



## Teaching Guide

Identifying Data					2022/23
Subject (*)	Ship Manoeuvring II	Code	631G01309		
Study programme	Grao en Náutica e Transporte Marítimo				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	1st four-month period	Third	Optional	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&amp;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 II" is the deepening of the basic knowledge acquired in the subject of 2nd year "Ship Handling I", and aims to give the student a solid foundation for the subjects "Nautical Simulation" (4th year) and "Advanced Ship Handling ?(Master).</p> <p>In the development of the subject will take into account:</p> <ul style="list-style-type: none"> <li>STCW 1978, and the 2010 Manila Amendments</li> <li>IMO Model Course 1.22 Ship Simulator and Bridge Teamwork.</li> <li>IMO Model Course 7.01 Master and Chief Mate</li> <li>IMO Model Course 7.03. Officer in Charge of a Navigational Watch</li> </ul>				

## Study programme competences

Code	Study programme competences
A10	Redactar e interpretar documentación técnica e publicacións 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.
A17	Adoptar as medidas axeitadas en casos de emerxencias.
A19	Utilizar as frases normalizadas da OMI para as comunicacións marítimas, e emprego do inglés falado e escrito.
A21	Manobrar e gobernar o buque en todas as condicións.
A30	Utilizar os telemandos das instalacións de propulsión e dos sistemas e servizos de maquinaria.
A35	Organizar e dirixir a tripulación aplicando técnicas de liderazgo e de traballo en equipo.
A37	Usar correctamente os diferentes aparatos de navegación e radiocomunicacións.
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.
B11	Capacidade de adaptación a novas situacións.
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 enfrontarse.
C6	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C8	Valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade.
C9	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
C10	Que os estudantes saiban aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en contornas novas ou pouco coñecidas dentro de contextos máis amplas (ou multidisciplinares) relacionados coa súa área de estudo

Learning outcomes			
Learning outcomes	Study programme competences		
Capacitar para realizar o estudo da manobrabilidade dun barco baseado en diferentes probas para a súa determinación e saber construír os gráficos correspondentes para o seu uso.	A10 A14 A15 A17 A21 A30 A35 A37	B1 B2 B3 B4 B5 B6 B11 B14 B15 B16 B22	C6 C9 C10
Coñecemento do estado da arte en termos de sistemas de propulsión do buque e temóns de alta eficiencia de última xeración, e o control deles polo manobrista.	A10 A14 A15 A17 A21 A30 A35 A37	B1 B2 B3 B4 B5 B6 B11 B14 B15 B16 B22	C6 C9 C10



Analizar as forzas presentes para saber facer un uso óptimo dos medios de manobra do buque e ter a capacidade de poder afrontar situacións imprevisibles que poidan xurdir no desenvolvemento da manobra.	A10	B1	C6
	A14	B2	C9
	A15	B3	C10
	A17	B4	
	A21	B5	
	A30	B6	
	A35	B9	
	A37	B11	
		B14	
	B15		
	B16		
	B22		
Coñecer os efectos derivados da navegación en augas restrinxidas polo seu calado e / ou pola súa anchura e, en particular, a interacción do buque con outro buque, coa beira e co fondo.	A10	B1	C6
	A14	B2	C8
	A15	B3	C10
	A17	B4	
	A21	B5	
	A30	B6	
	A35	B11	
	A37	B14	
		B15	
	B16		
	B22		
Adestrar para o estudo, planificación, desenvolvemento e execución das manobras de recalada, fondeo, entrada, descarga e saída de diferentes portos e terminais con distintos tipos de buques.	A10	B1	C6
	A14	B2	C9
	A15	B3	C10
	A17	B4	
	A19	B5	
	A21	B6	
	A30	B11	
	A35	B14	
	A37	B15	
	B16		
	B22		

Contents	
Topic	Sub-topic
1. Introduction.	Objectives. Teaching Guide. STCW 1978/2010. IMO Model Courses 7.01 and 7.03
2. The Human Factor in Ship Handling.	STCW Chapter VIII . BTM (Bridge Team Management). Organisation and teams. Qualities that a good shiphandler should have. Standard Marine Communication Phrases related to the subject.
3. Manoeuvrability. Standards.	IMO Circulars A.601(15), MSC.137(76) y MSC/Circ.1053. Pivot Point.
4. Ship Handling Equipment.	Propeller. Rudder. Steering Gear. Automatics Pilot. Rudder/ ROT Indicators.
5. Sailing in shallow waters	Hydrodynamics. Squat. Bank effect. Ship interaction. Constant angular velocity / constant rudder angle techniques. Effects of water speed. Stopping distances. Calculations.
6. Basics of Ship Handling.	Rudder-Propeller Effect. Wind Effect. Current Effect
7. Berthing Operations.	Berthing. Unberthing. Approaching the berth. Safety margins. Use of ropes. Use of anchors. Typical Manoeuvres.



8. Mooring.	Ropes. Winches. Forces. Mooring Configurations. Deck teams. Sequences. Accident prevention.
9. Anchoring.	Windlass. Deck team. Sequences. Problems. Accident prevention.
10. Pilot Station.	Approach. Rigging Pilot Ladder Master Pilot Exchange. IMO Resolutions A.1045(27) and A.960(23).
11. Tugs.	Types. Scort. Port. Accident prevention.
12. Open Sea.	Bad weather: IMO MSC.1/Circular.1228. Emergency Maneuvres: Towing, MOB, IAMSAR.
13. Ship Handling in the Voyage Plan.	SOLAS Regulation V/29. IMO Resolution A.893(21). Practical implementation.

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A10 A14 A15 A17 A19 A21 A30 A35 A37 B1 B2 B3 B4 B5 B6 B9 B11 B14 B15 B16 B22 C6 C8 C9 C10	30	45	75
Workshop	A10 A14 A15 A17 A19 A21 A30 A35 A37 B1 B2 B3 B4 B5 B6 B9 B11 B14 B15 B16 B22 C6 C8 C9 C10	24	24	48
Supervised projects	A10 A14 A15 A17 A21 A30 A35 A37 B1 B2 B3 B4 B5 B6 B11 B14 B15 B16	0	16	16
Mixed objective/subjective test	A10 A14 A15 A17 A19 A21 A30 A35 A37 B1 B2 B3 B4 B5 B6 B9 B11 B14 B15 B16 B22 C6 C9 C10	9	0	9
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	Oral presentation of the topics that make up the subject, also seeking the active participation of students. Some contents can be developed in English. Power Point presentations, technical software (CAD, Maxsurf, etc.) and videos could be used as support. A minimum attendance of 80% will be necessary to qualify the Continuous Assessment. Lack of punctuality may be a reason for not being accepted in the classroom.
Workshop	Practical application of the Master Sessions. Problem solving (formulas, calculations). Analysis of practical cases. Role-play may be applied to explain real shipboard actions and the use of Standard Marine Communication Phrases.
Supervised projects	An example of Supervised project could be the application of the contents of the subject in the development of a practical case of a Voyage Plan.



Mixed objective/subjective test	They will consist of tests, generally written, consisting of theoretical questions (essay test, short answer, etc.) and practical questions (calculations, manoeuvre graphs, etc.).
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**Personalized attention**

Methodologies	Description
Guest lecture / keynote speech	Face-to-face. During tutorial hours and in compliance with current health regulations.
Mixed objective/subjective test	Teams. It will depend only on the availability of the teacher.
Supervised projects	Email.
Workshop	The lecturer undertakes to respond as soon as possible to all queries sent.
	For "Students with recognition of part-time dedication and academic dispensation of exemption from attendance" the teacher may offer the possibility of online tutorials. Teacher and students will coordinate this assistance.

**Assessment**

Methodologies	Competencies	Description	Qualification
Mixed objective/subjective test	A10 A14 A15 A17 A19 A21 A30 A35 A37 B1 B2 B3 B4 B5 B6 B9 B11 B14 B15 B16 B22 C6 C9 C10	In order to have the right to continuous assessment, a minimum of 80% of attendance to face-to-face classes will be required.  Each Mixed Test will consist of theoretical questions (essay test, short answer, etc.) and practical questions (calculations, manoeuvre graphs, etc.).	70
Supervised projects	A10 A14 A15 A17 A21 A30 A35 A37 B1 B2 B3 B4 B5 B6 B11 B14 B15 B16	In relation to supervised works, the following will be valued: - The methodological adaptation with the requirements of the work. - The accuracy of the calculations used. - The depth of the content. - Mastery of the concepts used. - The correct use of the subject's own terminology. - The use of complementary and current documentary sources. - The presentation and clarity of the exhibition.  An example of Supervised Project can be the elaboration of a practical case of a Voyage Plan, taking into account topics related to the subject.	30

**Assessment comments**



2010 STCW: The evaluation criteria contemplated in Table A-II / 1 of the STCW Code, and included in the Quality Assurance System, will be taken into account when designing and carrying out the evaluation.

In order to have the right to continuous assessment, a minimum of 80% of attendance to face-to-face classes will be required.

The grade for the Continuous Assessment will consist of a Mixed Test (70%) and Assigned Work (30%). The final mark for the Mixed Test will be the average of the different Mixed Tests that may take place during the course. In order for these tests to average out, a minimum mark of 4 will be required for each one. This average of the Mixed Tests will be 70% of the grade of the Continuous Assessment. If only one Mixed Test is taken, the mark for this will be 70% of the Continuous Assessment mark. Each Assignment will have a weighting that will depend on its length. During the course the teacher will define this weighting. The final average mark of the Assignments will be 30% of the Continuous Assessment grade. If only one Assignment is carried out, the mark for this will be 30% of the Continuous Assessment mark.

Students with recognition of part-time dedication and academic dispensation of exemption from attendance (as established in the "Norma que Regula o Réxime de Dedicación ao Estudo dos

Estudantes de Grao na UDC"), may take the Continuous Assessment without the need to attend 80% of the face-to-face classes. To do so, these students will duly inform the lecturer, at the beginning of the course, of the said academic dispensation situation and of their timetable availability for attendance. Apart from the Autonomous Work that appears in this Teaching Guide, the teacher may ask these students to carry out different works/problems throughout the course to be presented or solved during tutorial hours.

Students

who do not follow the on-site course (attendance less than 80%), or who have not passed the Continuous Assessment, may sit the final exams in January and

July. The assessment of these exams will consist of a Mixed Objective/Subjective Test consisting of theoretical questions (essay test, short answer, etc.) and practical questions (calculations, manoeuvre graphs, etc.). The

contents of these mixed tests may cover any content of the subject. Such

a Mixed Test will account for 100% of the qualification of that call. For this test, it will be necessary to have a calculator, square, bevel, an angle gauge and a compass.

Ethical behaviour is expected throughout the course. The use of equipment or materials not allowed in the exams, copying answers by any unauthorised means or plagiarism will lead to a mark of 0 in the final assessment of the subject.

Ignorance of some basic concepts may lead to elimination. These will be mentioned during the course.

Sources of information

<p><b>Basic</b></p>	<p>A.601(15). Provision and Display of Manoeuvring Information on Board Ships. IMOMSC.137(76). Standards for Ship Maneuverability. IMOMSC/Circ.1053. Explanatory Notes to the Standards for Ship Manoeuvrability. IMOMSC.1/Circular.1228. Revised Guidance to the Master for Avoiding Dangerous Situations in Adverse Weather and Sea Conditions. IMO.893(21). Guidelines for Voyage Planning. IMO.1045(27). Pilot Transfer Arrangements. IMO.960(23). Recommendations on Training and Certification and on Operational Procedures for Maritime Pilots other than Deep-Sea Pilots. IMO.918(22). IMO Standard Marine Communication Phrases. IMOModel Course 7.01. Master and Chief Mate. 2014 Edition. IMO. London. Model Course 7.03. Officer in Charge of a Navigational Watch. 2014 Edition. IMO. London. The Shiphandler's Guide. Rowe, R.W. The Nautical Institute, London. 2000A Master's Guide to Berthing. Murdoch, E., Dand, I. W., Clarke, C. 2nd ed. The Standard Club. London. 2012 (recurso Web) Ship Handling. Baudu, H. 2nd ed. Dokmar. Vlissingen. 2018 Ship Squat and Interaction. Barrass, C.B. Witherby, Edinburgh. 2009 Shiphandling with Tugs. J. Slesinger. 2nd. ed. Cornell Maritime Press. Centreville. 2008 Maniobra de los buques. R. M. Sagarra. Edicions UPC. 1998 ROM 3.1-99 Proyecto de la Configuración Marítima de los Puertos; Canales de Acceso y Áreas de Flotación. Puertos del Estado. 2000 (recurso Web)</p>
<p><b>Complementary</b></p>	<p>Behaviour and Handling of Ships. Hooyer, H. H. Cornell Maritime Press. Maryland. 1994 Tug Use in Port. A practical guide. Hensen, H. 3rd. ed. The Nautical Institute. London. 2018 Bridge Team Management. Swift, A.J. 2nd ed. The Nautical Institute. London. 2004 Theory and Practice of Shipping Handling. Inoue K. ITU Vakfi. Istanbul. 2014 Ship Dynamics for Mariners. Clark, I.C. The Nautical Institute, London. 2005 Mooring and Anchoring Vol 1. Principles and Practice. Clark, I.C. The Nautical Institute, London. 2009 Mooring and Anchoring Vol 2. Inspection and Maintenance. Vervloesem, W. The Nautical Institute, London. 2009 Maniobra de buques: teoría y práctica. Gilardoni, E. O, Retes, M. Mesa editorial. Buenos Aires. 2012 Shiphandling - Passenger Ships Without Tugs. Nash, N. Witherby Publishing Group. Livingston. 2018</p>



## Recommendations

### Subjects that it is recommended to have taken before

Naval Construction/631G01105

Ship's Energy and auxiliary systems/631G01204

Ship Manoeuvring I/631G01207

Ship's Theory I/631G01208

Navigation and Ship Management/631G01212

### Subjects that are recommended to be taken simultaneously

Navigation II/631G01306

Collision Rules, Signals, Bouyage Systems and ISM Code/631G01303

### Subjects that continue the syllabus

Nautical simulation/631G01402

### 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.