



Teaching Guide

Identifying Data					2022/23
Subject (*)	Robotics	Code	770G01056		
Study programme	Grao en Enxeñaría Electrónica Industrial e Automática				
Descriptors					
Cycle	Period	Year	Type	Credits	
Graduate	2nd four-month period	Fourth	Optional	4.5	
Language	Spanish				
Teaching method	Face-to-face				
Prerequisites					
Department	Enxeñaría Industrial				
Coordinador	Casteleiro Roca, José Luis	E-mail	jose.luis.casteleiro@udc.es		
Lecturers	Casteleiro Roca, José Luis Meizoso López, Maria del Carmen	E-mail	jose.luis.casteleiro@udc.es carmen.meizoso@udc.es		
Web					
General description	<p>The following aspects related to robotics will be analyzed:</p> <ul style="list-style-type: none"> - Introduction to robotics and its integration with other 4.0 or emerging technologies - Architecture and main elements of robots - Mobile and/or intelligent autonomous systems 				

Study programme competences

Code	Study programme competences
A3	Capacidade para realizar medicións, cálculos, valoracións, taxacións, peritaxes, estudos e informes.
A30	Coñecer e ser capaz de modelar e simular sistemas.
A32	Coñecer os principios e aplicacións dos sistemas robotizados.
A33	Coñecemento aplicado de informática industrial e comunicacións.
B1	Capacidade de resolver problemas con iniciativa, toma de decisións, creatividade e razoamento crítico.
B2	Capacidade de comunicar e transmitir coñecementos, habilidades e destrezas no campo da enxeñaría industrial.
B3	Capacidade de traballar nun contorno multilingüe e multidisciplinar.
B4	Capacidade de traballar e aprender de forma autónoma e con iniciativa.
B5	Capacidade para empregar as técnicas, habilidades e ferramentas da enxeñaría necesarias para a práctica desta.
B6	Capacidade de usar adecuadamente os recursos de información e aplicar as tecnoloxías da información e as comunicacións na enxeñaría.
B7	Capacidade para traballar de forma colaborativa e de motivar un grupo de traballo.
B12	CB5 - Que los estudiantes hayan desarrollado aquellas habilidades de aprendizaje necesarias para emprender estudios posteriores con un alto grado de autonomía.
C1	Expresarse correctamente, tanto de forma oral coma escrita, nas linguas oficiais da comunidade autónoma.
C2	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.
C5	Valorar criticamente o coñecemento, a tecnoloxía e a información dispoñible para resolver os problemas cos que deben enfrontarse.

Learning outcomes

Learning outcomes	Study programme competences		
Understand the importance of robotics in the field of current and emerging industry	A32	B1	C1
	A33	B2	C2
		B5	C5
		B6	
		B12	



Understand the operating principles of robotics	A3 A30 A32	B4 B7	
Ability to use simulation tools and robot programming in a flexible and collaborative industrial environment	A30 A32 A33	B3 B6 B7	
Know and manage intelligent autonomous systems	A30 A32 A33	B6 B7	

Contents	
Topic	Sub-topic
Introduction to robotics and integration with other 4.0 or emerging technologies	Robotics as an enabling technology in Industry 4.0 Collaborative robotics or cobots Trends in industrial robotics
Architecture and elements of robotics	Morphology Model and kinematic control Modeling and dynamic control Programming
Mobile and/or intelligent autonomous systems	Autonomous mobile robots (AMR)

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student?s personal work hours	Total hours
Guest lecture / keynote speech	A32 B1 B2 B12 C1 C5	12	12	24
Problem solving	A3 A30 A33 B3 B4 B5 B6 B7 C2	8.5	17	25.5
Laboratory practice	A30 A32 A33 B3 B4 B7 B12 C1 C2 C5	11	32	43
Objective test	A30 A32 B2 B4 B6 B12 C1 C2 C5	3	15	18
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
Guest lecture / keynote speech	Keynote speech complemented with the use of audiovisual media and the introduction of some questions to students, in order to transmit knowledge and facilitate learning. The order of the topics covered will not have to be the one described in the teaching guide. In addition, there will be topics that can be seen together on the development of others, and the division between them may not be strict.
Problem solving	Solving exercises and specific problems in the classroom, from the knowledge explained.
Laboratory practice	Performing laboratory practice as far as possible; or, failing that, solving exercises and specific problems in the classroom, from the knowledge explained.
Objective test	It consists in carrying out an objective test of approximately 2 hours, in which the acquired knowledge will be evaluated.

Personalized attention	
Methodologies	Description
Laboratory practice Problem solving	The student has the relevant meetings of personalized tutorials, to resolve the concerns arising from the matter.

