UNIVERSIDADE DA CORUÑA

Teaching Guide				
Identifying Data				2016/17
Subject (*)	Sistemas de propulsión		Code	730496016
Study programme	Mestrado Universitario en Enxeñaría Naval e Oceánica (plan 2012)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Obligatoria	4.5
Language	SpanishEnglish			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Naval e Oceánica			
Coordinador	Miguez Gonzalez, Marcos	E-mail	marcos.miguez@udc.es	
Lecturers	Fariñas Alvariño, Pablo Miguez Gonzalez, Marcos	E-mail	pablo.farinas@udc.es marcos.miguez@udc.es	
Web				
General description	O obxectivo desta materia é complementar os coñecementos do alumnado que procede dos Grados de Arquitectura Naval ou que non tiveran cursado asignaturas relacionadas cos sistemas de propulsión de buques. Nesta materia abordarase o estudo dos sistemas de propulsión do buque no seu conxunto, incluíndo tanto os conceptos básicos para o proxecto dos mesmos, as normas e os procedementos para a súa instalación e o seu mantemento e os procesos de construción e instalación dos equipos propulsores, abordando os cinco tipos principais de plantas de propulsión actuais: mediante motores diesel, turbinas de gas, turbinas de vapor, propulsión eléctrica e sistemas combinados.			

Study programme competences	
Code	Study programme competences
B1	Posuír e comprender coñecementos que acheguen unha base ou oportunidade de ser orixinais no desenvolvemento e/ou aplicación de ideas, a miúdo nun contexto de investigación
B2	Que os estudantes saiban aplicar os coñecementos adquiridos e a súa capacidade de resolución de problemas en ámbitos novos ou pouco coñecidos dentro de contextos máis amplos (ou multidisciplinares) relacionados coa súa área de estudo
B3	Que os estudantes sexan capaces de integrar coñecementos e enfrontarse á complexidade de formular xuízos a partir dunha información que, sendo incompleta ou limitada, inclúa reflexións sobre as responsabilidades sociais e éticas vinculadas á aplicación dos seus coñecementos e xuízos
B5	Que os estudantes posúan as habilidades de aprendizaxe que lles permitan continuar estudando dun modo que haberá de ser en boa medida autodirixido ou autónomo.

Learning outcomes		
Learning outcomes	Study programme competences	
Que o alumno coñeza no seu conxunto os sistemas de propulsión de buques actuais, así como os conceptos básicos para o proxecto dos mesmos, as normas e os procedementos para a súa instalación e o seu mantemento e que saiba dirixir, planificar e controlar os proxectos e os procesos de construción e instalación dos equipos propulsores	BC1 BC2 BC3 BC5	

Contents	
Topic	Sub-topic
Introduction to the marine propulsion systems	Introduction

Diesel engines	Introduction Working principles Diesel engine selection Ancilliary systems Engine room arrangement
Gas turbines	Introduction Working principles Marine gas turbines Ancilliary systems Engine room arrangement
Steam turbines	Introduction Working principles Ancilliary systems Conventional steam propulsion plants Nuclear steam propulsion plants Engine room arrangement
Electric propulsion	Introduction Working principles Electric generator selection Electric motor selection Associated propulsors
Combined propulsion systems	Introduction Propulsion plant arrangement Propulsion plant selection and associated systems
Machinery arrangement within the ship design process	Introduction Design constraints Rules and regulations Building strategy

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Supervised projects	B1 B2 B3 B5	2	16	18
Supervised projects	B1 B2 B3 B5	1	6	7
Oral presentation	B1 B2 B3 B5	3	6	9
Objective test	B2 B5	2	0	2
Problem solving	B2	8	9.5	17.5
Guest lecture / keynote speech	B1 B5	17	40	57
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
Supervised projects	To develop the design of the engine room of a given vessel, that will be defined at the beggining of the course. On it, some of the knowledge acquired along the course will have to be applied. At the beggining of the course, and depending on the number of students, it will be decided if the project has to be done individually or in groups of students.

Supervised projects	To develop a project work about a given topic within the contents of the course, that will be defined at the beggining of it. This project will be orally presented. At the beggining of the course, and depending on the number of students, it will be decided if the project has to be done individually or in groups of students.
Oral presentation	Oral presentation of the project work about a topic of the course, in front of the professor and the rest of the students. Moreover, the student will also evaluate the oral presentations of the rest of the groups
Objective test	Theoretical/practical written examination about the different contents of the course.
Problem solving	Resolución de problemas prácticos de cada un dos temas nos que se divide a asignatura, tanto polo profesor como polos propios alumnos, en sesións presenciais.
Guest lecture / keynote speech	Lecture sessions where the contents of the course will be explained and described by the professor.

Personalized attention	
Methodologies	**Description**
Supervised projects Oral presentation Supervised projects	Regarding the two project works to be carried out during the course, individualized guiding sessions will be done, where bibliographic references, information sources and advice will be provided at the different stages of development of both works, also including oral presentation basic techniques.

Assessment			
Methodologies	**Competencies**	**Description**	**Qualification**
Problem solving	B2	A asistencia a máis do 75 % de devanditas sesións corresponderase cun máximo do 2.5 % da nota final do alumno.	2.5
Supervised projects	B1 B2 B3 B5	The maximum assigned score to the project work about a especific topic is a 5 % of the total score of the course. It is a compulsory assignment that has to be acomplished to pass the course. Its maximum score will be 10 points. A minimum of 4 points are required to pass the course.	5
Objective test	B2 B5	Theoretical/practical written examination about the different contents of the course. The maximum assigned score to this item is a 6 % of the total score of the course. It is a compulsory assignment that has to be acomplished to pass the course. Its maximum score will be 10 points. A minimum of 4 points are required to pass the course.	60
Oral presentation	B1 B2 B3 B5	The maximum assigned score to the oral presentation of the project work about a especific topic, together with the evaluation of the other presentations, is a 5 % of the total score of the course. It is a compulsory assignment that has to be acomplished to pass the course. Its maximum score will be 10 points. A minimum of 4 points are required to pass the course.	5
Guest lecture / keynote speech	B1 B5	A asistencia a máis do 75 % de devanditas sesións corresponderase cun máximo do 2.5 % da nota final do alumno.	2.5

Supervised projects	B1 B2 B3 B5	Project work about the design of the engine room of a ship. This work has a maximum assigned score of a 30 % of the total score of the course. It is a compulsory assignment that has to be acomplished to pass the course. Its maximum score will be 10 points. A minimum of 4 points are required to pass the course.	25

Assessment comments
Os requisitos que aqueles alumnos con dispensa de asistencia a clase terán que cumprir, tanto en primeira como en segunda oportunidade, serán os mesmos requisitos que aqueles sen esta dispensa, coas seguintes excepcións: - Non será necesaria a realización da presentación oral do traballo tutelado dun tema específico da asignatura. Polo tanto, neste caso, a puntuación asignada a este apartado (traballo tutelado dun tema específico) será dun 10 % do total da cualificación. - A puntuación asignada á asistencia aos apartados de "Solución de problemas" e "Sesións maxistrais", asignarase á "Proba obxectiva". Así, nestes casos, a cualificación da proba obxectiva será dun 70 %.

Sources of information	
Basic	- Lamb, T. (2003). Ship Design and Construction. Society of Naval Architects and Marine Engineers (SNAME) - Watson, D.G.M. (2002). Practical Ship Design. Elsevier - Casanova Rivas, E. (2001). Máquinas para la Propulsión de Buques. Universidade da Coruña
Complementary	

Recommendations
Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Máquinas e motores térmicos marinos/730496017
Subjects that continue the syllabus
Deseño e optimización de plantas de enerxía e propulsión/730496005
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.