 B11 C2	The qualification of the theoretical exam of this course will represent a 30 % of the student's final qualification.  It will be necessary to have a grade higher than 4 to pass the course.	30
Others			

Assessment comments
<p>According to the degree regulations, the students will have the opportunity to pass this course in two opportunities (first and second opportunity).</p> <p>In order to pass the course, an overall mark of 5 out of 10 should be obtained by applying the percentages above to each of the methodologies, considering each of them evaluated in a scale from 0 to 10.</p> <p>At the beginning of the course, dates for presenting the technical reports and doing the oral presentation will be published in Moodle/ MS Teams.</p> <p>In the second opportunity, students will be able to repeat the exam and correct/modify the technical reports; however, in order to pass the course, both the technical report and the oral presentation should have been done in any case fulfilling the prescribed deadlines set during the course.</p> <p>General EMJMD Sustainable Ship and Shipping SEAS 4.0 evaluation rules:</p> <ul style="list-style-type: none"> <li>- Students will have only two opportunities to pass a course. If failing to do so, they may be forced to leave the degree.</li> <li>- No part time or lecture attendance exemptions are allowed in this degree.</li> </ul>

Sources of information	
Basic	- Tupper, E. C., Rawson, K. J. Basic ship theory, combined volume. Butterworth-Heinemann. 2001.- Lewis, E. V. Principles of naval architecture second revision: stability and strength. SNAME. Jersey.1988.- Biran, A., Lopez Pulido, R. Ship hydrostatics and stability. Butterworth-Heinemann. 2013.- Garcia Lena, J.L., de Juana Gamo, J. El nuevo marco legislativo internacional de estabilidad en averías. SOLAS 2009. Ministerio de Fomento. 2009.- Belenky, Sevastianov. Stability and Safety of Ships. Society of Naval Architects and Marine Engineers (SNAME). 2007. - IMO. MSC.1/Circ.1226. International Maritime Organization. 2007. - IMO. RESOLUTION MSC.216(82). International Maritime Organization. 2006.
Complementary	

Recommendations
Subjects that it is recommended to have taken before



Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

Masters Dissertation/730542032

Other comments

To help in achieving a sustainable environment and to get the objective of number 5 action of the "Ferrol Green Campus Action Plan" (Healthy and environmental and socially sustainable research and teaching): The assignments to be done in this course:- Will be required in digital format.- Will be delivered using Moodle, with no need to print them. In case it is necessary to print them:- Plastics won't be used.- Two side printing will be used.- Recycled paper will be used.- Printing drafts will be avoided. A sustainable use of the resources should be done, together with the prevention of negative impacts on the environment.&nbsp;

(\* )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.