



## Teaching Guide

Identifying Data					2014/15
Subject (*)	Operación e Control Automático de Instalacións Marítimas		Code	631510213	
Study programme	Mestrado Universitario en Enxeñaría Náutica e Transporte Marítimo				
Descriptors					
Cycle	Period	Year	Type	Credits	
Official Master's Degree	2nd four-month period	First	Optativa	3	
Language					
Prerequisites					
Department	Enxeñaría Industrial				
Coordinator	Ferreiro Garcia, Ramon	E-mail	ramon.ferreiro@udc.es		
Lecturers	Ferreiro Garcia, Ramon	E-mail	ramon.ferreiro@udc.es		
Web					
General description					

## Study programme competences

Code	Study programme competences
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.
B2	Capacidade para resolver problemas de forma efectiva.
B9	Capacidade de análise e síntese.
B10	Capacidade para adquirir e aplicar coñecementos.
B15	Capacidade para comunicar as súas conclusións e os coñecementos e razóns últimas que as sustentan a públicos especializados e non especializados dun modo claro e sen ambigüidades
B16	Capacidade para desenvolver as habilidades de aprendizaxe que lles permitan continuar estudando dun modo que habrá de ser en gran 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
C8	Capacidade para valorar a importancia que ten a investigación, a innovación e o desenvolvemento tecnolóxico no avance socioeconómico e cultural da sociedade

## Learning outcomes

Subject competencies (Learning outcomes)	Study programme competences		
	AJ11	BC2	CC1
	AJ12	BC9	CC2
	AJ13	BC10	CC8
	AJ14	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 manegement .
Fire fighting and fire protection control systems	Detection systems Monitoring systems Automatic fire fighting systems

**Planning**

Methodologies / tests	Ordinary class hours	Student?s personal work hours	Total hours
Case study	6	3	9
Guest lecture / keynote speech	20	10	30
Laboratory practice	2	5	7
Objective test	2	5	7
Document analysis	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.
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.
Laboratory practice	Consists of lab exersises to acquire skills on lab instrumernts used on board .
Objective test	The aim is to verify the acquired knowledge by means of solving individuassly case studies.
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	Description	Qualification
Document analysis	Revision of the proper bibliography.	10
Case study	Practical case studies related with the program topics.	25
Guest lecture / keynote speech	Generic and concrete concepts related with the program topics.	40
Laboratory practice	Instrumentation calibration exercises related with the program topics.	15



Objective test	Knowledge (skills) verification on all studied topics.	10
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### Assessment comments

### Sources of information

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

### Recommendations

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

#### Subjects that are recommended to be taken simultaneously

#### Subjects that continue the syllabus

Hidrostática e Estabilidade/631510201

Xestión e control das operacións de carga/631510207

Resistencia ao Avance e Propulsión/631510216

Informática de Control/631510212

Manobra Avanzada /631510204

#### Other comments

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