

**1. General information****Course:** DIGITAL ELECTRONICS I**Type:** CORE COURSE**Degree:** 360 - UNDERGRAD. IN INDUSTRIAL ELECTRONICS AND AUTOMAT. ENGINEERING (TO)**Center:** 303 - E.DE INGENIERÍA INDUSTRIAL Y AEROSPOACIAL DE TOLEDO**Year:** 3**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 56504**ECTS credits:** 6**Academic year:** 2021-22**Group(s):** 40**Duration:** First semester**Second language:****English Friendly:** Y**Bilingual:** N**Lecturer:** JOSE MANUEL GILPEREZ AGUILAR - Group(s): 40

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**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
A02	To know how to apply knowledge to work or vocation in a professional manner and possess the competences that are usually demonstrated by the formulation and defence of arguments and the resolution of problems in the field of study.
A05	To have developed the learning skills necessary to undertake subsequent studies with a greater degree of autonomy.
A07	Knowledge of Information Technology and Communication (ITC).
A08	Appropriate level of oral and written communication.
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 Engineering and Automation.
A15	Ability to work to specifications and comply with obligatory rules and regulations.
D03	Knowledge of the fundamentals and applications of digital electronics and microprocessors.
D06	Ability to design analogue, digital and power electronic systems.
D07	Knowledge and ability for modelling and simulation of systems.

**5. Objectives or Learning Outcomes****Course learning outcomes**

Description

Ability to analyze, design, model and simulate combinational and sequential circuits using basic elements, functional blocks and hardware description language (HDL)

**Additional outcomes****6. Units / Contents****Unit 1:**

Unit 1.1

Unit 1.2

Unit 1.3

Unit 1.4

**Unit 2:**

Unit 2.1

Unit 2.2

Unit 2.3

**Unit 3:**

Unit 3.1

Unit 3.2

Unit 3.3

Unit 3.4

Unit 3.5

Unit 3.6

Unit 4:

Unit 4.1

Unit 4.2

Unit 4.3

Unit 4.4

Unit 5:

Unit 5.1

Unit 5.2

Unit 5.3

Unit 5.4

Unit 5.5

Unit 5.6

Unit 5.7

Unit 5.8

Unit 6:

Unit 6.1

Unit 6.2

Unit 7:

Unit 7.1

Unit 7.2

Unit 7.3

Unit 7.4

Unit 7.5

Unit 7.6

Unit 8:

Unit 8.1

Unit 8.2

Unit 8.3

Unit 8.4

Unit 9:

Unit 9.1

Unit 9.2

Unit 9.3

Unit 9.4

## 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	A07 A12 A15 D03 D06 D07	1	25	N	-	
Class Attendance (practical) [ON-SITE]	Problem solving and exercises	A07 A12 A13 D03 D06 D07	0.72	18	N	-	
Laboratory practice or sessions [ON-SITE]	Work with simulators	A02 A07 A12 A13 A15 D03 D06 D07	0.6	15	Y	Y	
Study and Exam Preparation [OFF-SITE]	Self-study	A02 A05 A07 A08 A12 A13 A15 D03 D06 D07	1.6	40	N	-	
Writing of reports or projects [OFF-SITE]	Self-study	A02 A05 A07 A08 A12 A13 A15 D03 D06 D07	1.4	35	N	-	
Progress test [ON-SITE]	Assessment tests	A02 A05 A07 A08 A12 A13 A15 D03 D06 D07	0.08	2	Y	N	
Writing of reports or projects [OFF-SITE]	Cooperative / Collaborative Learning	A02 A05 A07 A08 A12 A13 A15 D03 D06 D07	0.44	11	Y	Y	
Practicum and practical activities report writing or preparation [OFF-SITE]	Cooperative / Collaborative Learning	A02 A05 A07 A08 A12 A13 A15 D03 D06 D07	0.16	4	Y	Y	
<b>Total:</b>			<b>6</b>	<b>150</b>			
<b>Total credits of in-class work: 2.4</b>			<b>Total class time hours: 60</b>				
<b>Total credits of out of class work: 3.6</b>			<b>Total hours of out of class work: 90</b>				

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	0.00%	15.00%	
Final test	0.00%	70.00%	
Practical exam	0.00%	15.00%	
<b>Total:</b>	<b>0.00%</b>	<b>100.00%</b>	

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
<b>Unit 1 (de 9):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1.5
<b>Unit 2 (de 9):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1.5
<b>Unit 3 (de 9):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	3
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	2
Laboratory practice or sessions [PRESENCIAL][Work with simulators]	2
Study and Exam Preparation [AUTÓNOMA][Self-study]	6
Writing of reports or projects [AUTÓNOMA][Self-study]	4
<b>Unit 4 (de 9):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
<b>Unit 5 (de 9):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	3
Laboratory practice or sessions [PRESENCIAL][Work with simulators]	3
Study and Exam Preparation [AUTÓNOMA][Self-study]	9
Writing of reports or projects [AUTÓNOMA][Self-study]	7
Progress test [PRESENCIAL][Assessment tests]	1
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	3
Practicum and practical activities report writing or preparation [AUTÓNOMA][Cooperative / Collaborative Learning]	1
<b>Unit 6 (de 9):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	2
<b>Unit 7 (de 9):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	4
Laboratory practice or sessions [PRESENCIAL][Work with simulators]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	9
Writing of reports or projects [AUTÓNOMA][Self-study]	9
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	3
Practicum and practical activities report writing or preparation [AUTÓNOMA][Cooperative / Collaborative Learning]	1
<b>Unit 8 (de 9):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	4
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	9
<b>Unit 9 (de 9):</b>	
<b>Activities</b>	<b>Hours</b>
Class Attendance (theory) [PRESENCIAL][Lectures]	6
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	5
Laboratory practice or sessions [PRESENCIAL][Work with simulators]	6
Writing of reports or projects [AUTÓNOMA][Self-study]	15
Progress test [PRESENCIAL][Assessment tests]	1
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	5
Practicum and practical activities report writing or preparation [AUTÓNOMA][Cooperative / Collaborative Learning]	2
<b>Global activity</b>	
<b>Activities</b>	<b>hours</b>
Writing of reports or projects [AUTÓNOMA][Self-study]	35
Laboratory practice or sessions [PRESENCIAL][Work with simulators]	15
Practicum and practical activities report writing or preparation [AUTÓNOMA][Cooperative / Collaborative Learning]	4
Class Attendance (theory) [PRESENCIAL][Lectures]	25

Study and Exam Preparation [AUTÓNOMA][Self-study]	40
Progress test [PRESENCIAL][Assessment tests]	2
Writing of reports or projects [AUTÓNOMA][Cooperative / Collaborative Learning]	11
Class Attendance (practical) [PRESENCIAL][Problem solving and exercises]	18
<b>Total horas:</b>	<b>150</b>

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Floyd, T. L.	Fundamentos de sistemas digitales	Pearson		8483220857	2006	
Mandado, Enrique	Sistemas Electrónicos Digitales	Marcombo Boixareu Editores		84-267-0804-8	1991	
Nelson, V. P., H. T. Nagle, B. D. Carroll y J. D. Irwin	Análisis y diseño de circuitos lógicos digitales	Prentice Hall		0-13-463894-8	1996	
Taub, H. y D. Schilling	Electrónica Digital Integrada	Marcombo Boixareu Editores		9788426703859	1984	
Wakerly, J. F.	Diseño digital. Principios y prácticas	Prentice Hall		968-880-244-1	1994	