



Teaching Guide				
Identifying Data			2021/22	
Subject (*)	Machine Design and Construction	Code	730497226	
Study programme	Mestrado Universitario en Enxeñaría Industrial (plan 2018)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	2nd four-month period	Second	Optional	4.5
Language	Spanish			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Naval e Industrial			
Coordinador	Cuadrado Aranda, Francisco Javier	E-mail	javier.cuadrado@udc.es	
Lecturers	Cuadrado Aranda, Francisco Javier Dopico Dopico, Daniel Lugris Armesto, Urbano Naya Villaverde, Miguel Ángel Sanjurjo Maroño, Emilio	E-mail	javier.cuadrado@udc.es daniel.dopico@udc.es urbano.lugris@udc.es miguel.naya@udc.es emilio.sanjurjo@udc.es	
Web				
General description	Abordarase o proceso de deseño e construción dunha máquina ou vehículo concreto.			
Contingency plan	1. Modifications to the contents 2. Methodologies *Teaching methodologies that are maintained *Teaching methodologies that are modified 3. Mechanisms for personalized attention to students 4. Modifications in the evaluation *Evaluation observations: 5. Modifications to the bibliography or webgraphy			

Study programme competences	
Code	Study programme competences
A3	ETI3 - Ability to design and test machines.
B2	CB7 - That students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study.
B4	CB9 - That the students know how to communicate their conclusions -and the knowledge and ultimate reasons that sustain them- to specialized and non-specialized audiences in a clear and unambiguous way.
B5	CB10 - That students have the learning skills that allow them to continue studying in a way that will be largely self-directed or autonomous.
B6	G1 - Have adequate knowledge of the scientific and technological aspects in Industrial Engineering.
B7	G2 - Project, calculate and design products, processes, facilities and plants.
B13	G8 - Apply the knowledge acquired and solve problems in new or unfamiliar environments within broader and multidisciplinary contexts.
B15	G10 - Knowing how to communicate the conclusions -and the knowledge and ultimate reasons that sustain them- to specialized and non-specialized publics in a clear and unambiguous way.
B16	G11 - Possess the learning skills that allow to continue studying in a self-directed or autonomous way.
C1	ABET (a) - An ability to apply knowledge of mathematics, science, and engineering.



C3	ABET (c) - An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
C5	ABET (e) - An ability to identify, formulate, and solve engineering problems.
C7	ABET (g) - An ability to communicate effectively.
C8	ABET (h) - The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
C9	ABET (i) - A recognition of the need for, and an ability to engage in life-long learning.
C11	ABET (k) - An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Learning outcomes			
Learning outcomes	Study programme competences		
Ser capaz de levar a cabo o prediseño dunha máquina ou vehículo sinxelo a partir dunhas especificacións básicas proporcionadas polo profesor.	AJ3	BJ2 BJ4 BJ5 BJ6 BJ7 BJ13 BJ15 BJ16	CJ1 CJ3 CJ5 CJ7 CJ8 CJ9 CJ11
Ser capaz de empregar un simulador xa existente da máquina (ou vehículo) prediseñada para obter datos que serán usados para afinar o deseño de detalle da máquina ou vehículo.	AJ3	BJ2 BJ4 BJ5 BJ6 BJ7 BJ13 BJ15 BJ16	CJ1 CJ3 CJ5 CJ7 CJ8 CJ9 CJ11
Ser capaz de levar a cabo o deseño de detalle da máquina ou vehículo.	AJ3	BJ2 BJ4 BJ5 BJ6 BJ7 BJ13 BJ15 BJ16	CJ1 CJ3 CJ5 CJ7 CJ8 CJ9 CJ11
Ser capaz de proxectar e executar a fabricación do deseño efectuado.	AJ3	BJ2 BJ4 BJ5 BJ6 BJ7 BJ13 BJ15 BJ16	CJ1 CJ3 CJ5 CJ7 CJ8 CJ9 CJ11

Contents	
Topic	Sub-topic
Proxecto de deseño da máquina ou vehículo proposto na materia de ?Simulación de máquinas e vehículos?.	Elección dos elementos de máquinas necesarios. Deseño dos elementos de máquinas necesarios.



Utilización do simulador desenvolto na materia de ?Simulación de máquinas e vehículos? como axuda ao deseño.	Axuste de parámetros do simulador. Obtención e interpretación de resultados que permitan afinar o deseño.
Construción da máquina ou vehículo deseñado.	Proxecto de construción. Construción.

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Problem solving	A3 B2 B4 B5 B13 B15 B16 B7 B6 C1 C3 C5 C7 C8 C9 C11	13.5	0	13.5
Supervised projects	A3 B2 B4 B5 B13 B15 B16 B7 B6 C1 C3 C5 C7 C8 C9 C11	27	67.5	94.5
Guest lecture / keynote speech	A3 B2 B4 B5 B13 B15 B16 B7 B6 C1 C3 C5 C7 C8 C9 C11	4.5	0	4.5
Personalized attention		0		0

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

Methodologies	
Methodologies	Description
Problem solving	Abordaranse as técnicas para a selección e/ou deseño dos elementos de máquinas necesarios.
Supervised projects	Elección e/ou deseño dos elementos de máquinas necesarios. Axuste de parámetros do simulador e obtención e interpretación de resultados que permitan afinar o deseño. Proxecto de construción e construción.
Guest lecture / keynote speech	Descrición da máquina ou vehículo a deseñar e construír, formulación de obxectivos e exposición da metodoloxía.

Personalized attention	
Methodologies	Description
Supervised projects	Os profesores estarán dispoñibles para os alumnos tanto nas sesións presenciais como no horario de titorías, que poderán ser presenciais ou non presenciais (email, Teams).

Assessment			
Methodologies	Competencies	Description	Qualification
Supervised projects	A3 B2 B4 B5 B13 B15 B16 B7 B6 C1 C3 C5 C7 C8 C9 C11	Avaliaranse os tres traballos tutelados que se propuxeron na Metodoloxía.	100

Assessment comments
<p>No caso de estudantes con dispensa académica e a tempo parcial, o sistema de avaliación será o mesmo: os estudantes integraranse nun grupo de traballo e acordarase co profesor a súa forma de participación. Isto é válido tanto para a primeira como para a segunda oportunidade.</p> <p>O sistema de avaliación será o mesmo na primeira e na segunda oportunidade, así como na convocatoria adiantada.</p> <p>A realización fraudulenta das probas ou actividades de avaliación implicará directamente a cualificación de suspenso '0' na materia na convocatoria correspondente, invalidando así calquera cualificación obtida en todas as actividades de avaliación para a convocatoria extraordinaria.</p>



Sources of information

Basic	<ul style="list-style-type: none">- T.D. Gillespie (1992). Fundamentals of Vehicle Dynamics. SAE- B.J. Hamrock, B. Jacobson, S.R. Schmid (2001). Elementos de Máquinas. McGraw-Hill- B. Heissing, M. Ersoy (Eds.) (2011). Chassis Handbook. Vieweg Teubner- R.L. Norton (2011). Diseño de Máquinas (4ª edición). Prentice Hall- J.E. Shigley, C.R. Mischke (2002). Diseño en Ingeniería Mecánica (6ª edición). McGraw-Hill- M. Tanelli, M. Corno, S.M. Savaresi (2014). Modelling, Simulation and Control of Two-wheel Vehicles. Wiley
Complementary	

Recommendations

Subjects that it is recommended to have taken before

Simulation of Machines and Vehicles/730497225

Machine Design and Testing/730497203

Subjects that are recommended to be taken simultaneously

Subjects that continue the syllabus

Other comments

Para axudar a conseguir unha contorna inmediata sostida e cumprir co obxectivo da acción número 5: "Docencia e investigación saudable e sustentable ambiental e social" do "Plan de Acción Green Campus Ferrol": A entrega de traballos que se realicen nesta materia: Solicitarase en formato virtual e/ou soporte informático. Realizarase a través da web da materia, en formato dixital, sen necesidade de imprimilos. En caso de ser necesario realízalos en papel: non se empregarán plásticos; realizaranse impresións a dobre cara; empregárase papel reciclado; evitárase a impresión de borradores. Débese facer un uso sustentable dos recursos e a prevención de impactos negativos sobre o medio natural.

(*)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.