UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: ELECTRONIC MATERIALS AND DEVICES
Code: 56536
Type: ELECTIVE
ECTS credits: 6
Degree: 417 - UNDERGRAD. IN INDUSTRIAL ELECTRONICS AND AUTOMAT. ENGINEERING
Academic year: 2022-23
Center: 602 - E.T.S. INDUSTRIAL ENGINEERING OF C. REAL
Group(s): 20
Year: 4
Duration: C2
Main language: Spanish
Second language: English
Use of additional languages:
English Friendly: Y
Web site:
Bilingual: N

Lecturer: **JUAN PEDRO ANDRES GONZALEZ** - Group(s): **20**

Building/Office	Department	Phone number	Email	Office hours
Edificio Politécnico/2-A17	FÍSICA APLICADA	926052443	juanpedro.andres@uclm.es	

Lecturer: **OSCAR JUAN DURA** - Group(s): **20**

Building/Office	Department	Phone number	Email	Office hours
Edificio Politécnico/2-A16	FÍSICA APLICADA	926053237	oscar.juan@uclm.es	

2. Pre-Requisites

Not established

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

Not established

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
CEO21	Knowledge of technologies required to deal with the automation of complex processes and systems.
CEO27	Knowledge of the applications and physical properties of materials and electronic devices of interest in current and emerging technologies in the area of electronic and automatic engineering.
CEO28	Knowledge of the physics underlying photovoltaic conversion, types of solar cells and engineering of photovoltaic systems.
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.
CG07	Ability to analyse and assess the social and environmental impact of technical solutions.
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

Knowledge of the physical fundamentals underlying the production of electrical energy by means of photovoltaic solar panels.

Applied knowledge of the laws of electromagnetism, emission, propagation and detection of electromagnetic waves.

Knowledge of the industrial applications and physical properties of materials and electronic devices of interest in current and emerging technologies of interest for electronic and automation engineering, as well as the basic experimental techniques used for their characterisation.

6. Units / Contents

Unit 1:
Unit 2:
Unit 3:
Unit 4:
Unit 5:

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	CEO21 CEO27	1	25	N	-	
Class Attendance (practical) [ON-SITE]	Combination of methods	CEO27 CG03 CG04 CT02	0.88	22	Y	Y	
Laboratory practice or sessions [ON-SITE]	Practical or hands-on activities	CB01 CB02 CB03 CB04 CB05 CEO27 CG03 CG04 CT03	0.32	8	Y	Y	
Final test [ON-SITE]	Assessment tests	CB02 CB04 CEO27 CG04 CT03	0.2	5	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	CB04 CEO21 CEO28 CG03 CG04 CT02	3.6	90	N	-	
		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
Laboratory sessions	15.00%	15.00%	
Final test	70.00%	70.00%	
Projects	15.00%	15.00%	
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	**hours**
Class Attendance (theory) [PRESENCIAL][Lectures]	25
Class Attendance (practical) [PRESENCIAL][Combination of methods]	22
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	8
Final test [PRESENCIAL][Assessment tests]	5
Study and Exam Preparation [AUTÓNOMA][Self-study]	90

Global activity

Activities	**hours**
Class Attendance (practical) [PRESENCIAL][Combination of methods]	22
Laboratory practice or sessions [PRESENCIAL][Practical or hands-on activities]	8
Final test [PRESENCIAL][Assessment tests]	5
Class Attendance (theory) [PRESENCIAL][Lectures]	25
Study and Exam Preparation [AUTÓNOMA][Self-study]	90
Total horas:	150

10. Bibliography and Sources

Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
S. Blundell	Magnetism in Condensed Matter	Oxford		0 19 850591 4	2011	
B.G. Streetma - S.K. Banerjee	Solid State Electronic Devices	Pearson		13:978:1-292-06055-2	2016	
S. Kasap	Principles of Electronic Materials and Devices	McGraw-Hill		978-0-07-802818-2	2018	
T. Shinjo	Nanomagnetism and Spintronics	Elsevier		978-0-444-63279-1	2014	
S. Li Sheng	Semiconductor Physical Electronics	Springer		13: 978-0387-28893-2	2006	