UNIVERSIDAD DE CASTILLA - LA MANCHA
GUÍA DOCENTE

1. General information

Course: DIGITAL CONTROL
Type: CORE COURSE
Degree: 415 - UNDERGRADUATE DEGREE PROGRAMME IN ELECTRICAL ENGINEERING
Center: 303 - E.DE INGENIERÍA INDUSTRIAL Y AEROESPOACIAL DE TOLEDO
Year: 3
Main language: Spanish
Use of additional languages:
Web site:

Code: 56381
ECTS credits: 6
Academic year: 2023-24
Group(s): 40
Duration: C2
Second language:
English Friendly: Y
Bilingual: N

Lecturer: FERNANDO JOSE CASTILLO GARCIA - Group(s): 40

Building/Office	Department	Phone number	Email	Office hours
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Lecturer: SERGIO JUÁREZ PÉREZ - Group(s): 40

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Lecturer: ISMAEL PAYO GUTIERREZ - Group(s): 40

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Lecturer: DAVID RODRIGUEZ ROSA - Group(s): 40

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2. Pre-Requisites

To take this subject with the best use, the student must have acquired the knowledge that derives from obtaining the skills related to the basic and common subjects to the industrial branch of mathematics, physics, computer science, electrical and electronic technology and automatic regulation.

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

The digital control subject allows students to acquire knowledge of automatic regulation and control techniques and their application to industrial automation which, complemented with those acquired in other specific subjects, will facilitate the application of their skills in the world of work and, ultimately, , will help the engineer to face the problems that will arise throughout the exercise of the profession

4. Degree competences achieved in this course

Course competences

Code	Description
CB01	Prove that they have acquired and understood knowledge in a subject area that derives from general secondary education and is appropriate to a level based on advanced course books, and includes updated and cutting-edge aspects of their field of knowledge.
CB02	Apply their knowledge to their job or vocation in a professional manner and show that they have the competences to construct and justify arguments and solve problems within their subject area.
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB04	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
CB05	Have developed the necessary learning abilities to carry on studying autonomously
CEE08	Knowledge of the principles of automatic regulation and their application to industrial automation.
CG03	Knowledge of basic and technological subjects to facilitate learning of new methods and theories, and provide versatility to adapt to new situations.
CG04	Ability to solve problems with initiative, decision-making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of industrial engineering.
CG06	Ability to handle specifications, regulations and mandatory standards.
CT01	Knowledge of a second language.
CT02	Knowledge and application of information and communication technology.
CT03	Ability to communicate correctly in both spoken and written form.

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Analysis of the dynamic and static response of a discrete system

Ability to reconstruct continuous signals from the sampled signal.

Ability to recognise and correctly interpret the stability criteria of discrete systems.

Command of the techniques for the design of discrete control systems using discretisation of continuous controllers and by means of z-transfer functions.

Ability to use the main computer support tools.

Ability to obtain and simplify z-variable block diagrams

6. Units / Contents

Unit 1: Introduction to digital control

Unit 2: Discrete signals and systems

Unit 3: Analysis of discrete systems

Unit 4: Analysis of closed-loop discrete systems

Unit 5: Design of digital controllers

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	CEE08 CG03 CT01	1.2	30	N	-	
Problem solving and/or case studies [ON-SITE]	Problem solving and exercises	CB02 CB03 CB04 CEE08 CG04 CT03	0.4	10	N	-	
Class Attendance (practical) [ON-SITE]	Practical or hands-on activities	CEE08 CG03 CG04 CT02 CT03	0.6	15	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	CEE08 CG03 CG04 CT02 CT03	3.6	90	N	-	
Formative Assessment [ON-SITE]	Assessment tests	CEE08 CG03 CG04 CT03	0.2	5	Y	Y	
		Total:	**6**	**150**			
	Total credits of in-class work: 2.4			**Total class time hours: 60**			
	Total credits of out of class work: 3.6			**Total hours of out of class work: 90**			

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
Mid-term tests	70.00%	0.00%	These tests will include theoretical-practical questions and/or resolution of problems related to the contents of a part of the subject.
Final test	0.00%	70.00%	It will include theoretical-practical questions and/or resolution of problems related to the contents of the subject.
Laboratory sessions	30.00%	30.00%	It will be valued from the reports delivered after the end of each practice and on the dates indicated by the professor of the subject. A grade equal to or greater than 4 points out of 10 will be required to pass the course.
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).

Evaluation criteria for the final exam:

    Continuous assessment:

    The theory mark will be the average of the marks obtained in the different partial tests carried out.

    Non-continuous evaluation:

    It will consist of two tests: 1) Theoretical test that will be worth 70% of the final grade and will have the same format as the partial tests, 2) Delivery of practices, practical simulation test with Matlab, and/or alternative practical work, which will be worth 30% of the final mark.

Specifications for the resit/retake exam:

The evaluation criteria in the extraordinary call are the same as those used in the non-continuous evaluation of the ordinary call.

9. Assignments, course calendar and important dates

Not related to the syllabus/contents

Hours	hours

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
O. Reinoso	Control de sistemas discretos	McGraw-Hill		9788448142049	2004	

Ogata, Katsuhiko.	Sistemas de control en tiempo discreto /	Prentice Hall Hispanoamericana,	968-880-539-4	2015
Valdivia Miranda, Carlos.	Sistemas de control continuos y discretos /	Paraninfo,	978-84-283-0744-4	2016