Teaching Guide				
Identifying Data				2023/24
Subject (*)	Maritime Safety and Pollution		Code	631G02259
Study programme	Grao en Tecnoloxías Mariñas			
Descriptors				
Cycle	Period	Year	Type	Credits
Graduate	2nd four-month period	Second	Obligatory	6
Language	SpanishGalician			
Teaching method	Face-to-face			
Prerequisites				
Department	Ciencias da Navegación e Enxeñaría Mariña			
Coordinador	Lama Carballo, Francisco Javier	E-mail	javier.lama@udc.es	
Lecturers	Lama Carballo, Francisco Javier	E-mail	javier.lama@udc.es	
Web				
General description	NORMATIVE. SAFETY ON BOARD. FIRE PREVENTION AND FIGHT. SURVIVAL AT SEA. POLLUTION PREVENTION			

Study programme competences / results	
Code	Study programme competences / results
A4	CE4 - Capacidade de analizar e valorar o impacto social e ambiental das solucións técnicas, así como a prevención de riscos laborais no ámbito da súa especialidade.
A9	CE9 - Realizar informes técnicos de incidentes con incendios, no ámbito da súa especialidade.
A10	CE10 - Observar os procedementos de emerxencia, no ámbito da súa especialidade.
A11	CE11 - Observar prácticas de seguridade no traballo, no ámbito da súa especialidade.
A15	CE15 - Manexar correctamente a información procedente da instrumentación e sintonizar controladores, no ámbito da súa especialidade.
A18	CE18 - Redacción e interpretación de documentación técnica.
A19	CE19 - Coñecer as características e limitacións dos materiais utilizados para a reparación de buques e equipos.
A21	CE37 - Capacidad para ejercer como Oficial de Máquinas de la Marina Mercante, una vez superados los requisitos exigidos por la Administración Marítima.
A24	CE40 - Capacidade para a xestión, dirección, control, organización e planificación de industrias ou explotacións relacionadas coas actividades da enxeñaría mariña tanto en competencias referidas á calidade, medio, seguridade mariña e prevención de riscos laborais como todas as actividades relacionadas coa posta no mercado da súa produción.
A27	CE23 - Aplicar os protocolos de seguridade nos casos de supervivencia.
A28	CE24 - Participar nos plans de coordinación de asistencia médica a bordo dos buques e aplicar os protocolos en caso de accidente e emerxencia médica.
A33	CE25 - Saber especificar os parámetros de operación dos sistemas de seguridade a bordo e os relacionados coa protección ambiental.
A34	CE26 - Asegurar o cumprimento das prescricións sobre prevención da contaminación.
A36	CE28 - Facer funcionar os dispositivos de salvamento.
A37	CE29 - Manter a navegabilidade do buque.
A43	CE31 - Prevención, control e loita contra incendios a bordo.
A48	CE33 - Vigilar el cumplimiento de las prescripciones legislativas.
A59	CE34 - Utilizar os sistemas de comunicación interna
A61	CE36 - Contribuir á seguridade das persoas e do buque
B5	CT5 - Traballar de forma colaboradora.
B6	CT6 - Comportarse con ética e responsabilidade social como cidadán e como profesional.
B8	CT8 - Versatilidade.
B10	CT10 - Comunicar por escrito e oralmente os coñecementos procedentes da linguaxe científica.

B11	CT11 - Capacidade para resolver problemas con iniciativa, toma de decisións, creatividade, razoamento crítico e de comunicar e transmitir coñecementos habilidades e destrezas.
C3	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.
C6	C6 - Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C12	CB4 - Poder transmitir información, ideas, problemas e solucións a un público tanto especializado como non especializado.
C13	CB5 - Ter desenvolvido aquelas habilidades de aprendizaxe necesarias para emprender estudos posteriores con un alto grao de autonomía.

Learning outcomes			
Learning outcomes	Study programme competences / results		
Control good practices of safety and health at work. Being able to respond to the different emergency situations that can occur on board, related to maritime safety and pollution prevention.	A4 A9 A10 A11 A15 A18 A19 A21 A24 A27 A28 A33 A34 A36 A37 A43 A48 A59 A61	B5 B6 B8 B10 B11	C3 C6 C12 C13

Contents	
Topic	Sub-topic
The development and overcoming of these contents, together with those corresponding to other subjects that include the acquisition of specific competencies of the degree, guarantees the knowledge, comprehension and sufficiency of the competencies contained in Table AIII / 2, of the STCW Convention, related to the level of management of First Engineer Officer of the Merchant Navy, on ships without power limitation of the main propulsion machinery and Chief Engineer officer of the Merchant Navy up to a maximum of 3000 kW.	Table A-III / 2 of the STCW Convention. Specification of the minimum standard of competence for Chief Engineer Officers and First Engineer Officers on ships powered by main propulsion machinery of 3000 kW or more.

BASIC TRAINING IN SAFETY	Types of emergency situations that can occur, such as collisions, fires, or sinking Types of life-saving devices normally carried on ships. Survival Craft Equipment Location of personal lifesaving devices Principles related to survival, including: .1 usefulness of training and exercises .2 personal protective clothing and equipment .3 need to be prepared for any emergency .4 steps to take when called to survival craft stations .5 actions to be taken when requested to abandon ship .6 actions to take when in the water .7 actions to be taken on board the craft survival .8 main dangers for survivors Organization of fire fighting on board Location of fire-fighting devices and escape routes in case of emergency Elements of fire and explosion (the fire triangle) Types and sources of ignition Flammable materials, risk of a fire being produced and spread fire Need for constant vigilance Measures to be taken on board ships Fire and smoke detection, and automatic alarm systems Classification of fires and extinguishing agents that can be used Fire fighting equipment and its location on board Instruction in: .1 fixed installations .2 fire fighting equipment .3 personal equipment .4 fire fighting devices and equipment .5 fire fighting methods .6 fire fighting officers .7 fire fighting procedures .8 use of respiratory equipment for fire fighting and rescue operations Comply with emergency procedures Take precautions to prevent pollution of the marine environment. Observe safe work practices Contribute to communications on board the ship being effective and good Take immediate action in the event of an accident or other type of medical emergency

Understand and adopt the necessary measures to control the fatigue

SURVIVAL CRAFT AND RESCUE BOATS (NOT FAST)	1.- TAKE CHARGE OF A SURVIVAL VESSEL OR RESCUE BOAT, DURING AND AFTER LAUNCHING 2.- HANDLING THE ENGINE OF A SURVIVAL BOAT 3.- ORGANIZE THE SURVIVORS AND THE SURVIVAL VESSEL AFTER LEAVING THE SHIP. 4.- USE LOCATION DEVICES: COMMUNICATIONS EQUIPMENT, SIGNALING AND PYROTECHNICAL SIGNALS 5.- PROVIDE FIRST AID TO SURVIVORS.
ADVANCED TRAINING IN FIRE FIGHTING (For students who opt for this certificate)	1.- CONTROL OF FIGHTING OPERATIONS C.I. ORGANIZATION OF THE FIGHT C.I. 2.- INSPECTION AND MAINTENANCE OF THE FIRE DETECTION AND EXTINGUISHING SYSTEMS AND EQUIPMENT 3.- INVESTIGATION AND COLLECTION OF REPORTS ON INCIDENTS IN WHICH THEY OCCUR
MARINE POLLUTION	MARPOL ANEX I ANEX II ANEX III ANEX IV ANEX V ANEX VI

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A4 A9 A10 A11 A15 A18 A19 A21 A24 A27 A28 A33 A34 A36 A37 A43 A48 A59 A61 B5 B6 B8 B10 B11 C3 C6 C12 C13	30	65	95
Laboratory practice	A4 A9 A10 A11 A15 A18 A19 A21 A24 A27 A28 A33 A34 A36 A37 A43 A48 A59 A61 B5 B6 B8 B10 B11 C3 C6 C12 C13	30	10	40
Objective test	A4 A9 A10 A11 A15 A18 A19 A21 A24 A27 A28 A33 A34 A36 A37 A43 A48 A59 A61	9	0	9
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	Oral presentation complemented by the use of audiovisual media and the introduction of some questions addressed to students, in order to transmit knowledge and facilitate learning. The master class is also known as a conference", "expository method" or "master lesson". This last modality seems to be reserved for a special type of lesson given by a teacher on special occasions, with a content that supposes an original elaboration and based on the almost exclusive use of the word as a means of transmitting information to the audience.
Laboratory practice	Practices in the UDC nautical installations, practices in boats and C.I. Activities developed in an external context to the university academic environment
Objective test	.

Personalized attention	
Methodologies	**Description**
Objective test Guest lecture / keynote speech Laboratory practice	Personalized attention will be provided during tutoring hours

Assessment			
Methodologies	**Competencies / Results**	**Description**	**Qualification**
Objective test	A4 A9 A10 A11 A15 A18 A19 A21 A24 A27 A28 A33 A34 A36 A37 A43 A48 A59 A61	Final exam (it is necessary to pass it to take into account the other methodologies)	100
Guest lecture / keynote speech	A4 A9 A10 A11 A15 A18 A19 A21 A24 A27 A28 A33 A34 A36 A37 A43 A48 A59 A61 B5 B6 B8 B10 B11 C3 C6 C12 C13	Class attendance	0
Laboratory practice	A4 A9 A10 A11 A15 A18 A19 A21 A24 A27 A28 A33 A34 A36 A37 A43 A48 A59 A61 B5 B6 B8 B10 B11 C3 C6 C12 C13	Mandatory to pass them to do average	0

Assessment comments

To pass the subject by continuous assessment, the minimum attendance at the master sessions will be 80%.To pass the subject by continuous assessment, the minimum attendance at the compulsory practices will be 100%.The obligatory practices of the subject, along with passing the rest of the methodologies, are associated with obtaining the following certificates: Basic Training in Safety and Survival Craft and Non-Fast Rescue Boats. To obtain these certificates, it will also be mandatory to carry out 100% of these practices.The mandatory practices consist of 30 contact hours, 40 hours in total, as can be seen in step 4. Of these 30 contact hours, 8 hours correspond to Basic Fire Fighting.The Advanced Fire Fighting Course is presented as an elective for students and consists of 33 H. Students who wish to obtain this Certificate must complete the remaining 25 H of the course and that are out of planning.To do media you have to overcome all methodologies. The evaluation criteria contemplated in tables A-III/1 and A-III/3 of the STCW Code, and included in the Quality Assurance System, will be taken into account when designing and carrying out the evaluation. THE SURVIVAL PRACTICES IN ITS ENTIRETY ARE MANDATORY TO PASS THE SUBJECT. THE FIRE FIGHTING PRACTICES CORRESPONDING TO BASIC TRAINING ARE MANDATORY TO PASS THE SUBJECT.Students with recognition of part-time dedication and academic exemption from attendance exemption, second establishes the "RULE THAT REGULATES THE REGIME OF DEDICATION TO THE STUDY OF UNDERGRADUATE STUDENTS AT UDC (Articles 2.3; 3. b; 4.3 and 7.5) (05/04/2017) may take the partial tests, if necessary, without having to attend 80% of the face-to-face classes, as long as the teachers are duly informed at the beginning of the course. These students may be asked to do different jobs/problems throughout the course to be exposed during lecture hours.Due to the very nature of the practices, which are not recoverable, no academic waiver is contemplated for their evaluation.The fraudulent performance of tests or assessment activities will involve the qualification of suspension in the call when the fault is committed and the student will be qualified with "suspension" (numerical grade 0) in the corresponding call of the academic year, whether the commission of the fault occurs in first and second chance. For this, your qualification will be modified in the first opportunity report if necessary.

Sources of information	
Basic	SOLAS consolidated edition 2020. Consolidated text of the International Convention for the Safety of Life at Sea, 1974. International Maritime Organization. London. 2020Código internacional de dispositivos de salvamento (Código IDS). Edición 2017. Organización Marítima Internacional. Londres. 2017Código Internacional de Sistemas de Seguridad Contra Incendios (Código SSCI). Edición 2015. Organización Marítima Internacional. Londres. 2016Manual IAMSAR. Vol III. Manual internacional de los servicios aeronáuticos y marítimos de búsqueda y salvamento. Edición 2019. OMI/OACI. Londres/ Montreal. 2019MSC.1/Circ.1182/Rev.1. Guía sobre las Técnicas de Rescate. IMO. 2014MSC.1/Circ.1185/Rev.1. Guía para la Supervivencia en Aguas Frías. IMO. 2012A.918(22) IMO Standard Marine Communication Phrases.Model course 1.19. Proficiency in personal survival techniques. 2019 Edition. International Maritime Organization. London. 2019Model Course 1.20. Fire Prevention and Basic Fire Fighting. 2000 Edition. International Maritime Organization. London. 2001Model Course 1.21. Personal safety and social responsibilities. 2016 Edition. International Maritime Organization. London. 2016 Model course 1.23. Proficiency in survival craft and rescue boats other than fast rescue boats. 2000 Edition. International Maritime Organization. London. 2016Model Course 2.03. Advanced training in fire fighting. 2000 Edition. International Maritime Organization. London. 2001MARPOL edición refundida 2017. Convenio internacional para prevenir la contaminación por los buques. Organización Marítima Internacional. London. 2017

Complementary	Model course 3.05. Survey of fire appliances and provisions. 2004 Edition. International Maritime Organization. London. 2004Model course 3.06. Survey of life-saving appliances and arrangements. 2004 Edition. International Maritime Organization. London. 2004Model course 3.11. Safety investigation into marine casualties and marine incidents. 2014 Edition. International Maritime Organization. London. 2014Model course 1.39. Leadership and teamwork. 2014 Edition. International Maritime Organization. London. 2004 Manual de Formación SOLAS. Dispositivos de salvamento y Técnicas de supervivencia. I.C. Brindle & Co. 2003Manual de Formación Contra Incendios. I.C. Brindle & Co. 2ª Edición. 2011Supervivencia en la mar. Ricard Marí Sagarra, Enrique González Pino. Instituto Social de la Marina. Madrid. 1990Técnicas, sistemas y organización de la prevención, protección y lucha contra incendios en los buques. Ricard Marí Sagarra. Enrique González Pino. Instituto Social de la Marina. Madrid. 1989The Naval Handbook for Ship Fire Fighters. 8th Ed. The Nautical Institute. London. 2006Marine Survival. D.J. House. 3rd Ed. Witherby. Edinburgh. 2011Manual sobre la Contaminación ocasionada por Hidrocarburos. Parte I Prevención. Edición 2011. Organización Marítima Internacional. Londres. 2011.Manual sobre la contaminación ocasionada por hidrocarburos. Parte IV Lucha contra los derrames de hidrocarburos. Organización Marítima Internacional. Londres. 2005. Manual sobre la contaminación ocasionada por hidrocarburos. Parte V Aspectos administrativos de la lucha contra la contaminación por hidrocarburos. Edición 2009. Organización Marítima Internacional. Londres. 2011Model course 1.38. Marine environmental awareness. 2011 Edition. International Maritime Organization. London. 2011

Recommendations
Subjects that it is recommended to have taken before
English/631G02155 Chemistry/631G02157 Naval Construction and Ship Theory/631G02160
Subjects that are recommended to be taken simultaneously
Naval Hygiene and Risks at Work/631G02255
Subjects that continue the syllabus
**Special Maritime Transports and dangerous shipment/631G02358
Other comments

FORMACIÓN BÁSICA EN SEGURIDADE Esta materia inclúe os contidos correspondentes ao curso de especialidade %ou201CFormación básica en seguridade%ou201D (70 h = 45 teóricas   25 prácticas) establecidos na Sección A-VIN/1-2 e B-VIN/1, do STCW 78/95/10, con arranxo aos cursos modelo OMI 1.13, 1.19, 1.20 e 1.21, que se desagregan a continuación segundo a Resolución de 18 de xuño de 2013 da DGMM: 1.1.Módulo de supervivencia no mar en caso de abandono do barco (10 h). 1.2.Módulo de prevención e loita contra incendios e extinción (15 h). 1.4. Módulo de seguridade persoal e responsabilidades sociais (10 h). Para a obtención do certificado de especialidade %ou201CFormación básica en seguridade%ou201D é necesaria a superación desta materia. PRÁCTICAS: Módulo 1.1: 12 h. Realízanse en augas interiores do porto da Coruña (Aula Universitaria). Módulo 1.2: 10 h. Realízanse en instalacións da Armada en Ferrol (Centro Integral de Seguridade Interior %ou2013 CISI). AVANZADO EN LOITA CONTRA INCENDIOS Esta materia inclúe os contidos correspondentes ao curso de especialidade %ou201CAvanzado en loita contra incendios%ou201D (24 h = 12 teóricas   12 prácticas) establecidos na Sección A-VIN/3, do STCW 78/95/10, con arranxo ao curso modelo OMI 2.03, que se desagregan a continuación segundo a Resolución de 18 de xuño de 2013 da DGMM: 1.1Control das operacións de loita contra incendios a bordo. 1.2Organización e capacitación de cuadrillas da loita contra incendios. 1.3Inspección e mantemento dos sistemas e o equipo de detección e extinción de incendios. Para a obtención do certificado de especialidade %ou201CAvanzado en loita contra incendios%ou201D é necesaria a superación desta materia. PRÁCTICAS:20 h. Realízanse en instalacións da Armada en Ferrol (Centro Integral de Seguridade Interior %ou2013 CISI). EMBARCACIÓNS DE SUPERVIVENCIA E BOTES DE RESCATE (NON RÁPIDOS) Esta materia inclúe os contidos correspondentes ao curso de especialidade %ou201CEmbarcaciones de supervivencia e botes de rescate (non rápidos)%ou201D (24 h = 12 teóricas   12 prácticas) establecidos na Sección A-VIN/2, do STCW 78/95/10, con arranxo ao curso modelo OMI 1.23, que se desagregan a continuación segundo a Resolución de 18 de xuño de 2013 da DGMM: 1.1Facerse cargo dunha embarcación de supervivencia ou bote de rescate (non rápido) durante e despois da posta á boia. 1.2Manexar o motor dunha embarcación de supervivencia. 1.3Organizar aos sobreviventes e a embarcación de supervivencia tras abandonar o barco. 1.4Utilizar os dispositivos de localización: equipos de comunicacións, sinalización e sinais pirotécnicos. Para a obtención do certificado de especialidade %ou201CEmbarcaciones de supervivencia e botes de rescate (non rápidos)%ou201D é necesaria a superación desta materia. PRÁCTICAS: 12 h. Realízanse en augas interiores da Ría de Ferrol coa embarcación de supervivencia que ten a Xunta instalada na Estación Naval da Graña da Armada.