



Teaching Guide

Teaching Guide				
Identifying Data				2023/24
Subject (*)	Special Cargoes Transport		Code	631G01401
Study programme	Grao en Náutica e Transporte Marítimo			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	1st four-month period	Fourth	Optional	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Ciencias da Navegación e Enxeñaría Mariña			
Coordinador	Pérez Canosa, José Manuel	E-mail	jose.pcanosa@udc.es	
Lecturers	Pérez Canosa, José Manuel	E-mail	jose.pcanosa@udc.es	
Web	https://nauticaemaquinas.udc.es/es/etsnm-2/			
General description	Complementary subject of Cargo Stowage (3rd year of Degree) with the purpose of training students in all aspects related to loading, unloading, stowage, cargo lashing and safe transport of goods on ships.			

Study programme competences

Code	Study programme competences
A22	Cargar, manipular e estibar do xeito axeitado as diferentes mercadorías transportables nun buque.
A23	Asegurar o cumprimento das prescricións sobre prevención da contaminación.
A27	Controlar o cumprimento das prescricións lexislativas.
A29	Responder correctamente ás diferentes situacións de emerxencia.
A31	Transporte de cargas perigosas.
A32	Controlar o asentado, a estabilidade e os esforzos.
A33	Protexer o medio mariño e aplicar criterios de sostibilidade ambiental ao transporte marítimo.
A39	Ser capaz de inspeccionar y elaborar informes sobre defectos y daños a los espacios de carga, escotillas y tanques de lastre.
B1	Aprender a aprender.
B2	Resolver problemas de xeito efectivo.
B3	Aplicar un pensamento crítico, lóxico e creativo.
B4	Comunicarse de xeito efectivo nun ámbito de traballo.
B5	Traballar de forma autónoma con iniciativa.
B6	Traballar de forma colaboradora.
B9	Capacidade para interpretar, seleccionar e valorar conceptos adquiridos noutras disciplinas do ámbito marítimo, mediante fundamentos físico-matemáticos.
B10	Versatilidade.
B11	Capacidade de adaptación a novas situacións.
B12	Uso das novas tecnoloxías TIC, e de Internet como medio de comunicación e como fonte de información.
B13	Comunicar por escrito e oralmente os coñecementos procedentes da linguaxe científica.
B15	Capacidade para adquirir e aplicar coñecementos.
B16	Organizar, planificar e resolver problemas.
C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacións (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C7	Asumir como profesional e cidadán a importancia da aprendizaxe ao longo da vida.
C8	Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.
C13	Que os estudantes posúan as habilidades de aprendizaxe que lles permitan continuar estudando dun modo que haberá de ser en grande medida autodirixido ou autónomo.

Learning outcomes



Learning outcomes	Study programme competences		
Knowledge of special transport ships: reefer ships, container ships, ro-ro cargo ships, lumber ships and bulk carriers.	A22 A23 A27 A29 A31 A32 A33 A39	B1 B2 B3 B4 B6 B10 B15 B16	C3 C7 C8 C13
knowledge of regulations, codes and other international standards on the safe handling, stowage and transport of goods.	A22 A23 A31 A33	B2 B15 B16	
Planning and stowage criteria: Preparation of stowage cargo plans	A22 A32 A33	B2 B9 B16	C3 C7 C8
Stowage and lashing of heavy cargoes	A22 A27 A32	B2 B3 B4 B6 B9 B11 B16	C3
Calculation of cargo to be loaded and put the ship in drafts	A22 A31 A32	B2 B5 B6 B12 B16	C3
Ability to carry out inspections of the ship's spaces and structure, detect damage and make the corresponding reports on the status of the protective coating and structural damage	A27 A39	B2 B13 B15 B16	C3

Contents	
Topic	Sub-topic



1. GRAIN CARGOES	Introducción Código internacional para o transporte de grao Ángulo de reposo Buques para o transporte de grao Documento de autorización Cálculo doss momentos escorantes supostos Exemplo de determinación do momento volumétrico escorante suposto nunha adega chea Prescripcíons sobre estabilidade Estiba de grao a granel Métodos para reducir o momento escorante Planificación e control das operacións de carga e descarga Obtención dos momentos escorantes supostos para diferentes estibas Cálculo de estabilidade para os buques que transporten graos a granel Procededementos seguros de manipulación, estiba e suxeción da carga, incluídas as cargas sólidas a granel, e a súa influencia na seguridade da vida humana e do buque. Precaucións que deben tomarse para evitar a contaminación do medio mariño
2. CARGO STOWAGE AND LASHING	Forzas que se orixinan no transporte de mercadorías por mar Compoñentes dunha trínca Forza de fricción ou rozamento Métodos de trincaxe Determinación da resistencia dos dispositivos de suxeción Camas de estiba Convenios da OMI relativos a seguridade da vida humana no mar e a protección do medio mariño. O Código CSS Suxeción de cargas non normalizadas Método empírico de trincaxe Método de cálculo avanzado Método alternativo: equilibrio de forzas Manual de suxeción da carga Estiba y suxeción de tubarías de gran diámetro na cuberta Outros métodos de trincaxe Coñecemento dos efectos da carga, incluídas as cargas pesadas, na navegabilidade e estabilidade do buque. Procededementos seguros de manipulación, estiba e suxeción da carga e a súa influencia na seguridade da vida humana e do buque



3. WOODEN CARGO AND OTHER FOREST PRODUCTS	Cargamentos de madeira Propiedades da carga Principios de estiba e suxeción Medios de suxeción Estiba de troncos, postes e trozas Estiba de madeira aserrada solta ou en fardos Métodos alternativos de suxeción da cubertada Precaucións durante o viaxe Estabilidade Estiba de rolos de papel Carga de balas Líñas de carga para o transporte de madeira na cuberta Cálculo da carga máxima a embarcar na cuberta
4. REEFER SHIPS AND PERISHABLE GOODS	Buques frigoríficos Sistemas de refrixeración Transporte de mercadorías perecedeiras Control de atmósferas Transporte de cargas refrixeradas en contenedores Preparación das adegas dun buque reefer Estiba de cargas refrixeradas Cuidados da carga Temperaturas recomendadas de transporte
5. CONTAINER SHIPS	O contenedor: introducción Dimensións e características dos contenedores Tipos de contenedores Buques portacontenedores Tipos de buques portacontenedores Planos de estiba Elementos de trincaxe dos contenedores Trincaxe de contenedores Forzas e tipos de fallos no trincaxe Principios de estiba Navegación con mal tempo nun buque portacontenedores
6. RO-RO SHIPS AND RO-RO CARGOES	Desenvolvemento do buque ro-ro O buque ro-ro Tipos de buques ro-ro O buque car carrier Rampas de acceso Utilaxe ro-ro Equipos para o manexo e a estiba da carga O AGV IPSI Normas xerais para o transporte de vehículos Estiba e trincaxe de automóbiles Estiba e trincaxe de vehículos pesados Diagramas de trincaxe para buques que realicen viaxes curtas Precaucións para a protección e seguridade dos pasaxeiros en situacións de emerxencia



7. PROBLEMS / PRACTICAL EXERCISES	Resolución de problemas de carga relacionados co programa: Determinación da carga a embarcar e o reparto da carga para deixar o buque en calados. Cálculos de trincaxe da carga nas adegas e na cuberta polo método avanzado e o alternativo. Cálculos de trincaxe de tubarías de gran tamaño na cubierta. Cálculos da máxima carga de madeira a embarcar na cubierta. Cálculos de graos
The development and passing of these contents, together with those corresponding to other subjects that include the acquisition of specific competencies of the degree, guarantee the knowledge, understanding and sufficiency of the competencies listed in table AII / 2, of the STCW Convention, related to the management level of First Officer of Merchant Ships, without limitation of gross tonnage and Captain of Merchant Ships up to a maximum of 3000 GT.	Table A-II / 2 of the STCW Convention. Specification of the minimum competition rules applicable to captains and first officers of gross tonnage vessels equal to or greater than 500 GT.

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A39 A33 A32 A31 A29 A27 A23 A22 B16 B15 B13 B12 B11 B10 B9 B6 B5 B4 B3 B2 B1 C3 C7 C8 C13	30	30	60
Objective test	A39 A33 A32 A31 A29 A27 A23 A22 B2 B5	4	0	4
Case study	A22 A32 B2 B3 B4 B5 B6 B9 B12 B16 C3	30	50	80
Personalized attention		6	0	6
(*)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	Presentation of each of the topics with the support of Tics, when deemed necessary. As a complement to the theoretical classes, different loading and stowage calculation problems are presented in different ship models and with different goods, as well as lashing calculations.
Objective test	The theoretical objective test will consist of a series of questions, between 10 and 20, of conceptual development on the subjects taught in class and on which students will be provided with sufficient material to pass. The test will also include the resolution of one to three problems (practical exercises) of loading, stowage and lashing calculations of the same type as those solved in class.
Case study	Resolution of different loading, stowage and lashing calculations with different types of goods and vessels. Students will have to solve the problems proposed by the teacher in order to apply theoretical knowledge in a practical way and/or using software.

Personalized attention	
Methodologies	Description



Case study	During the tutoring timetable set by the Nautical School, and also on any other date previously agreed between the students and the teacher. Tutorials can be face-to-face or telematic (Teams).
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Assessment			
Methodologies	Competencies	Description	Qualification
Objective test	A39 A33 A32 A31 A29 A27 A23 A22 B2 B5	It will be the result of the averages obtained in the partial tests (if any) and/or the final test. Objective written test to assess knowledge and understanding of the basic contents of the subject, considering the students' skills and abilities, and their strategies and formulations in problem solving. It may combine different types of questions and problems. Each partial test (P1 and P2) will be worth 50%. The final grade will be the result of the averages obtained in the partial tests and/or the final test, being necessary to pass the subject to obtain a minimum grade of 5.0 in each of the tests. Objective written test. This will be compulsory for those students who do not participate or do not pass the assessment during the course. It allows to evaluate and check the expected results in terms of the overall content of the subject and to verify the degree of achievement of the proposed objectives. The overall final exam, as a single assessment, will consist of a test composed of a theoretical part and a problem-solving part with independent assessment, being necessary to obtain a minimum of 5.0 points in each: a) theoretical (50%); b) practical (50%).	50
Case study	A22 A32 B2 B3 B4 B5 B6 B9 B12 B16 C3	The final objective test will consist of solving two loading, stowage and lashing calculations (with different types of goods and vessels), similar to those solved in class. It will be compulsory for students who do not pass the evaluation of problem solving per course, if they have done so	50
Others			

Assessment comments
Finalexam: The objective written test will be compulsory for those students who havenot participated in or passed the continuous evaluation of the subjectthroughout the course. The global final exam, as a single evaluation, willconsist of a test consisting of a theoretical part and a problem solving partwith independent assessment, being necessary to obtain a minimum of 5 points ineach and an average of 5: a) theoretical 50% ; b) 50% practice. The evaluation criteria contemplated, no cadre A-II / 1 of the STCW Code, and recollection of the Quality Assurance System, will be taken into account at the time of designing and carrying out the evaluation.Or students with part-time dedication recognition and academic exemption from attendance exemption, secondly, it establishes "NORM THAT REGULATES OR RULES OF DEDICATION TO OR STUDY OF TWO STUDENTS FROM GRAO NA UDC (Arts. 2.3; 3.b; 4.3 e 7.5) (05/04/2017) will be able to carry out partial tests, if you are houbere, if you need to attend or 80% of the classes you attend, always when the teachers are duly informed at the beginning of the course. This student body has different jobs / problems or the length of the course to be exhibited during the timetable. Fraudulent performance of assessment tests or activities, once verified, will directly lead to a failing grade in the exam session in which it is committed: the student will be graded with a "fail" (numerical grade 0) in the corresponding exam session of the academic year, whether the fault is committed at the first or second opportunity. For this, the student's grade will be modified in the first opportunity report, if necessary.

Sources of information



Basic	Estiba de Cargas Sólidas, Felipe Louzán, Cartamar, A Coruña, 2016. Código internacional para la construcción y el equipo de buques que transportes gases licuados a granel. OMI. Código IMDG, IMO 2018. Código IMSBC, IMO 2018. Código de prácticas de seguridad para la estiba y sujeción de la carga. IMO 2011. Código BLU: Código de prácticas de seguridad de las operaciones de carga y descarga de graneleros. IMO 2011. Manual de estiba de mercancías sólidas. Ricardo González Blanco, Ediciones UPC 2006 Tratado de estiba. Capt. J.B.Costa, Tercera edición, 2008. Cargo work. David J. House, Seventh edition, 2007. Thomas Stowage: The properties and stowage of cargoes, 5th edition. Brown, Son & Ferguson, Ltd. 2008. Hatch Cover Inspections: A Practical Guide. Walter Vervloesem AMNI. The Nautical Institute, 2003. Hatch Covers: Operation, Testing and Maintenance. Mike Wall. Witherby Seamanship International, 2008. Steel: Carriage by Sea, fifth edition. Arthur Sparks & Frans Coppers. Lloyd's Practical Shipping Guides, London 2009. Manejo de cargas: Riesgos y medidas preventivas, 2ª edición. Luis Mª Azcuénaga Linaza. FC Editorial, Madrid 2010. Bulk Carrier Practice, 2nd edition. Captain Jack Isbester. The Nautical Institute, London 2010. Bulk Carrier Notes. Abdul Khaliq. Witherby Seamanship International, 2010. Cargo Notes. Dhananjay Swadi. Witherby Seamanship International, 2005. Cargo Ventilation: A Guide to Good Practice. David Anderson and Daniel Sheard. North of England P&I Association. Newcastle upon Tyne, 2006. Hatch Cover Maintenance and Operation: A Guide to Good Practice, Second Edition. David Byrne. . North of England P&I Association. Newcastle upon Tyne, 2005. Draught Surveys: A Guide to Good Practice. Jim Dibble and Peter Mitchell.. North of England P&I Association 1998. Código de prácticas de seguridad para buques que transporten cubiertas de madera, IMO 1992. Código de prácticas de seguridad para buques que transporten cubiertas de madera, IMO 2011. Cargo Stowage and Securing: A Guide to Good Practice, Second edition. Charles Bliault. North of England P&I Association. Newcastle upon Tyne, 2007. Deck Stowage and Securing of Pipes. Charles Bliault. North of England P&I Association. Newcastle upon Tyne, 2008. Reefer Transport & Technology. Capt. A.W.C. Alders. Rotterdam Marine Chartering Agents B.V., The Neetherlands, 1995. Lashing and Securing of Deck Cargoes, second edition. The Nautical Institute, London 1994. Stability, Trim and Strength for Merchant Ships and Fishing Vessels, second edition. Ian Clark. The Nautical Institute, 2006. El transporte en contenedor. Ricard Mari y Jaime Rodrigo de Larrucea, Marge Books, 2012.
Complementary	

Recommendations

Subjects that it is recommended to have taken before

Ship's Theory I/631G01208

Cargo Stowage/631G01301

Subjects that are recommended to be taken simultaneously

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.