



Teaching Guide						
Identifying Data				2022/23		
Subject (*)	Ship Manoeuvering I		Code	631G01207		
Study programme	Grao en Náutica e Transporte Marítimo					
Descriptors						
Cycle	Period	Year	Type	Credits		
Graduate	2nd four-month period	Second	Obligatory	6		
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	<p>The subjects related to the Ship Handling make up a block of essential and exclusive knowledge in the training of a Professional Sailor. It can be said that a trained and experienced Marine is the only person able to predict all the inputs and outputs in the design and development of the Maneuver of a ship.</p> <p>On the other hand, the consequences of a bad decision when executing a Maneuver can be serious and even catastrophic: strandings, collisions, sinking allisions, fires and explosions. An error will involve at least damage to the ship and its economic consequences: costs, P&I, delays, arrests, etc.</p> <p>In all of the above lies the importance of their training.</p> <p>Integrated in the Degree, this subject " Ship Handling I" comprises the basic knowledge of Maneuver, which will be reviewed in more depth in the 3rd year subject " Ship Handling II".</p> <p>In the development of the subject will take into account:</p> <p>STCW 1978, and the 2010 Manila Amendments</p> <p>IMO Model Course 7.03. Officer in Charge of a Navigational Watch</p> <p>IMO Model Course 1.22 Ship Simulator and Bridge Teamwork.</p>					

Study programme competences	
Code	Study programme competences
A10	Redactar e interpretar documentación técnica e publicacóns náuticas.
A14	Planificar e dirixir unha travesía, determinar a situación por calquera medio de navegación, e dirixir a navegación.
A15	Realizar unha garda de navegación segura.
A16	Manter a seguridade da navegación utilizando o radar, a ARPA e os modernos sistemas de navegación para facilitar a toma de decisións.
A17	Adoptar as medidas axeitadas en casos de emerxencias.
A21	Manobrar e gobernar o buque en todas as condicións.
A35	Organizar e dirixir a tripulación aplicando técnicas de liderazgo e de traballo en equipo.
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.
B11	Capacidade de adaptación a novas situacóns.
B14	Capacidade de análise e síntese.
B15	Capacidade para adquirir e aplicar coñecementos.



B16	Organizar, planificar e resolver problemas.
B22	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrentarse.
C3	Utilizar as ferramentas básicas das tecnoloxías da información e as comunicacóns (TIC) necesarias para o exercicio da súa profesión e para a aprendizaxe ao longo da súa vida.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrentarse.
C9	Posuir e comprender coñecementos que aporten unha base ou oportunidade de ser originais no desenvolvemento e/ou aplicación de ideas, a miúdo nun contexto de investigación
C10	Que os estudiantes saibam aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en contornas novas ou pouco coñecidas dentro de contextos más amplas (ou multidisciplinares) relacionados coa súa área de estudo
C11	Que os estudiantes sexan capaces de integrar coñecementos e enfrentarse á complexidade de formular xuízos a partires dunha información que, sendo incompleta ou limitada, inclúa reflexións sobre as responsabilidades sociais e éticas vincelladas á aplicación dos seus coñecementos e xuízos
C13	Que os estudiantes posúan as habilidades de aprendizaxe que lles permitan continuar estudiando dun modo que haberá de ser en grande medida autodirixido ou autónomo.

Learning outcomes			
Learning outcomes		Study programme competences	
Be able to understand the forces over which the manoeuvre operator has control, analysing their influence on the manoeuvre.		A21	B15
Identify critical situations and use available means in order to resolve them effectively.		A17	B3 B11
Handling the vessel in different conditions.		A35	B2 B4 B5 B6
Plan the different manoeuvres and evaluate their execution.		A10 A14 A15 A16	B14 B16 B22
Apply new state-of-the-art technologies in the field of manoeuvring aids.			B1 C3 C9 C11 C13
Operational competencies to manoeuvre the ship: those listed in column two of table A-II/1 of the STCW Convention and the 2010 Manila amendments to the STCW Convention.		A21	B4 C6

Contents	
Topic	Sub-topic
Topic 1. Marlinspike seamanship	Ropes: classification. Materials used in the production of ropes. Rope manufacturing system: splicing, braiding and weaving. Breaking loads and safety. Conservation and handling of ropes. Operations with ropes.
Topic 2. Tackle and Rigging.	Blocks. thimbles, hooks, shackles, turnbuckles, swivels, etc. Rigging. Classification of rigging. Rigging a rig. Laws of rigging balance. Breaking loads of hooks, shackles, etc.
Topic 3. Propellers and Rudders.	Manoeuvrability and steering. Rudder and its effect on the vessel. Turning Circle: definition, phases and parameters. Manoeuvres and procedures for man overboard rescue. Rudder commands. Propeller. Forces and currents generated by the propeller and their effect on the ship. Influence of the type of engine/propeller on the effects on the ship. Orders to the Engine.



Topic 4. Propeller and rudder combined effects.	Combined effect of propeller and rudder of a single propeller dextrorotating and levorotating ship at rest and in motion. Effect of wake current. Combined effect of propeller and rudder on a two-propeller vessel. Turning.
Topic 5. Wind and current. The effects of wind and currents on the way the ship will steer.	Introduction. Wind action on the ship. Importance of the loading condition. Effects of wind on the stationary ship and in motion. Action of current on the ship. Effect of current on the stationary ship and in motion. Importance of shallow waters.
Topic 6. Mooring.	Introduction. Mooring equipment. Winches and capstans. Bits. Chocks, fairleads. Rollers. Mooring lines. Mooring lines.. Mooring procedures Effect of mooring lines on the vessel. Mooring by stern. Making fast on a bit. To single up.
Topic 7. Anchoring.	Anchoring equipment: windlass, anchors, chains, pipe, etc. Terminology used in anchoring operations. Anchoring procedures Anchoring manoeuvres. Choice of anchoring point. Preparations for anchoring. Relationship between depth and cable length. Walking out the anchor. Swinging circle. Bell-ringing. Dropping the anchor. Heaving up the anchor from the bottom. Turns in chains.
Topic 8. Berthing and unberthing in calm conditions.	General: Preparations prior to the manoeuvre. Criteria for berthing at a quay with a single-propeller vessel. Idem. with a two-propeller vessel. Considerations of the manoeuvre according to the side. Departure manoeuvre.
Topic 9. Berthing and unberthing under the influence of wind and current.	Introduction. Speed criteria. Berthing with wind perpendicular to the quay. Idem. with parallel wind to the quay. Need for tug. Mooring with bow/stern current. Need for turning. Entry into docks and locks. Departure manoeuvres in the same conditions.
Topic 10. Navigation in bad weather.	Introduction. Measures to be taken before departure. To haul and brace. Precautions when encountering adverse weather conditions. Enduring bad weather in port. Idem. at sea.
Topic 11. Sailing.	Introduction. Theoretical principles. Apparent and real wind. Sails: nomenclature and classification. Aerodynamics of sails Rigging: nomenclature Manoeuvres with the sails. Types of sailboats. Trimming the sails. How to sail depending on how the wind is received.
Topic 12. Tugs and towing.	Introduction. Towing classification. Port tugs. Types of port tugs. Working methods.
STCW	The development of these topics and subtopics complies with the STCW Convention and its 2010 Manila amendments of table A-II/1 in the following points: The Effects of Various Deadweights, Draughts, Trim, Speed and Under-Keel Clearance on Turning Circles and Stopping Distances Effect of Wind and Current on Ship Handling Manoeuvres for the Rescue of a Person Overboard Proper Procedures for Anchoring and Mooring
The development and passing of these contents, together with those corresponding to other subjects that include the acquisition of specific competences of the qualification, guarantee the knowledge, understanding and sufficiency of the competences included in table AII/2, of the STCW Convention, related to the management level of Chief Mate of the Merchant Navy, without limitation of gross tonnage and Master of the Merchant Navy up to a maximum of 3,000 GT.	Table A-II/2 of the STCW Convention. Specification of minimum standards of competence for masters and chief mates on ships of 500 GT and above.

Planning

Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A10 A14 A15 A16 A17 A21 A35	30	54	84



Workshop	B1 B2 B3 B4 B5 B6 B11 B14 B15 B16 B22 C3 C6 C9 C10 C11 C13	24	36	60
Mixed objective/subjective test	A10 A14 A15 A16 A17 A21 A35 B1 B2 B3 B4 B5 B6 B11 B14 B15 B16 B22 C3 C6 C9 C10 C11 C13	4	0	4
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	Exposición oral, complementada co uso de medios audiovisuais e a introdución de algunas preguntas dirixidas aos estudiantes, de cada un dos temas que conforman o programa ao obxecto de que os alumnos adquiran os coñecementos básicos sobre a manobra do buque, coa finalidade de transmitir coñecementos e facilitar a aprendizaxe.
Workshop	Modalidade formativa orientada á aplicación de aprendizaxes na que se poden combinar diversas metodoloxías/probas (exposicións, simulacións, debates, solución de problemas, prácticas guiadas, etc) a través da que o alumnado desenvolve tarefas eminentemente prácticas sobre un tema específico, co apoio e supervisión do profesorado. Como obradoiros específicos poderanse incluir clases de nós, prácticas no simulador de manobra e prácticas no barco Breogán.
Mixed objective/subjective test	Proba que integra preguntas tipo de probas de ensaio e preguntas tipo de probas obxectivas. En tanto a preguntas de ensaio, recolle preguntas abertas de desenvolvemento. Ademais, en tanto preguntas obxectivas, pode combinar preguntas de resposta múltiple, de ordenación, de respuesta breve, de discriminación, de completar e/ou de asociación.

Personalized attention	
Methodologies	Description
Guest lecture / keynote speech	Face-to-face. During tutorial hours, in accordance with current health regulations.
Workshop	Teams.
Mixed objective/subjective test	Synchronous tutoring will depend on the availability of the teacher. Email. The lecturer will try to respond as soon as possible to all questions sent asynchronously. For "Students with recognition of part-time dedication and academic dispensation of exemption from attendance", the lecturer may offer the possibility of online tutorials.

Assessment			
Methodologies	Competencies	Description	Qualification
Workshop	B1 B2 B3 B4 B5 B6 B11 B14 B15 B16 B22 C3 C6 C9 C10 C11 C13	Demostración do coñecemento dos nós básicos de forma práctica, así como a asistencia proactiva ás prácticas no simulador e no buque Breogán (se as houber).	10



Mixed objective/subjective test	A10 A14 A15 A16 A17 A21 A35 B1 B2 B3 B4 B5 B6 B11 B14 B15 B16 B22 C3 C6 C9 C10 C11 C13	Proba que integra preguntas tipo de probas de ensaio e preguntas tipo de probas obxectivas. En tanto a preguntas de ensaio, recolle preguntas abertas de desenvolvemento. Ademais, en tanto preguntas obxectivas, pode combinar preguntas de resposta múltiple, de ordenación, de resposta breve, de discriminación, de completar e/ou de asociación.	90
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Assessment comments

Para ter o dereito a avaliación

continua, será necesario como mínimo un 80% da asistencia ás clases presenciais.

Durante a Avaliación Continua

realizaranse unha ou varias Proba Mixtas sobre os temas do contido da materia.

A nota final da Proba Mixta será a media das diferentes Probas Mixtas que se poidan desenvolver durante o curso. Para que estas probas fagan media entre se será necesario unha nota mínima de 4 en cada unha. Tanto se se realizan varias Probas Mixtas ou soamente realiza unha, a media daquelas, ou a nota desta, será o 90% da cualificación da Avaliación Continua.

O 10% restante consistirá nunha

proba para demostrar o coñecemento dos nós básicos de forma práctica, así como a asistencia proactiva ás prácticas no simulador e no buque Breogán (se as houber).

En calquera caso, a proba de nós é

eliminatoria, sendo necesario superala para aprobar a materia.

O alumnado con recoñecemento de

dedicación a tempo parcial e dispensa académica de exención de asistencia (segundo establezase na correspondente normativa da UDC), poderá acollerse á Avaliación Continua sen necesidade de asistir o 80% das clases presenciais.

Para iso, estes/as alumnos/as informarán debidamente o profesor, ao principio do curso, da devandita situación de dispensa académica e así como da súa disponibilidade horaria de asistencia. O profesor acordará individualmente con este alumnado metodoloxías para compensar a non asistencia ás clases presenciais.

O alumnado que non siga o curso

presencial (asistencia menor do 80%), ou que non superase a Avaliación Continua, poderase presentar ás convocatorias finais de maio e xullo. A avaliación destas convocatorias consistirá nunha Proba Mixta que poderá constar de preguntas teóricas e de preguntas sobre aplicacións prácticas da materia. Os contidos destas Probas Mixtas poderán abracer calquera contido da materia.

Como na Avaliación Continua, tamén

se realizará unha proba de nós, que será eliminatoria, sendo necesario superala para aprobar a materia.

Espérase un comportamento ético o

longo do curso. O uso de equipos ou materiais non permitidos nos exames, copiar as respostas por algún medio non autorizado ou o plaxio conllevarán unha nota de 0 na avaliação final da materia.

Os criterios de avaliação cumpren cos contemplados nos cadros A-II/1 do Código STCW e as súas emendas relacionados con esta materia

Sources of information



Basic	<ul style="list-style-type: none">- Ardley, R.A.B. (1959). Pilotaje en puerto. Madrid: Ediciones Garriga.- Barbudo Escobar, Ignacio (2004). Tratado de maniobra. Tomo I Fundamentos de maniobra. Tomo II Maniobras a bordo y en la mar. Madrid: Fragata- House, David (2007). Ship handling: theory and practice. 1st ed. Boston: Elsevier- Mari Sagarra, Ricard (1999). Maniobra de los buques. 3ª ed. Barcelona: Ediciones UPC
Complementary	

Recommendations

Subjects that it is recommended to have taken before

Naval Construction/631G01105

Subjects that are recommended to be taken simultaneously

Navigation I/631G01202

Ship's Energy and auxiliary systems/631G01204

Maritime Technical English/631G01275

Subjects that continue the syllabus

Nautical simulation/631G01402

Ship Manoeuvering II/631G01309

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.