



Guía docente				
Datos Identificativos				2023/24
Asignatura (*)	Simulación y Optimización de Procesos de Fabricación del Buque	Código	730542024	
Titulación	Master Universitario Erasmus Mundus en Sostibilidade e Industria 4.0 aplicada ao Sector Marítimo			
Descriptor				
Ciclo	Periodo	Curso	Tipo	Créditos
Máster Oficial	1º cuatrimestre	Segundo	Optativa	6
Idioma	Inglés			
Modalidad docente	Presencial			
Prerrequisitos				
Departamento	Empresa			
Coordinador/a	Pernas Álvarez, Javier	Correo electrónico	javier.pernas2@udc.es	
Profesorado	Lamas Rodríguez, Adolfo	Correo electrónico	adolfo.lamasr@udc.es	
	Pernas Álvarez, Javier		javier.pernas2@udc.es	
Web				
Descripción general	The goal of this subject is to provide a basic theoretical and practical understanding of modelling and simulation technologies (M&S) applied to shipbuilding. M&S is considered one of the Industry 4.0 technologies that allows shipyards to optimize manufacturing processes and logistics. The simulation software Flexsim will be used to solve practical cases based on real problems solved in shipyards.			

Competencias del título	
Código	Competencias del título
B7	CG1 ? To display the adequate intercultural competence to successfully navigating within multicultural learning environments and to implement basic management principles suitable for a multicultural working environment.
B8	CG2 ? To express an attitude of intellectual inquisitiveness and open-mindedness.
B11	CG5 ? To have the capability to identify, formulate and solve engineering problems within realistic constraints.
B13	CG7 ? To have the capability to critically analyse, synthesise, interpret and summarise complex scientific processes.
C2	CT2 - Mastering oral and written expression in a foreign language.
C3	CT3 - Using ICT in working contexts and lifelong learning.
C4	CT4 - Acting as a respectful citizen according to democratic cultures and human rights and with a gender perspective.
C6	CT6 - Acquiring skills for healthy lifestyles, and healthy habits and routines.
C7	CT7 -Developing the ability to work in interdisciplinary or transdisciplinary teams in order to offer proposals that can contribute to a sustainable environmental, economic, political and social development.

Resultados de aprendizaje		
Resultados de aprendizaje	Competencias del título	
To have basic knowledge about the modelling and simulation methodology.	BM6	CM2
	BM7	CM3
	BM10	CM4
	BM12	CM6
		CM7
To solve realistic problems about process optimization and planning in shipyards using simulation.	BM6	CM2
	BM7	CM3
	BM10	CM4
	BM12	CM6
		CM7

Contenidos



Tema	Subtema
Modelling and Simulation	The M&S methodology. M&S technologies. Simulation projects.
Model development in Flexsim	Flexsim basics. Fixed resource library. Task executers. Networks and conveyors. Introduction to process flows.
Shipbuilding processes	Cutting-welding. Block assembly. Outfitting. Painting. Blocks erection.
Shipyards simulation.	Material receipts. Assembly workstations. Blocks erection. Cranes. Planning.
Optimization	Input data analysis. Simulation experiments. Optimization concepts. Linear models. Heuristics. Evolutionary algorithms.

Planificación				
Metodologías / pruebas	Competencias	Horas presenciales	Horas no presenciales / trabajo autónomo	Horas totales
Prácticas a través de TIC	A2 A3 B7 B8 B11 B13 C2 C3 C4 C6 C7	15	15	30
Estudio de casos	B7 B8 B11 B13 C2 C3 C4 C6 C7	4.5	22.5	27
Trabajos tutelados	A2 A3 B7 B8 B11 B13 C2 C3 C4 C6 C7	1.5	40.5	42
Prueba mixta	B7 B8 B11 B13 C2 C3 C4 C6 C7	2	2	4
Sesión magistral	A2 A3 B8 B11 B13	21	21	42
Atención personalizada		5	0	5

(*) Los datos que aparecen en la tabla de planificación són de carácter orientativo, considerando la heterogeneidad de los alumnos

Metodologías	
Metodologías	Descripción
Prácticas a través de TIC	Solving practical problems and case studies using Flexsim.
Estudio de casos	Solving practical cases proposed by the teachers
Trabajos tutelados	Simulation project proposed by the teachers
Prueba mixta	Final exam about the contents of this subject.
Sesión magistral	Lectures on the subject contents

Atención personalizada	
Metodologías	Descripción
Prácticas a través de TIC Prueba mixta Sesión magistral Estudio de casos Trabajos tutelados	During tutorial time, students can meet the teachers to clarify the doubts of the subject, as well as the ones concerning the supervised projects

Evaluación			
Metodologías	Competencias	Descripción	Calificación
Prueba mixta	B7 B8 B11 B13 C2 C3 C4 C6 C7	Assessment of the final exam	20
Estudio de casos	B7 B8 B11 B13 C2 C3 C4 C6 C7	Assessment of the practical cases assigned to the students.	20

