

UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: INDUSTRIAL ROBOTS				Co	bde: 56506		
Туре: (CORE COURSE			ECTS credits: 6			
Degree: B	ND AUTOMAT.	Academic y	vear: 2020-21				
Center: 6	02 - E.T.S. INDUSTRIAL ENGINEERING OF		Group(s): 20				
Year: 3			Duration: First semester				
Main language: S	Main language: Spanish Second language: English						
Use of additional languages:				English Frien	dly: Y		
Web site:				Biling	ual: N		
Lecturer: ANDRES SA	LOMON VAZQUEZ FERNANDEZ PACHEC	O - Group(s	s): 20				
Building/Office	Department	Phone number	Email		Office hours		
	INGENIERÍA ELÉCTRICA, ELECTRÓNICA, AUTOMÁTICA Y COMUNICACIONES	Vía Teams	andress.vazquez@	ouclm.es			

2. Pre-Requisites

Not established

3. Justification in the curriculum, relation to other subjects and to the profession

Not established

4. Degree competen	4. Degree competences achieved in this course						
Course competences							
Code	Description						
A05	To have developed the learning skills necessary to undertake subsequent studies with a greater degree of autonomy.						
A12	Knowledge of basic materials and technologies that assist the learning of new methods and theories and enable versatility to adapt to new situations.						
A13	Ability to take the initiative to solve problems, take decisions, creativity, critical reasoning and ability to communicate and transmit knowledge, skills and abilities in Industrial Electronic Engineering and Automation.						
D09	Knowledge of principles and applications of robotic systems.						

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Know the applications of industrial robots Application of the main robot information tools

Use the principle programming languages of industrial robots

Ability to dynamically model the structure of a rigid robot

Know the work space of a robot and its limitations

Ability to generate trajectories within the work environment

Ability to identify different classes of robots

6. Units / Contents

Unit 1: Presentation Unit 1.1 Unit 1.2 Unit 2: Introduction Unit 2.1 Unit 2.2 Unit 2.3 Unit 2.4 Unit 3: Robot Morphology Unit 3.1 Unit 3.2 Unit 3.3 Unit 3.4 Unit 3.5 Unit 3.6 Unit 4: Mathematical Tools Unit 4.1 Unit 4.2

Unit 4.3 Unit 4.4 Unit 4.5 Unit 4.6 Unit 5: Robot Kinematics Unit 5.1 Unit 5.2 Unit 5.3 Unit 6: Differential Kinematics Unit 6.1 Unit 6.2 Unit 6.3 Unit 6.4 Unit 6.5 Unit 6.6 Unit 7: Static Forces in Manipulators Unit 7.1 Unit 7.2 Unit 7.3 Unit 7.4 Unit 8: Trajectory Planning Unit 8.1 Unit 8.2 Unit 8.3 Unit 8.4 Unit 8.5 Unit 8.6 Unit 8.7 Unit 9: Robot Programming Unit 9.1 Unit 9.2 Unit 9.3 Unit 9.4 Unit 9.5 Unit 9.6 Unit 9.7 Unit 9.8 Unit 10: Industrial applications of manipulators Unit 10.1 Unit 10.2 Unit 11: New Trends in robotics Unit 11.1 Unit 11.2 Unit 11.3 Unit 11.4 Unit 11.5 Unit 11.6 Unit 11.7

7. Activities, Units/Modules and Methodology							
Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON- SITE]	Lectures	A05 A12 A13 D09	0.8	20	N	-	
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	A05 A12 A13 D09	0.72	18	Ν	-	
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	A05 A12 A13 D09	0.6	15	Y	Y	
Writing of reports or projects [OFF- SITE]	Group Work	A05 A12 A13 D09	1.68	42	Y	Y	
Practicum and practical activities report writing or preparation [OFF- SITE]	Guided or supervised work	A05 A12 A13 D09	0.6	15	Y	Y	
Study and Exam Preparation [OFF- SITE]	Self-study	A05 A12 A13 D09	1.24	31	N	-	
Final test [ON-SITE]	Assessment tests	A05 A12 A13 D09	0.08	2	Y	Y	
Project or Topic Presentations [ON- SITE]	Group Work	A05 A12 A13 D09	0.08	2	Y	Y	
Individual tutoring sessions [ON- SITE]	Other Methodologies	A05 A12 A13 D09	0.12	3	N	-	
On-line debates and forums [OFF-	Other Methodologies	A05 A12 A13 D09	0.08	2	Ν	-	

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SITE]	Total:	6	150					
	Total credits of in-class work: 2.4					Total c	lass time	hours: 60
	Total credits of out of class work: 3.6				Total ho	ours of o	ut of class	work:90
A A								

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System							
Evaluation System	Continuous assessment	Non- continuous evaluation*	Description				
Assessment of activities done in the computer labs	25.00%	0.00%					
Laboratory sessions	25.00%	0.00%					
Final test	50.00%	100.00%					
Total:	100.00%	100.00%					

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	
Unit 1 (de 11): Presentation	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	.5
Unit 2 (de 11): Introduction	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	3
Individual tutoring sessions [PRESENCIAL][Other Methodologies]	.25
Unit 3 (de 11): Robot Morphology	.20
	Начика
	Hours
Class Attendance (theory) [PRESENCIAL][Lectures] Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	3 1
Writing of reports or projects [AUTÓNOMA][Group Work]	5
Study and Exam Preparation [AUTÓNOMA][Gloup Work]	5 4
Final test [PRESENCIAL][Assessment tests]	
Project or Topic Presentations [PRESENCIAL][Group Work]	.25 .25
Individual tutoring sessions [PRESENCIAL][Other Methodologies]	.5
On-line debates and forums [AUTÓNOMA][Other Methodologies]	.25
	.23
Unit 4 (de 11): Mathematical Tools	
	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	2
Writing of reports or projects [AUTÓNOMA][Group Work]	5 4
Study and Exam Preparation [AUTÓNOMA][Self-study]	.25
Final test [PRESENCIAL][Assessment tests] Project or Topic Presentations [PRESENCIAL][Group Work]	.25
Individual tutoring sessions [PRESENCIAL][Other Methodologies]	.25
On-line debates and forums [AUTÓNOMA][Other Methodologies]	.25
	.23
Unit 5 (de 11): Robot Kinematics	
	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	2
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	5
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	6
Writing of reports or projects [AUTÓNOMA][Group Work] Practicum and practical activities report writing or preparation [AUTÓNOMA][Guided or supervised work]	5
Study and Exam Preparation [AUTÓNOMA][Self-study]	6 5
Final test [PRESENCIAL][Assessment tests]	.25
Project or Topic Presentations [PRESENCIAL][Group Work]	
Individual tutoring sessions [PRESENCIAL][Other Methodologies]	.25 .25
On-line debates and forums [AUTÓNOMA][Other Methodologies]	.25
	.20
Unit 6 (de 11): Differential Kinematics	
	Hours
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Problem solving and/or case studies [PRESENCIAL][Problem solving and exercises]	4
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	3
Writing of reports or projects [AUTÓNOMA][Group Work]	5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Guided or supervised work]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	4

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Study and Exam Preparation [AUTÓNOMA][Self-study]31Final test [PRESENCIAL][Assessment tests]2Project or Topic Presentations [PRESENCIAL][Group Work]2Individual tutoring sessions [PRESENCIAL][Other Methodologies]3On-line debates and forums [AUTÓNOMA][Other Methodologies]2		
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Project or Topic Presentations [PRESENCIAL][Group Work] 2 ndividual tutoring sessions [PRESENCIAL][Other Methodologies] 3 Dn-line debates and forums [AUTÓNOMA][Other Methodologies] 2		
ndividual tutoring sessions [PRESENCIAL][Other Methodologies] 3 Dn-line debates and forums [AUTÓNOMA][Other Methodologies] 2	וויונו נסגרף הבטבוזטוהבן[הספססווופות נפסנס]	
Dn-line debates and forums [AUTÓNOMA][Other Methodologies] 2	Project or Tonic Presentations (PRESENCIAL I/Group Work)	2
	Project or Topic Presentations [PRESENCIAL][Group Work]	
Total Tota	Individual tutoring sessions [PRESENCIAL][Other Methodologies]	3
		3 2

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Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description

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