



## Teaching Guide

Identifying Data				2019/20
Subject (*)	Operation and Automatic Control of Maritime Installations	Code	631510213	
Study programme	Mestrado Universitario en Náutica e Transporte Marítimo			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	2nd four-month period	First	Optional	3
Language				
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Industrial			
Coordinador	Rodríguez Gómez, Benigno Antonio	E-mail	benigno.rodriguez@udc.es	
Lecturers	Rodríguez Gómez, Benigno Antonio	E-mail	benigno.rodriguez@udc.es	
Web				
General description				

## Study programme competences / results

Code	Study programme competences / results
A11	Capacidade para utilizar os telemandos das instalacións de propulsión e dos sistemas e servizos de maquinaria.
A12	Capacidade para planificar e garantir o embarco, estiba e suxección da carga, e o seu coidado durante a viaxe e o desembarco.
A13	Capacidade para a avaliación das avarías e defectos notificados, nos espazos de carga, as tapas de escotilla e os tanques de lastre, e adoptar as medidas oportunas.
A14	Capacidade para o transporte de mercadorías perigosas.
B1	Capacidade para aprender a aprender.
B2	Capacidade para resolver problemas de forma efectiva.
B5	Capacidade para traballar de forma efectiva nunha contorna de traballo.
B6	Capacidade de adaptación a novas situacións.
B9	Capacidade de análise e síntese.
B10	Capacidade para adquirir e aplicar coñecementos.
B12	CB6 -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
B13	CB7-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
B15	CB9-Que os estudantes saiban comunicar as súas conclusións e os coñecementos e razóns últimas que as sustentan a públicos especializados e non especializados dun xeito claro e sin ambigüidades
B16	CB10-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.
C1	Capacidade para expresarse correctamente tanto de forma oral como escrita, nas linguas oficiais da comunidade autónoma
C2	Capacidade para dominar a expresión e a comprensión de forma oral e escrita nun idioma estranxeiro
C3	Capacidade para 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	Capacidade para valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.
C8	Capacidade para valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade
C10	C10-Capacidade para aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en contornas novas ou pouco coñecidas dentro de contextos máis amplos (ou multidisciplinares) relacionados coa súa área de estudo

## Learning outcomes



Learning outcomes	Study programme competences / results		
	AJ11	BC1	CC1
	AJ12	BC2	CC2
	AJ13	BC5	CC3
	AJ14	BC6	CC6
		BC9	CC8
		BC10	CC10
		BC12	
		BC13	
		BC15	
		BC16	

Contents	
Topic	Sub-topic
Ship automatic steering control	Steering control systems description emergency operation (man-auto changes)
Dynamic positioning systems (DPS)	DPS clasification. Description of DP types (I, II e III). DPS components. Operation modes.
Ballast control system	Automatic ballast system components and operation. Control de heelong and trim by ballast management.
Roll and heading control systems	Actual models description. Trim and heeling control systems Rudder roll control and anti-heeling control systems. Gravity tanks based control Lateral and stern flaps based control
Bull cargos (LPG, LNG, Crude oil, refined oil and chemicals)	Level, temperature and flow rate control systems. Maintenance of liquid cargoes (LPG) . Control of Inertization operations and management .
Fire fighting and fire protection control systems	Detection systems Monitoring systems Automatic fire fighting systems

Planning				
Methodologies / tests	Competencies / Results	Teaching hours (in-person & virtual)	Student?s personal work hours	Total hours
Case study	A11 A12 A13 A14 B2 B9 B10 B15 B16 C1 C2 C8	6	3	9
Objective test	A11 B1 B5 B6 B12 B13 C3 C6 C10	2	5	7
Laboratory practice	A11	2	5	7
Guest lecture / keynote speech	A11	20	10	30
Document analysis	A11	2	5	7
Personalized attention		15	0	15

(\*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.



Methodologies	
Methodologies	Description
Case study	Consists of analysing different class room-studed cases providing an inside of the studied topic.
Objective test	The aim is to verify the acquired knowledge by means of solving individually case studies.
Laboratory practice	Consists of lab exercises to acquire skills on lab instruments used on board .
Guest lecture / keynote speech	The aim is to learn as much as possible all related with the programmed topics with the help of graphic descriptions on examples of practical applications.
Document analysis	The objective is to select and analyse the technical available information related with the studied topics.

Personalized attention	
Methodologies	Description
Case study	Tratarase de aprender a resolver casos individualmente para adequerir autonomía.

Assessment			
Methodologies	Competencies / Results	Description	Qualification
Document analysis	A11	Revision of the proper bibliography.	10
Case study	A11 A12 A13 A14 B2 B9 B10 B15 B16 C1 C2 C8	Practical case studies related with the program topics.	25
Guest lecture / keynote speech	A11	Generic and concrete concepts related with the program topics.	40
Laboratory practice	A11	Instrumentation calibration exercises related with the program topics.	15
Objective test	A11 B1 B5 B6 B12 B13 C3 C6 C10	Knowledge (skills) verification on all studied topics.	10

Assessment comments

Sources of information	
<b>Basic</b>	- Job van Amerongen (1998). Ship steering. Encyclopedia of Life Support Systems (EOLSS), United Nations - Asgeir J. Sørensen (2013). Marine Control Systems. Department of Marine Technology, Norwegian University of Science and Technology
<b>Complementary</b>	

Recommendations
<b>Subjects that it is recommended to have taken before</b>
Hydrostatic and ship Stability/631510201 Management Control Ship Cargo Operations/631510207 Resistance to the Advance and Propulsion/631510216 Computing of Control/631510212 Advanced Shiphandling/631510204
<b>Subjects that are recommended to be taken simultaneously</b>
<b>Subjects that continue the syllabus</b>
<b>Other comments</b>



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